



BREA MALL MIXED USE PROJECT

DRAFT ENVIRONMENTAL IMPACT REPORT

VOLUME IIB

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BREA MALL MIXED USE PROJECT

for the City of Brea

Volume IIB Appendices G – O

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LOCAL REGULATIONS AND STANDARDS

NOISE

Studies have identified noise as an environmental pollutant that can have substantial and permanent impacts on human health and general well-being. Not only is noise a health hazard, excessive noise can be a source of annoyance, tension, and discomfort that disrupts everyday activities. Brea aims to substantially reduce noise and its impacts within the urban environment, with a focus on protecting residential neighborhoods, schools, and similar sensitive uses.

Context

In Brea, street and freeway traffic represent the primary noise sources. Industrial and commercial activity present concerns where adjacent to residential neighborhoods. In addition, mechanical equipment, playgrounds, leaf blowers, and construction equipment are examples of random noise sources that can contribute to neighborhood noise.

Figure PS-5 displays a composite picture of average noise levels in Brea in 2001. As Figure PS-5 illustrates, the loudest noise levels occur along State Highway 57, Imperial Highway, Brea Boulevard, and Valencia Avenue, where truck traffic associated with the Olinda Alpha landfill lingers past homes and places of business. Lambert Road also experiences loud noise levels due to access to State Highway 57.

Noise and Land Use Compatibility Guidelines

Noise generally is defined as unwanted or intrusive sound. Because noise consists of pitch, loudness, and duration, describing noise with a single unit of measure presents a challenge. The A-weighted decibel scale, or dB(A), has been developed to describe the loudness of a sound or sound environment based on the sensitivity of the human ear. A sound level meter that measures A-weighted decibels has an electrical circuit that allows the meter to have the same sensitivity to sound at different frequencies as the average human ear. Table PS-3 indicates criteria the State has established to reduce adverse noise effects on human health.

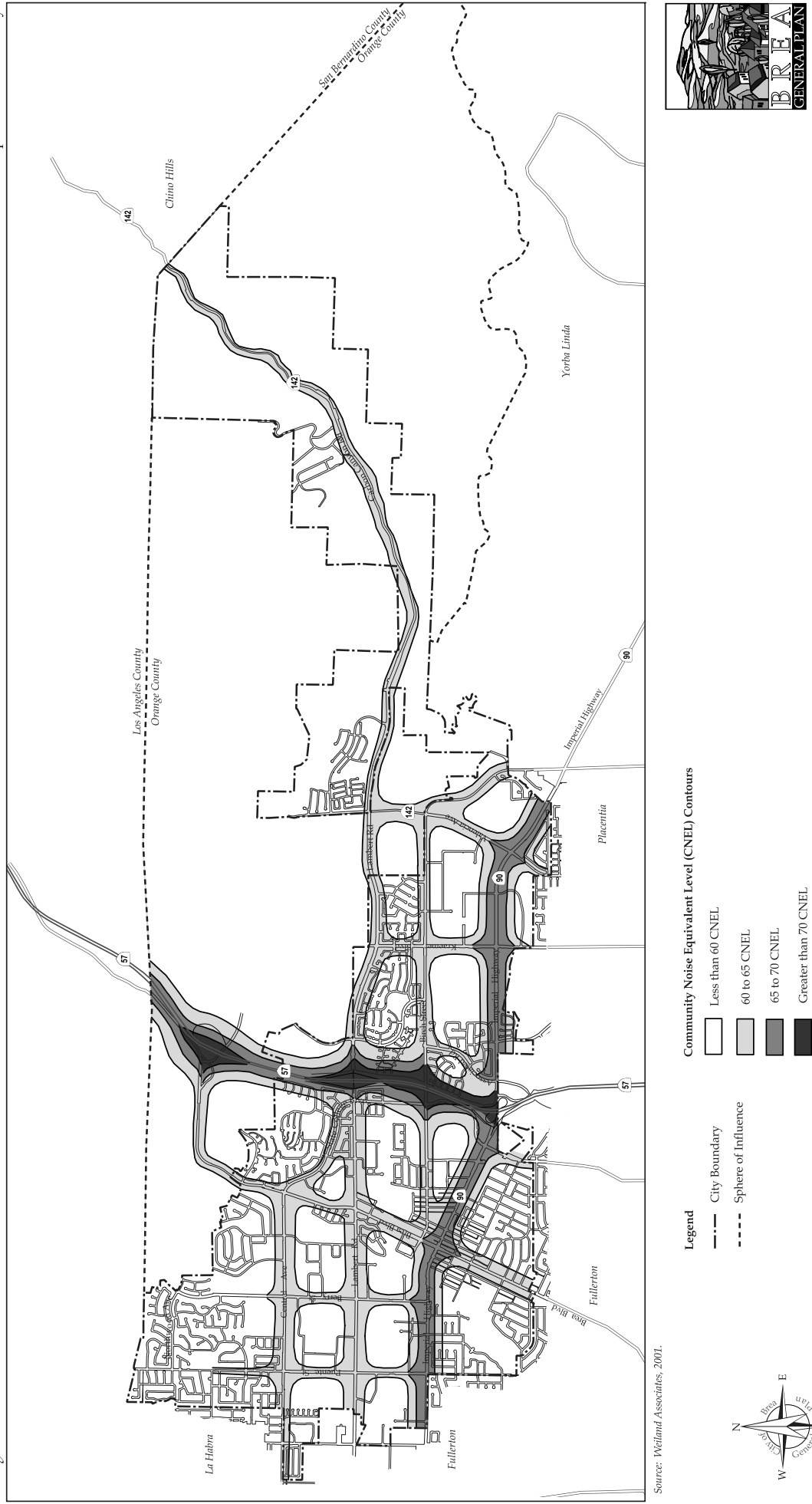


Figure PS-5
Noise Contours (2001)

Table PS-3
State Criteria for Minimizing Adverse Noise Effects on Humans

Objective	dB(A) Range
Prevent Hearing Loss	75-80
Prevent Physiological Effects (Other than hearing loss)	65-75
Prevent Speech Interference	50-60
Address People's Subjective Preference for Noise Control	45-50
Prevent Sleep Interruption	35-45

Source: California General Plan Guidelines, 2000.

The dB(A) descriptor only reports noise from a single source or combination of sources at a point in time. To allow a more comprehensive description of a noise environment, federal and State agencies have established noise and land use compatibility guidelines that use averaging approaches to noise measurement. Two measurement scales commonly used in California are the Community Noise Equivalent Level (CNEL) and the day-night level (Ldn). To account for increased human sensitivity at night, the CNEL level includes a 5-decibel penalty on noise during the 7:00 A.M. to 10:00 P.M. time period and a 10-decibel penalty on noise during the 10:00 P.M. to 7:00 A.M. time period. The Ldn level includes only the 10 decibel weighting for late-night noise. These values are nearly identical for all but unusual noise sources.

The City will use land use compatibility standards when planning and making development decisions in order to ensure that noise producers do not adversely affect sensitive receptors.

The City's primary goal with regard to community noise is to minimize the exposure of residents to unhealthful or excessive noise levels to the extent possible. To this end, the noise/land use compatibility guidelines in Figure PS-6, based on cumulative noise criteria for outdoor noise, are used to review development proposals and to identify and mitigation measures necessary to avoid or minimize impacts, including traffic noise impacts, a new use may have on established uses.

**Figure PS-6
Noise/Land Use Compatibility**

Land Use Category	Community Noise Equivalent Level (CNEL) or Day-Night Level (Ldn), dB							
	55	60	65	70	75	80	85	
Residential- Low-Density Single-Family, Duplex, Mobile Homes								
Residential- Multiple Family								
Transient Lodging - Motels, Hotels								
Schools, Libraries, Churches, Hospitals, Nursing Homes								
Auditoriums, Concert Halls, Amphitheaters								
Sports Arenas, Outdoor Spectator Sports								
Playgrounds, Neighborhood Parks								
Golf Courses, Riding Stables, Water Recreation, Cemeteries								
Office Buildings, Business, Commercial and Professional								
Industrial, Manufacturing, Utilities, Agriculture								

Nature of the noise environment where the CNEL or Ldn level is:

Below 55 dB

Relatively quiet suburban or urban areas, no arterial streets within 1 block, no freeways within 1/4 mile.

55-65 dB

Most somewhat noisy urban areas, near but not directly adjacent to high volumes of traffic.

65-75 dB

Very noisy urban areas near arterials, freeways or airports.

75+ dB

Extremely noisy urban areas adjacent to freeways or under airport traffic patterns. Hearing damage with constant exposure outdoors.



Normally Acceptable

Specified land use is satisfactory, based on the assumption that any buildings are of normal conventional construction, without any special noise insulation requirements



Conditionally Acceptable

New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning, will normally suffice.



Normally Unacceptable

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.



Clearly Unacceptable

New construction or development should generally not be undertaken.

The Community Noise Equivalent Level (CNEL) and Day-Night Noise Level (Ldn) are measures of the 24-hour noise environment. They represent the constant A-weighted noise level that would be measured if all the sound energy received over the day were averaged. In order to account for the greater sensitivity of people to noise at night, the CNEL weighting includes a 5-decibel penalty on noise between 7:00 p.m. and 10:00 p.m. and a 10-decibel penalty on noise between 10:00 p.m. and 7:00 a.m. of the next day. The Ldn includes only the 10-decibel weighting for late-night noise events. For practical purposes, the two measures are equivalent for typical urban noise environments.

Noise Contours and Noise Impact Areas

The use of noise contours based on the major noise sources can describe the noise environment for the community. Noise contours outline areas of equal noise exposure. Future noise contours have been estimated using information about existing and projected land use development and transportation activity.

The projected noise contours and noise impact areas for Brea are displayed in Figure PS-7. These contours will serve as a guide for land use and development decisions. Contours of 60 dB(A) or greater define noise impact areas. An acoustical analysis must be prepared when noise sensitive land uses are proposed within noise impact areas. The analysis must show that the project is designed to attenuate noise to meet the City's noise standards in order to receive approval. If the project design does not meet the noise standards, mitigation can be recommended in the analysis. If the analysis demonstrates that the noise standards can be met by implementing the mitigation measures, the project can be approved conditioned upon implementation of the mitigation measures.

Transportation Related Noise

Transportation activity is the primary source of noise in Brea. The three major sources of transportation related noise are:

- Traffic on the Orange Freeway (SR-57)
- Commercial truck traffic associated with the Olinda Alpha landfill on Valencia Avenue and Imperial Highway
- Automobile traffic on Brea Boulevard, Brea Canyon Road, Central Avenue, and Lambert Road

Residential neighborhoods bordering the Orange Freeway are subject to loud noise levels. Properties directly adjacent to the freeway can experience decibels as high as 70 to 75 dB(A). Sound attenuation walls, landscaped buffers, and dirt mounds all help to reduce the sound intensity of the freeway. Figure PS-7 illustrates the projected noise contours along the freeway.

Commercial trucks associated with the Olinda Alpha landfill contribute to excessive noise levels via the Orange Freeway, Imperial Highway, and Valencia Avenue to connect with the landfill. Commercial trucks are not permitted to access Valencia Avenue via Lambert Road, minimizing some of the noise impacts to adjacent residential neighborhoods. Olinda Alpha is slated to close in the year 2013; however, the County of Orange is investigating extending the life of the landfill much further.

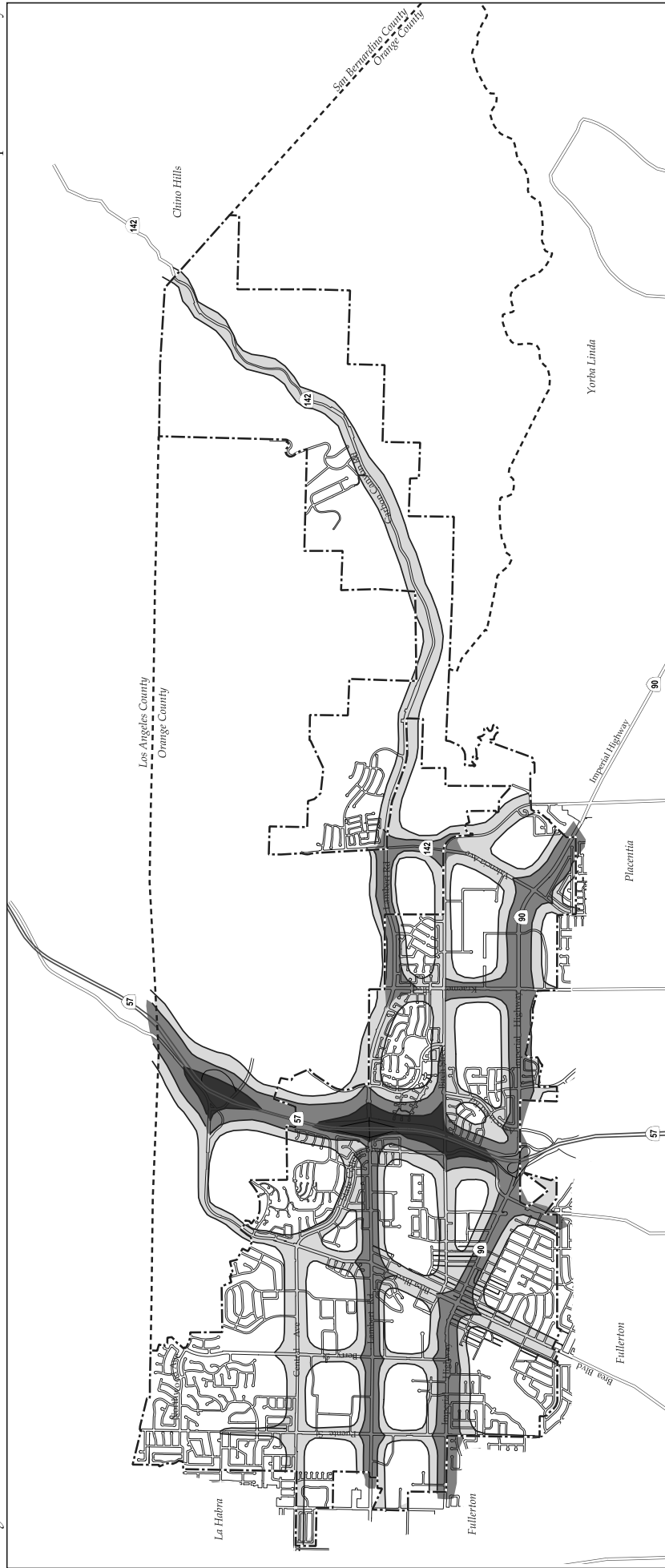
New residential development has been recently constructed at the northeast corner of Valencia Avenue and Carbon Canyon Road just south of the Olinda Alpha landfill entrance. Dense planting of deciduous and evergreen trees as well as a sound attenuation wall were set within the landscaped area to minimize the impacts to residential properties directly abutting Valencia Avenue.

Proposed residential land uses have also been designated for both sides of Valencia Avenue south of Lambert Road/Carbon Canyon Road. Residential, school, and park uses are proposed for the Hartley Research Center. Careful planning and mitigation within these areas will protect these sensitive uses from excessive noise levels.

Noise levels along Brea Boulevard, Brea Canyon Road, Central Avenue, and Lambert Road are above average and can impact sensitive uses adjacent to these streets.

Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic. The primary source of noise from automobiles is high-frequency tire noise, which increases with speed. In addition, trucks and older automobiles produce engine and exhaust noise.

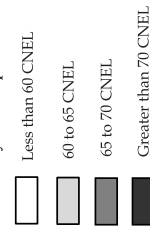
The most efficient and effective means of controlling noise from transportation systems is to reduce noise at the source. However, the City has little direct control over noise produced by transportation sources because State noise regulations preempt local regulations. Because the City cannot control noise at the source, City noise programs focus on reducing the impact of transportation noise at reception sites. During the planning stages of the development process, potential impacts from transportation noise will be identified and mitigation measures will be required as needed to meet City noise standards.



Source: Weiland Associates, 2001.



Community Noise Equivalent Level (CNEL) Contours



Legend

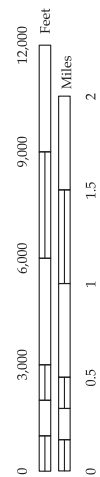
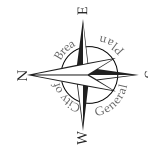


Figure PS-6
Future Noise Contours



Sound attenuation walls and limits on speed help to shield residential neighborhoods from automobile noise on Imperial Highway.

Non-Transportation Related Noise

When reviewing a proposed industrial, commercial, or public project, noise generation and potential impacts to surrounding development are considered in accordance with CEQA. Specific attention should be given to non-residential proposals adjacent to residential neighborhoods. An acoustical analysis is required for projects that will generate noise potentially affecting sensitive receptors. Where significant impacts are identified, mitigation measures are required. Common mitigation measures that could be applied when reviewing projects include acoustically treated and quiet design: 1) furnaces, 2) fans, 3) motors, 4) compressors, and 5) valves and pumps. The City may also require limited delivery hours and hours of operation to minimize impacts on adjacent residential users or other sensitive receptors.

Goals and Policies

Certain areas of Brea are subject to high levels of noise. This in turn can reduce the quality of life within these neighborhoods. Consideration of noise sources in the planning process and identification of who that noise impacts is an effective method of minimizing the impacts of noise on residents. Areas already impacted by noise can explore different noise attenuation and rehabilitative improvements.

Goal PS-9	Minimize the impact of point source noise and ambient noise levels throughout the community.
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- Policy PS-9.1 Evaluate the need to require acoustical studies for development proposals that address both direct and indirect, particularly traffic, noise impacts, and require such studies, with appropriate mitigation included, as warranted.
- Policy PS-9.2 Ensure that the noise standards set forth in the Municipal Code reflect standards most appropriate for Brea.
- Policy PS-9.3 Ensure that acceptable noise levels are maintained near schools, hospitals, convalescent homes, and other noise sensitive areas in accordance with the City's Municipal Code and noise standards contained in the General Plan.
- Policy PS-9.4 Employ creative methods of reducing noise pollution in the City.
- Policy PS-9.5 Avoid placing high-noise activity centers near residential areas.

Goal PS-2	Minimize the impacts of transportation-related noise.
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- Policy PS-2.1 Reduce transportation noise by imposing traffic restrictions where necessary.
- Policy PS-2.2 Work with the counties of Orange and Los Angeles to include noise mitigation measures in the design of new roadway projects.

Goal PS-3	Minimize noise impacts from sources other than transportation.
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- Policy PS-3.1 Require the inclusion of noise mitigation measures, techniques, and design features in the planning, design, and construction of future development and redevelopment projects.

- Policy PS-3.2 Require that mixed-use structures be designed to prevent transfer of noise and vibration from commercial/retail to residential use.
- Policy PS-3.3 Minimize stationary noise sources and noise emanating from construction activities and special events.
- Policy PS-3.4 Require that new non-residential development plan delivery areas away from existing residential areas.
- Policy PS-3.5 Continue active enforcement to limit commercial and industrial delivery hours adjoining residential areas.
-

**Implementation
Guide**



See Section XXIII of the Implementation Guide for action programs.

Brea City Code

CHAPTER 8.20: NOISE CONTROL

Section

- 8.20.010 Declaration of policy
- 8.20.020 Definitions
- 8.20.030 Noise level measurement criteria
- 8.20.040 Designated noise zone
- 8.20.050 Exterior noise standards
- 8.20.060 Interior noise standards
- 8.20.070 Special provisions
- 8.20.080 Motor vehicle racing
- 8.20.090 Schools, hospitals and churches
- 8.20.100 Air conditioning; refrigeration; pool filters and fans
- 8.20.110 Noise level measurement
- 8.20.120 Manner of enforcement

§ 8.20.010 DECLARATION OF POLICY.

A. In order to control unnecessary, excessive and annoying sounds emanating from areas of the city, it is hereby declared to be the policy of the city to prohibit such sounds generated from all sources as specified in this chapter.

B. It is determined that certain sound levels are detrimental to the public health, welfare and safety, and contrary to the public interest.

('61 Code, § 7B.1) (Ord. 812, passed - -)

§ 8.20.020 DEFINITIONS.

For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

AMBIENT NOISE LEVEL. The all-encompassing noise level associated with a given environment, being a composite of sounds from all sources, excluding the alleged offensive noise, at the location and approximate time at which a comparison with the alleged offensive noise is to be made.

CUMULATIVE PERIOD. An additive period of time composed of individual time segments which may be continuous or interrupted.

DECIBEL (dB). A unit which denotes the ratio between two (2) quantities which are proportional to power: the number of decibels corresponding to the ratio or two (2) amounts of power is ten (10) times the logarithm to the base ten (10) of this ratio.

DWELLING UNIT. A single unit providing complete, independent living facilities for one (1) or more persons including permanent provisions for living, sleeping, eating, cooking and sanitation.

EMERGENCY MACHINERY, VEHICLE, OR WORK. Any machinery, vehicle or work used, employed or performed in an effort to protect, provide or restore safe conditions in the community or for the citizenry, or work by private or public utilities when restoring utility service.

FIXED NOISE SOURCE. A stationary device which creates sounds while fixed or motionless, including but not limited to industrial and commercial machinery and equipment, pumps, fans, compressors, generators, air conditioners and refrigeration equipment.

GRADING. Any excavating or filling of earth material, or any combination thereof, conducted at a site to prepare said site for construction or other improvements thereon.

IMPACT NOISE. The noise produced by the collision of one mass in motion with a second mass which may be either in motion or at rest.

MOBILE NOISE SOURCE. Any noise source other than a fixed noise source.

NOISE LEVEL. The “A” weighted sound pressure level in decibels obtained by using a sound level meter at slow response with a reference pressure of twenty (20) micronewtons per square meter. The unit of measurement shall be designated as dB(A).

PERSON. A person, firm, association, co-partnership, joint venture, corporation or any entity, public or private in nature.

RESIDENTIAL PROPERTY. A parcel of real property which is developed and used either in part or in whole for residential purposes, other than transient uses such as hotels and motels.

SIMPLE TONE NOISE. A noise characterized by a predominant frequency or frequencies so that other frequencies cannot be readily distinguished.

SOUND LEVEL METER. An instrument meeting American National Standard Institute's Standard S1.4-1971 for Type 1 or Type 2 sound level meters or an instrument and the associated recording and analyzing equipment which will provide equivalent data.

SOUND PRESSURE LEVEL OF A SOUND, IN DECIBELS. Twenty (20) times the logarithm to the base ten (10) of the ratio of the pressure of the sound to a reference pressure, which reference pressure shall be explicitly stated.

('61 Code, § 7B.2) (Ord. 812, passed - -)

§ 8.20.030 NOISE LEVEL MEASUREMENT CRITERIA.

Any noise level measurements made pursuant to the provisions of this chapter shall be performed using a sound level meter as defined in § 8.20.020.

('61 Code, § 7B.3) (Ord. 812, passed - -)

§ 8.20.040 DESIGNATED NOISE ZONE.

The entire territory of the city is hereby designated as “Noise Zone 1.”

('61 Code, § 7B.4) (Ord. 812, passed - -)

§ 8.20.050 EXTERIOR NOISE STANDARDS.

A. The following noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

NOISE STANDARDS

<i>Noise Zone</i>	<i>Noise Level</i>	<i>Time Period</i>
--------------------------	---------------------------	---------------------------

1	55 dB(A)	7:00 a.m. - 10:00 p.m.
---	----------	------------------------

1	50 dB(A)	10:00 p.m. - 7:00 a.m.
---	----------	------------------------

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

B. It shall be unlawful for any person at any location within the city to create any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, to exceed:

1. The noise standard for a cumulative period of more than 30 minutes in any hour; or

2. The noise standard plus five (5) dB(A) for a cumulative period of more than 15 minutes in any hour; or

3. The noise standard plus ten (10) dB(A) for a cumulative period of more than five (5) minutes in any hour; or

4. The noise standards plus fifteen (15) dB(A) for a cumulative period of more than one (1) minute in any hour; or

5. The noise standard plus twenty (20) dB(A) for any period of time.

C. In the event the ambient noise level exceeds any of the first four (4) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

('61 Code, § 7B.5) (Ord. 812, passed - -)

§ 8.20.060 INTERIOR NOISE STANDARDS.

A. The following interior noise standards, unless otherwise specifically indicated, shall apply to all residential property within a designated noise zone:

INTERIOR NOISE STANDARDS

<i>Noise Zone</i>	<i>Noise Level</i>	<i>Time Period</i>
--------------------------	---------------------------	---------------------------

1	55 dB(A)	7:00 a.m. - 10:00 p.m.
---	----------	------------------------

1	45 dB(A)	10:00 p.m. - 7:00 a.m.
---	----------	------------------------

In the event the alleged offensive noise consists entirely of impact noise, simple tone noise, speech, music, or any combination thereof, each of the above noise levels shall be reduced by five (5) dB(A).

B. It shall be unlawful for any person at any location within the city to create any noise, or to allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, when the foregoing causes the noise level, when measured on any other residential property, to exceed:

1. The interior noise standard for a cumulative period of more than five (5) minutes in any hour; or
2. The interior noise standard plus five (5) dB(A) for a cumulative period of more than one (1) minute in any hour; or
3. The interior noise standard plus ten (10) dB(A) for any period of time.

C. In the event the ambient noise level exceeds any of the first two (2) noise limit categories above, the cumulative period applicable to said category shall be increased to reflect said ambient noise level. In the event the ambient noise level exceeds the third noise limit category the maximum allowable noise level under said category shall be increased to reflect the maximum ambient noise level.

('61 Code, § 7B.6) (Ord. 812, passed - -)

§ 8.20.070 SPECIAL PROVISIONS.

The following activities shall be exempted from the provisions of this chapter:

A. Activities conducted on the grounds of any public nursery, elementary, intermediate or secondary school or college.

B. Outdoor gatherings, public dances and shows, provided said events are conducted pursuant to a permit as required by this code.

C. Activities conducted on any park or playground, provided such park or playground is owned and operated by a public entity.

D. Any mechanical device, apparatus or equipment used, related to or connected with emergency machinery, vehicle or work.

E. Noise sources associated with construction, repair, remodeling, or grading of any real property, provided said activities do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

F. All mechanical devices, apparatus or equipment which are utilized for the protection or salvage of agricultural crops during periods of potential or actual frost damage or other adverse weather conditions.

G. Mobile noise sources associated with agricultural operations; provided such operations do not take place between the hours of 7:00 p.m. and 7:00 a.m. on weekdays, including Saturday, or at any time on Sunday or a federal holiday.

H. Mobile noise sources associated with agricultural pest control through pesticide application, provided that the application is made in accordance with restricted material permits issued by or regulations enforced by the Agricultural Commissioner.

I. Noise sources, associated with the maintenance of real property, provided said activities take place between 7:00 a.m. and 7:00 p.m. on any day.

J. Any activity to the extent regulation thereof has been preempted by state or federal law.

('61 Code, § 7B.7) (Ord. 812, passed - -)

§ 8.20.080 MOTOR VEHICLE RACING.

It shall be unlawful to conduct motor vehicle racing, testing, timing or similar noise-producing activities at raceways, speedways, off-road vehicle courses, drag strips or other similar places, including, but not limited to, the operation of midget race cars, drag cars, motorcycles, off-road vehicles, and specialty automobiles, between the hours of 11:30 p.m. and 7:00 a.m.

('61 Code, § 7B.8) (Ord. 812, passed - -)

§ 8.20.090 SCHOOLS, HOSPITALS AND CHURCHES.

It shall be unlawful for any person to create any noise which causes the noise level at any school, hospital or church while same is in use to exceed the noise limits as specified in § 8.20.050 proscribed for the assigned noise zone in which the school, hospital or church is located, or which noise level unreasonably interferes with the use of such institutions or which unreasonably disturbs or annoys patients in the hospital, provided conspicuous signs are displayed in three (3) separate locations within one-tenth of a mile of the institution indicating the presence of a school, church or hospital.

('61 Code, § 7B.9) (Ord. 812, passed - -)

§ 8.20.100 AIR CONDITIONING; REFRIGERATION; POOL FILTERS AND FANS.

During the five (5) year period following the effective date of this chapter, the noise standards enumerated in §§ 8.20.050 and 8.20.060 shall be increased eight (8) dB(A) where the alleged offensive noise source is an air conditioning, or refrigeration system, fan, or swimming pool filter, or associated equipment which was installed prior to the effective date of this chapter.

('61 Code, § 7B.10) (Ord. 812, passed - -)

§ 8.20.110 NOISE LEVEL MEASUREMENT.

The location selected for measuring exterior noise levels shall be at any point on the affected property. Interior noise measurements shall be made within the affected dwelling unit. The measurement shall be made at a point at least four (4) feet from the wall, ceiling or floor nearest the alleged offensive noise source and may be made with the windows of the affected unit open.

('61 Code, § 7B.11) (Ord. 812, passed - -)

§ 8.20.120 MANNER OF ENFORCEMENT.

A. The Police Department, the Code Enforcement Officer and their duly authorized representatives are directed to enforce the provisions of this chapter.

B. No person shall interfere with, oppose or resist any authorized person charged with the enforcement of this chapter while such person is engaged in the performance of his or her duty.

('61 Code, § 7B.12) (Ord. 812, passed - -)

[Print](#)

Brea City Code

§ 20.20.040 VIBRATION.

Every use shall be so operated that the ground vibration inherently and recurrently generated does not cause a displacement of the earth greater than .003 of one (1) inch as measured at the property line of the subject use.

(Ord. 425, passed 10-14-68)

CONSTRUCTION NOISE MODELING

Report date: 10/28/2019
Case Description: Brea 03.3

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Building Demo	Residential	65.0	60.0	55.0

		Spec	Actual	Receptor	Estimated	
	Impact	Usage	Lmax	Lmax	Distance	
Description	Device	(%)	(dBA)	(dBA)	(feet)	
					Shielding	
					(dBA)	
Excavator	No	40		80.7	50.0	0.0
Excavator	No	40		80.7	50.0	0.0
Tractor	No	40	84.0		50.0	0.0
Pumps	No	50		80.9	50.0	0.0

[illegible]

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Asphalt Demo	Residential	65.0	60.0	55.0

Description	Impact Device	Equipment				
		Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Tractor	No	40	84.0	50.0	0.0	

		Results													

		Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
		Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Lmax	Leq														
-----		-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Tractor		84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															
Total		84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Site Preparation	Residential	65.0	60.0	55.0

Description	Impact	Equipment				
		Usage Device	Spec (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance Shielding (feet) (dBA)
Grader	No	40	85.0	50.0	0.0	
Grader	No	40	85.0	50.0	0.0	
Scraper	No	40	83.6	50.0	0.0	
Scraper	No	40	83.6	50.0	0.0	
Scraper	No	40	83.6	50.0	0.0	
Scraper	No	40	83.6	50.0	0.0	
Front End Loader	No	40	79.1	50.0	0.0	

		Results													
		Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
		Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
Equipment		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Lmax	Leq														
Grader		85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															
Grader		85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															
Scraper		83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															
Scraper		83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															
Scraper		83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															
Scraper		83.6	79.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															
Front End Loader		79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															
	Total	85.0	88.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A															

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Mall Podium Parking	Residential	65.0	60.0	55.0

Description	Impact Device	Equipment				
		Usage (%)	Spec Lmax (dBA)	Actual Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Tractor	No	40	84.0		50.0	0.0
Crane	No	16		80.6	50.0	0.0
Man Lift	No	20		74.7	50.0	0.0
Front End Loader	No	40		79.1	50.0	0.0
Concrete Saw	No	20		89.6	50.0	0.0

Equipment Lmax Leq	Results						Noise Limits (dBA)						Noise Limit Exceedance (dBA)			
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night			
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq		
Tractor N/A	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Crane N/A	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Man Lift N/A	74.7	67.7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Front End Loader N/A	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Concrete Saw N/A	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Total N/A	89.6	85.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Mall Construction	Residential	65.0	60.0	55.0

Description	Impact Device	Equipment				
		Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Tractor	No	40	84.0	50.0	0.0	
Crane	No	16	80.6	50.0	0.0	
Concrete Saw	No	20	89.6	50.0	0.0	
Pickup Truck	No	40	75.0	50.0	0.0	

Equipment Lmax Leq	Results						Noise Limits (dBA)								Noise Limit Exceedance (dBA)			
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night					
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq				
Tractor N/A	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Crane N/A	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Concrete Saw N/A	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Pickup Truck N/A	75.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Total N/A	89.6	85.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Baselines (dBA)				
Description	Land Use	Daytime	Evening	Night
Dick's Sporting Goods	Residential	65.0	60.0	55.0

Equipment						

	Spec	Actual	Receptor	Estimated		
	Impact	Usage	Lmax	Lmax	Distance	Shielding
Description	Device	(%)	(dBA)	(dBA)	(feet)	(dBA)
Tractor	No	40	84.0	50.0	0.0	
Crane	No	16	80.6	50.0	0.0	
Concrete Saw	No	20	89.6	50.0	0.0	
Pickup Truck	No	40	75.0	50.0	0.0	

Results													

Noise Limits (dBA)							Noise Limit Exceedance (dBA)						
-----							-----						
Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
-----		-----		-----		-----		-----		-----		-----	
Equipment		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Lmax	Leq												
Tractor		84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A													
Crane		80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A													
Concrete Saw		89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A													
Pickup Truck		75.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A													
Total		89.6	85.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A													

Roadway Construction Noise Model (RCNM), Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Fitness Center	Residential	65.0	60.0	55.0

Equipment

Description	Impact Device	Spec Usage	Actual Lmax	Receptor Lmax	Estimated Distance	Shielding
		(%)	(dBA)	(dBA)	(feet)	(dBA)
Tractor	No	40	84.0		50.0	0.0
Crane	No	16		80.6	50.0	0.0
Concrete Saw	No	20		89.6	50.0	0.0
Pickup Truck	No	40		75.0	50.0	0.0

Results

[illegible]

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Res Podium Parking	Residential	65.0	60.0	55.0

Description	Impact Device	Spec Usage (%)	Equipment			
			Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Tractor	No	40	84.0	50.0	0.0	
Crane	No	16	80.6	50.0	0.0	
Concrete Saw	No	20	89.6	50.0	0.0	
Pickup Truck	No	40	75.0	50.0	0.0	

Equipment Lmax Leq	Results						Noise Limits (dBA)								Noise Limit Exceedance (dBA)			
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night					
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq				
	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----				
Tractor N/A	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Crane N/A	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Concrete Saw N/A	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Pickup Truck N/A	75.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
Total N/A	89.6	85.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Paving	Residential	65.0	60.0	55.0

Description	Impact Device	Spec Usage (%)	Equipment			
			Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Pavement Scarafier	No	20	20	89.5	50.0	0.0
Roller	No	20	20	80.0	50.0	0.0
Front End Loader	No	40	40	79.1	50.0	0.0

Equipment Lmax Leq	Results						Noise Limits (dBA)						Noise Limit Exceedance (dBA)			
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night			
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Pavement Scarafier	89.5	82.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Roller	80.0	73.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Front End Loader	79.1	75.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	89.5	83.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Hardscape/Landscape	Residential	65.0	60.0	55.0

Description	Impact Device	Equipment				
		Spec Usage (%)	Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Grader	No	40	85.0	50.0	0.0	
Pickup Truck	No	40	75.0	50.0	0.0	

		Results													
		Noise Limits (dBA)						Noise Limit Exceedance (dBA)							
		Calculated (dBA)		Day		Evening		Night		Day		Evening		Night	
		Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq
Equipment	Lmax	Leq													
Grader		85.0	81.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A															
Pickup Truck		75.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A															
Total		85.0	81.4	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
N/A															

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Baselines (dBA)		
	Land Use	Daytime	Evening Night
Architectural Coating - Residential & Non Residential	Residential	65.0	60.0 55.0

Description	Equipment				
	Spec	Actual	Receptor	Estimated	
Impact	Usage	Lmax	Lmax	Distance	Shielding
Device	(%)	(dBA)	(dBA)	(feet)	(dBA)
Compressor (air)	No	40	77.7	50.0	0.0
Pickup Truck	No	40	75.0	50.0	0.0

Equipment	Results					
	Noise Limits (dBA)					
Lmax Leq	Calculated (dBA)			Noise Limit Exceedance (dBA)		
	Day	Evening	Night	Day	Evening	Night
Lmax Leq	Lmax Leq	Lmax Leq	Lmax Leq	Lmax Leq	Lmax Leq	Lmax Leq
Compressor (air)	77.7 73.7	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Pickup Truck	75.0 71.0	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
Total	77.7 75.6	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 10/28/2019
Case Description: Brea 03.3

**** Receptor #1 ****

Description	Land Use	Baselines (dBA)		
		Daytime	Evening	Night
Residential	Residential	65.0	60.0	55.0
Construction				

Description	Impact Device	Spec Usage (%)	Equipment			
			Actual Lmax (dBA)	Receptor Lmax (dBA)	Estimated Distance (feet)	Shielding (dBA)
Tractor	No	40	84.0	50.0	0.0	
Crane	No	16	80.6	50.0	0.0	
Concrete Saw	No	20	89.6	50.0	0.0	
Pickup Truck	No	40	75.0	50.0	0.0	

Equipment	Results						Noise Limits (dBA)								Noise Limit Exceedance (dBA)			
	Calculated (dBA)		Day		Evening		Night		Day		Evening		Night					
	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq	Lmax	Leq				
Tractor	84.0	80.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A																		
Crane	80.6	72.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A																		
Concrete Saw	89.6	82.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A																		
Pickup Truck	75.0	71.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A																		
Total	89.6	85.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A																		

Attenuation Calculation				
	RCNM Referenece at 50 feet.		Grace Community Church - west	
Phase	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Building Demo	84.1	50	64.1	500
Asphalt Demo	80		60.0	
Site Prep	88.1		68.1	
Mall Podium Constructio	85.3		65.3	
Mall Construction	85		65.0	
Dicks Sporting Good's C	85		65.0	
Fitness Center & Pool C	85		65.0	
Residential Podium Con	85		65.0	
Paving	83.6		63.6	
Hardscape/Landscap	81.4		61.4	
Architectural Coating	75.6		55.6	
Residential Construction	75.6		55.6	
			-20.0	

Attenuation Calculation				
	RCNM Referenece at 50 feet.		Residence - west	
Phase	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Building Demo	84.1	50	59.5	850
Asphalt Demo	80		55.4	
Site Prep	88.1		63.5	
Mall Podium Constructio	85.3		60.7	
Mall Construction	85		60.4	
Dicks Sporting Good's C	85		60.4	
Fitness Center Construc	85		60.4	
Residential Podium Con	85		60.4	
Paving	83.6		59.0	
Hardscape/Landscap	81.4		56.8	
Architectural Coating	75.6		51.0	
Residential Construction	75.6		51.0	
			-24.6	

Attenuation calculated through Inverse Square Law: $L_n = 20\text{Log}(R_2/R_1)$

Attenuation Calculation				
	RCNM Referenece at 50 feet.		Maplewood Apartments - south	
Phase	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Building Demo	84.1	50	58.1	1000
Asphalt Demo	80		54.0	
Site Prep	88.1		62.1	
Mall Podium Constructio	85.3		59.3	
Mall Construction	85		59.0	
Dicks Sporting Good's C	85		59.0	
Fitness Center Construc	85		59.0	
Residential Podium Con	85		59.0	
Paving	83.6		57.6	
Hardscape/Landscap	81.4		55.4	
Architectural Coating	75.6		49.6	
Residential Construction	75.6		49.6	

Attenuation calculated through Inverse Square Law: $L_n = 20\text{Log}(R_2/R_1)$

Attenuation Calculation				
	RCNM Referenece at 50 feet.		Craig Regional Park	
Phase	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Building Demo	84.1	50	58.8	920
Asphalt Demo	80		54.7	
Site Prep	88.1		62.8	
Mall Podium Constructio	85.3		60.0	
Mall Construction	85		59.7	
Dicks Sporting Good's C	85		59.7	
Fitness Center Construc	85		59.7	
Residential Podium Con	85		59.7	
Paving	83.6		58.3	
Hardscape/Landscap	81.4		56.1	
Architectural Coating	75.6		50.3	
Residential Construction	75.6		50.3	

Attenuation calculated through Inverse Square Law: $Ln = 20\text{Log}(R_2/R_1)$

Attenuation Calculation				
	RCNM Referenece at 50 feet.		Embassy Suites - north	
Phase	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Building Demo	84.1	50	61.2	700
Asphalt Demo	80		57.1	
Site Prep	88.1		65.2	
Mall Podium Constructio	85.3		62.4	
Mall Construction	85		62.1	
Dicks Sporting Good's C	85		62.1	
Fitness Center Construc	85		62.1	
Residential Podium Con	85		62.1	
Paving	83.6		60.7	
Hardscape/Landscap	81.4		58.5	
Architectural Coating	75.6		52.7	
Residential Construction	75.6		52.7	

Attenuation Calculation				
	Reference Levels		Grace Community Church	
Source	dBA Leq	distance (ft)	dBA Leq	distance (ft)
Amplified Event	47	1200	51.1	750
HVAC	72	3	34.7	220

Attenuation calculated through Inverse Square Law: $Ln = 20\text{Log}(R_2/R_1)$

TRAFFIC NOISE INCREASE CALCULATIONS

Approximate Traffic Noise Increase

Segment	Existing No Project	Existing Plus Project	Buildout Without Project	Buildout With Project	Project Noise Increase	Cumulative Increase	Project Contribution
Lambert Road, east of Berry Street	34,552	34,594	41,517	41,559	0.0	0.8	0.0
Lambert Road, east of Brea Boulevard	37,156	37,156	43,865	43,865	0.0	0.7	0.0
Lambert Road, west of Santa Fe Road/Kraemer Boulevard	33,433	33,507	39,005	39,079	0.0	0.7	0.0
Brea Boulevard, north of Birch Street	27,156	27,354	30,156	30,354	0.0	0.5	0.0
State College Boulevard, north of Birch Street	21,756	22,036	30,970	31,250	0.1	1.6	0.0
Kraemer Boulevard, south of Lambert Road	16,763	16,856	20,553	20,646	0.0	0.9	0.0
Birch Street, east of Brea Boulevard	17,868	18,126	21,469	21,727	0.1	0.8	0.1
Birch Street, east of Randolph Avenue	19,341	19,370	22,446	22,475	0.0	0.7	0.0
Birch Street, east of State College Boulevard	24,742	24,863	26,455	26,576	0.0	0.3	0.0
Birch Street, east of S Associated Road	24,245	24,366	26,850	26,971	0.0	0.5	0.0
Birch Street, east of N Associated Road	20,757	20,878	22,612	22,733	0.0	0.4	0.0
Randolph Street, south of Birch Street	7,610	8,872	8,230	9,492	0.7	1.0	0.6
State College Boulevard, south of Birch Street	13,577	13,950	17,764	18,137	0.1	1.3	0.1
Kraemer Boulevard, south of Birch Street	19,885	19,885	21,185	21,185	0.0	0.3	0.0
Imperial Highway, west of Puente Street	42,299	42,787	50,621	51,109	0.0	0.8	0.0
Imperial Highway, east of Berry Street	56,302	57,000	65,374	66,072	0.1	0.7	0.0
Imperial Highway, east of Brea Boulevard	53,549	54,696	63,371	64,518	0.1	0.8	0.1
Imperial Highway, east of State College Boulevard	72,542	74,272	81,614	83,344	0.1	0.6	0.1
Imperial Highway, east of SR-57 NB Ramps	53,855	54,683	60,697	61,525	0.1	0.6	0.1
Imperial Highway, east of Associated Road	51,706	52,378	59,297	59,969	0.1	0.6	0.0
Imperial Highway, east of Castlegate Lane/Placentia Avenue	51,786	52,187	57,893	58,294	0.0	0.5	0.0
Brea Boulevard, south of Imperial Highway	30,661	31,047	34,411	34,797	0.1	0.5	0.0
Kraemer Boulevard, south of Imperial Highway	19,886	19,886	21,839	21,839	0.0	0.4	0.0

NOISE MONITORING DATA

Summary

File Name on Meter	LxT_Data.005
File Name on PC	SLM_0005426_LxT_Data_005.02.ldbin
Serial Number	0005426
Model	SoundTrack LxT®
Firmware Version	2.302
User	IG
Location	
Job Description	
Note	

Measurement

Description	Amplified Event
Start	2018-12-16 16:58:51
Stop	2018-12-16 17:13:55
Duration	00:15:03.6
Run Time	00:15:03.6
Pause	00:00:00.0
Pre Calibration	2018-12-16 14:50:44
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	A Weighting		
Detector	Slow		
Preamp	PRMLxT1		
Microphone Correction	Off		
Integration Method	Linear		
Overload	144.2 dB		
	A	C	Z
Under Range Peak	100.4	97.4	102.4 dB
Under Range Limit	49.4	47.4	55.4 dB
Noise Floor	36.3	36.9	44.5 dB

Results

LAeq	47.2	dB
LAE	76.8	dB
EA	5.296	μPa²h
EA8	168.813	μPa²h
EA40	844.063	μPa²h
LApeak (max)	2018-12-16 17:03:50	83.8 dB
LASmax	2018-12-16 17:09:24	59.3 dB
LASmin	2018-12-16 16:58:51	44.4 dB
SEA	-99.9	dB

LAS > 85.0 dB (Exceedance Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedance Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedance Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedance Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedance Counts / Duration)	0	0.0 s

LCeq	61.6	dB
LAeq	47.2	dB
LCeq - LAeq	14.4	dB
LAlaq	49.9	dB
LAeq	47.2	dB
LAlaq - LAeq	2.6	dB

	A		C		Z	
	dB	Time Stamp	dB	Time Stamp	dB	Time Stamp
Leq	47.2		61.6			
LS(max)	59.3	2018/12/16 17:09:24				
LS(min)	44.4	2018/12/16 16:58:51				
LPeak(max)	83.8	2018/12/16 17:03:50				

# Overloads	0
Overload Duration	0.0 s

Dose Settings		
Dose Name	OSHA-1	OSHA-2
Exchange Rate	5	5 dB
Threshold	90	80 dB
Criterion Level	90	90 dB
Criterion Duration	8	8 h
Results		
Dose	0.01	0.01 %
Projected Dose	0.26	0.26 %
TWA (Projected)	47.0	47.0 dB
TWA (t)	22.1	22.1 dB
Lep (t)	32.2	32.2 dB
Statistics		
LAS2.00	51.6 dB	
LAS8.00	48.7 dB	
LAS25.00	47.4 dB	
LAS50.00	46.5 dB	
LAS66.60	46.1 dB	
LAS90.00	45.4 dB	

Appendices

Appendix H: Service Provider Response

Appendices

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**Proposed Brea Mall Redevelopment Project
School District Questionnaire**

Please verify/respond to the following:

1. Are there additional schools that would serve the project site?

Not at this time.

School Enrollment and Capacity

School & Location	Enrollment (10-year average) N/A	Total Capacity
Laurel Elementary School	368 435 magnet program	455
Brea Junior High School	913	1,248
Brea Olinda High School	1,885	2,720
Source: Aldrete 2018.		

2. What is the average enrollment (~~10-year average~~) of each school that would serve the project site?

N/A see above

3. Would these schools would be able to accommodate a potential increase in enrollment from 312 additional residential units?

Laurel would not, it appears that the Middle School and High School would as of this date.

4. What impact will the proposed project, in combination with all the other projects planned in the area, have on the ability of the Brea Olinda Unified School District to provide educational services in the area?

The Magnet Bilingual Program at Laurel would continue, the development would not effect student busing services or meal services at that school.

**Proposed Brea Mall Redevelopment Project
School District Questionnaire**

5. Pursuant to Senate Bill 50, the current statutory school impact fees are as follows:

- Residential – \$3.79/square foot
- Commercial – \$0.61/square foot

Yes, but the SB50 rates are modified every 24 months and the cost impact per square foot for Single family detached homes is \$5.14 and the Multifamily Attached is \$5.48.

6. Please add any comments you may wish to make regarding this matter.

We would like to see the projected number and type of units as well as the square footage per unit type. Are we to assume the project is multifamily units with a total of 149,625 square feet? It is also important to know what the estimated date of completion is so that facilities have sufficient time to be constructed.

Response Prepared By:

Colleen Patterson	Interim CBO
Name	Title

Brea Olinda Unified School District	July 15, 2019
Agency	Date

Proposed Brea Mall Redevelopment Project Fire Questionnaire

Please verify/respond to the following:

1. Please list any additional stations that would respond to the site:

Fire Stations and Equipment Serving the Project Site

Station	Address	Equipment
City of Brea Fire Department		
Brea Fire Department – Station #1	555 North Berry Street, Brea	Type 1 – Advanced Life Support, 4 personnel
Brea Fire Department – Station #2	200 North Brea Boulevard, Brea	Pierce/tiller – Advanced Life Support, 4 personnel
Fullerton Fire Department		
Fullerton Fire Department – Station #4	3251 North Harbor Boulevard, Fullerton	Type 1 – Advanced Life Support, 4 personnel
Los Angeles County Fire Department		
LACFD – Station 191	850 West La Habra Boulevard, La Habra	2 paramedics
LACFD – Station 192	520 South Harbor Boulevard, La Habra	Type 1 – Advanced Life Support, 3 personnel
LACFD – Station 193	1000 West Risner Way, La Habra	Type 1 – Advanced Life Support, 3 personnel

2. What is the approximate fire flow requirement for the proposed project? **Fire flow is determined by construction type and total square footage of the structure. It will vary and reduction in fire flow could occur due to the factors previously mentioned. At this time the fire flow is 8,000 gpm for a duration of 4 hours. If existing fire hydrants do not provide the required fire flow, then improvements will be made to meet the minimum requirement.**
3. The Department's standard is 6 minutes to first arriving unit on scene. What is the average response time to the project site? **Approximately 5 minutes.**
4. Are there any existing deficiencies in the level of fire protection service currently provided to the area including and surrounding the project site? **No existing deficiencies exist at this time.**
5. Would this project have a significant impact on the ability to maintain adequate level of fire protection service to the area? **No significant impact at this time.**

**Proposed Brea Mall Redevelopment Project
Fire Questionnaire**

6. What conditions will the Fire Department require or recommended to reduce fire hazards and reduce potential impacts on fire service? [The new structures will be fully protected as required by the California Fire and Building Codes, City ordinances and the applicable national standards. The following fire protection systems will be required: automatic fire sprinkler system, automatic fire alarm system, a fire pump, and an emergency responder radio coverage system. Fire apparatus access roads will also be provided to ensure adequate accessibility to the new structures.](#)
7. Please add any other comments you may wish to make regarding this project.

Response Prepared By:

Kathy Schaefer	Division Chief – Fire Marshal
Name	Title
Peter Salgado	Fire Protection Analyst
Name	Title
Brea Fire Department	September 13, 2019
Agency	Date

Proposed Brea Mall Redevelopment Project Police Questionnaire

Please verify/respond to the following:

1. Please confirm the following station responds to calls from the project site:
 - a. The Brea Police Station is located at 1 Civic Center Circle, Brea. Police patrol units work in the field and may be responding from other locations from throughout the city.
2. Please indicate the type of service calls or service demands anticipated by the proposed uses (mall and residential).

a. If the development is more of an expansion of the typical retail and food establishments (with limited or no alcohol sold) currently at the mall, service calls are expected to increase. Standard calls for service include but not limited to theft (shoplifting), burglary, robbery and an occasional assault. In addition, the apartment development located on the mall property will increase calls for service including but not limited to domestic disturbances, noise complaints, suspicious persons/vehicles, burglary/theft investigations as well as traffic/parking complaints.

b. If the mall expansion includes more of a night life atmosphere with restaurants including bars (such as BJ's/Yard House/Cheesecake Factor), with coffee houses and some type of night entertainment, there is an expectation of an increase of service calls similar to the type the police department experiences in the Downtown. Those types of calls are disturbances, alcohol related disturbances, suspicious persons/vehicles, burglary/theft investigations and minor assault incidents.

The exact impact of the Mall expansion will not be known until the Mall expansion has been fully completed and the businesses are operating/apartments occupied.

3. Given the existing level of staffing and equipment, will the police department be able to provide police services to the proposed project? If not, please indicate what will be required to serve the project.

The increase in retail stores as well as outside venue will increase calls for service. Depending upon retail stores, outside entertainment and the types of restaurants which open in the area, there will be an increase service needs from the police department. In addition the apartment development will increase calls for service. The expansion of service needs should be evaluated for increasing police officer strength along with increased resources & equipment.

4. What impact will the proposed project, in combination with all the other projects planned in the area, have on the ability of the police department to provide police services in the area?

The "Core" area of Brea is currently seeing significant development, and a combination of all the developments (Mall/Hines/hotel/Imperial Shopping Center/etc.), all will increase calls for service which will impact the Police Department's ability to service

**Proposed Brea Mall Redevelopment Project
Police Questionnaire**

the already established parts of the city. A current staffing needs assessment is being conducted and may provide a clearer understanding of specific Police Department needs.

5. What conditions will the Police Department require or recommended to reduce safety hazards and reduce potential impacts on police service?

Increase integration with onsite private security with the police department in communications (video access), as well as ability to access locked common areas (knox box keys) for emergency response. Verified Police/Fire radio reception in enclosed areas of the Mall.

6. Please add any comments you may wish to make regarding this matter.

With the Mall development as well as the other projects in the area (Hines/hotel/Imperial Shopping Center/etc.) traffic will be increased in the area to some unknown degree. I do not see any increased traffic lanes, traffic measures being implemented and there may be a need for funds to assist in traffic mitigation measures for this project.

Response Prepared By:

David Dickinson

Lt.

Name

Title

Police Department

8-6-19

Agency

Date

Appendices

Appendix I: Traffic Report

Appendices

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TRAFFIC IMPACT ANALYSIS REPORT
BREA MALL MIXED-USE PROJECT

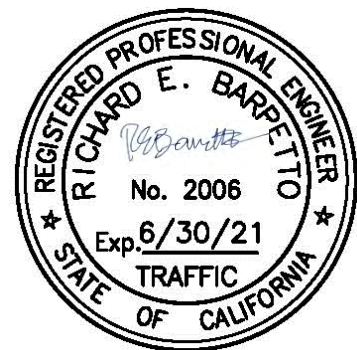
Brea, California
January 9, 2020

Prepared for:

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TRAFFIC IMPACT ANALYSIS REPORT
BREA MALL MIXED USE PROJECT

Brea, California
January 9, 2020

1.0 INTRODUCTION

This Traffic Impact Analysis report addresses the potential traffic impacts and circulation needs associated with Brea Mall Mixed Use Project (hereinafter referred to as Project) in the City of Brea. The Project consists of redevelopment of 17.5-acre in the southwest portion of the Brea Mall property that includes the Sears parcel and adjoining transition areas adjacent to Nordstrom and Macy's. The Project involves demolishing 161,990 square-foot (SF) of the Sears department store and associated auto center and roughly 12 acres of surface parking in order to development 183,615 SF of new retail space, a 128,000 SF health club, and a 312-unit seven-story apartment building. The proposed Project is located west of the State Route (SR) 57 Freeway and is generally bounded by State College Boulevard to the east, Imperial Highway (State Route 91) to the south, Randolph Avenue to the west, and Birch Street to the north. The Project is expected to be developed in several phases with the Year 2022 utilized to assess the Project's potential traffic impacts at full occupancy within a near-term cumulative traffic setting.

1.1 Scope of Work

This traffic report documents the findings and recommendations of a traffic impact analysis conducted by Linscott, Law & Greenspan, Engineers (LLG) to determine the potential impacts associated with the proposed Project. The traffic analysis evaluates the existing operating conditions at twenty-nine (29) key study intersections within the project vicinity, estimates the trip generation potential of the proposed Project, and forecasts future near-term (Year 2022) and long-term (Year 2040) operating conditions without and with the proposed Project. Where necessary, intersection improvements/mitigation measures are identified.

This traffic report satisfies the traffic impact requirements of the City of Brea and is consistent with the current *Congestion Management Program (CMP) for Orange County*. The Scope of Work for this traffic study is included in **Appendix A** and was developed in conjunction with City of Brea Public Works Department staff and in consideration of comments of Caltrans staff.

The project site has been visited and an inventory of adjacent area roadways and intersections was performed. Existing weekday peak hour and Weekend (Saturday) Midday peak hour traffic count information has been collected at twenty-nine (29) key study intersections for use in the preparation of intersection level of service calculations. Information concerning cumulative projects (planned and/or approved) in the vicinity of the proposed Project has been researched at the Cities of Brea, Fullerton, La Habra and Placentia. Based on our research, there are five (5) related projects in the City of Brea and one (1) related project in the City of Fullerton. The six (6) related projects, as vetted with City staff, were considered in the near-term cumulative traffic analysis for this project.

This traffic report analyzes existing and future weekday daily, AM peak hour and PM peak hour and weekend (Saturday) midday peak hour traffic conditions for a near-term (Year 2022) and long-term (Year 2040) traffic setting upon completion of the proposed Project. Near-term (Year 2022) cumulative daily and peak hour traffic forecasts were projected by incorporating a one percent (1.0%) annual growth rate and the trip generation potential of six (6) related projects. Long-term (Year 2040) daily and peak hour traffic forecasts were projected based on modeled traffic projections prepared by OCTA utilizing the OCTAM 4.0 Year 2040 Model.

1.2 Study Area

Twenty-nine (29) key study intersections have been identified for evaluation in collaboration with City of Brea staff. The twenty-nine (29) intersections listed below provide regional and local access to the study area and define the extent of the boundaries for this traffic impact investigation, as well as identifies the governing jurisdiction whose criteria have been applied to that intersection. It should be noted that cities that border the intersection but do not have governing jurisdictions are included in parentheses.

Key Intersection	Applicable Jurisdiction (City Location)				
	Caltrans	City of Brea	City of La Habra	City of Fullerton	City of Placentia
1. Puente Street at Lambert Road	--	Brea	--	--	--
2. Brea Boulevard at Lambert Road	--	Brea	--	--	--
3. State College Boulevard at Lambert Road	--	Brea	--	--	--
4. SR-57 SB Ramps at Lambert Road	Caltrans	(Brea)	--	--	--
5. SR-57 NB Ramps at Lambert Road	Caltrans	(Brea)	--	--	--
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	--	Brea	--	--	--
7. Brea Boulevard at Birch Street	--	Brea	--	--	--
8. Randolph Avenue at Birch Street	--	Brea	--	--	--
9. State College Boulevard at Birch Street	--	Brea	--	--	--
10. S Associated Road at Birch Street	--	Brea	--	--	--
11. N Associated Road at Birch Street	--	Brea	--	--	--
12. Kraemer Boulevard at Birch Street	--	Brea	--	--	--
13. Randolph Avenue at Madison Way	--	Brea	--	--	--
14. Randolph Avenue at Brea Mall	--	Brea	--	--	--
15. Brea Mall South at State College Boulevard	--	Brea	--	--	--
16. Harbor Boulevard at Imperial Highway ¹	Caltrans	--	(La Habra)	(Fullerton)	--
17. Puente Street at Imperial Highway	Caltrans	(Brea)	--	(Fullerton)	--
18. Brea Boulevard at Imperial Highway	Caltrans	(Brea)			
19. Randolph Avenue at Imperial Highway	Caltrans	(Brea)	--	--	--
20. State College Blvd at Imperial Highway ¹	Caltrans	(Brea)	--	--	--
21. SR-57 SB Ramps at Imperial Highway ¹	Caltrans	(Brea)	--	--	--
22. SR-57 NB Ramps at Imperial Highway ¹	Caltrans	(Brea)	--	--	--
23. Associated Road at Imperial Highway	Caltrans	(Brea)	--	--	--
24. Castlegate Ln/Placentia Ave at Imperial Hwy	Caltrans	(Brea)	--	--	--
25. Kraemer Boulevard at Imperial Highway	Caltrans	(Brea)	--	--	--

¹ Orange County Congestion Management Program (CMP) intersection.

Key Intersection	Applicable Jurisdiction (City Location)				
	Caltrans	City of Brea	City of La Habra	City of Fullerton	City of Placentia
26. Brea Boulevard at Bastanchury Road	--	--	--	Fullerton	--
27. State College Boulevard at Bastanchury Road	--	--	--	Fullerton	--
28. Placentia Avenue at Bastanchury Road	--	--	--	--	Placentia
29. Kraemer Boulevard at Bastanchury Road	--	--	--	--	Placentia

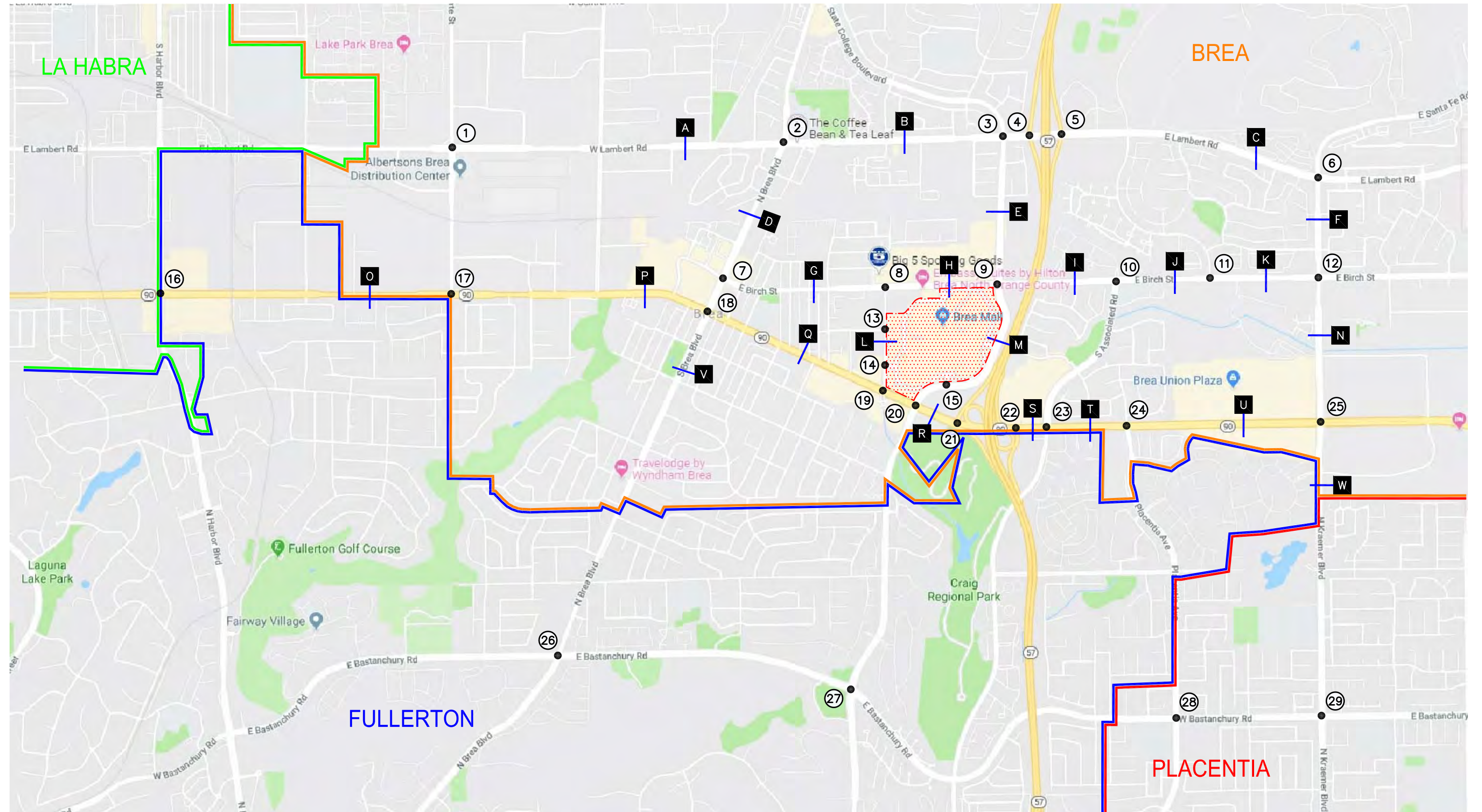
Of the study intersections, the following four (4) intersections are CMP intersections:

<u>Study Intersection</u>	<u>Location</u>
16	Harbor Boulevard at Imperial Highway
20	State College Boulevard at Imperial Highway
21	SR-57 SB Ramps at Imperial Highway
22	SR-57 NB Ramps at Imperial Highway

Figure 1-1 presents a Vicinity Map, which illustrates the general location of the Project and depicts the study locations and surrounding street system. The Level of Service (LOS) investigations at these key locations were used to evaluate the potential traffic-related impacts associated with area growth, cumulative projects and the proposed Project. When necessary, this report recommends intersection and/or roadway improvements that may be required to accommodate future traffic volumes and restore/maintain an acceptable Level of Service, and/or mitigates the impact of the project. Included in this Traffic Impact Analysis are:

- Existing traffic counts,
- Estimated project traffic generation/distribution/assignment,
- Estimated cumulative project traffic generation/distribution/assignment,
- Weekday AM and PM peak hour and Weekend (Saturday) Midday peak hour capacity analyses for existing conditions,
- Weekday AM and PM peak hour and Weekend (Saturday) Midday peak hour capacity analyses for existing plus project conditions,
- Weekday AM and PM peak hour and Weekend (Saturday) Midday peak hour capacity analyses for future near-term (Year 2022) traffic conditions without and with the proposed Project,
- Weekday AM and PM peak hour and Weekend (Saturday) Midday peak hour capacity analyses for future long-term (Year 2040) traffic conditions without and with the proposed Project,
- Site Access Evaluation,
- Congestion Management Program Compliance Assessment, and
- Caltrans Basic Freeway Segment Analysis.

Traffic impact analyses are typically focused on evaluating traffic operations during the morning and evening commute peak hours (7:00 to 9:00 AM, and 4:00 to 6:00 PM) on a typical weekday because these are generally when the busiest traffic conditions occur. As a conservative measure in assessing potential traffic impacts of the Project, Saturday midday conditions were also analyzed (with the peak expected to occur between 11:00 AM and 3:00 PM).



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SOURCE: GOOGLE

KEY

- # = STUDY INTERSECTION
- # = STUDY ROADWAY SEGMENT
- # = PROJECT SITE

FIGURE 1-1

VICINITY MAP

BREA MALL MIXED-USE PROJECT, BREA

This analysis is also consistent with the traffic impact study requirements of the most current *Orange County Congestion Management Program* (CMP). The CMP specifies the following two thresholds for formulating the study scope of a CMP-based evaluation:

- **To determine whether a development project requires a CMP traffic impact analysis:**
The CMP requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips (this threshold is reduced to 1,600 or more daily trips if the project will have direct access to a CMP link).
- **To identify which CMP intersections and/or roadway segments (i.e. arterials and freeway mainline segments) will need to be evaluated for project impacts:**
The CMP-based traffic impact analysis should include any CMP intersections and/or roadway segments where the development project could add trips corresponding to 3% or more of existing capacity (i.e., LOS E).

It should be noted that the two thresholds described above are intended for establishing the CMP-based study scope and are not the CMP's criteria for determining significant traffic impacts of a development project. Per the CMP, a significant impact is identified if the project causes the CMP facility to operate worse than LOS E, and increases the ICU value by more than 0.10 if the CMP facility operates at LOS F without the project.

Based on the application of the CMP scoping requirements to the proposed Project, the CMP study thresholds were exceeded by the Project's trip making potential (project trip generation is further discussed in Section 5.0 of this report); therefore, CMP intersections were analyzed by applying the CMP methodology.

2.0 PROJECT DESCRIPTION

The Brea Mall is an existing regional shopping center that is located on approximately 74 acres of land in the City of Brea in northeast Orange County. The Brea Mall is located west of the State Route 57 (SR-57) Freeway and is generally bound by State College Boulevard to the east, Imperial Highway (State Route 91) to the south, Randolph Avenue to the west, and Birch Street to the north. *Figure 2-1* is an existing aerial photograph of the Brea Mall.

2.1 Existing Brea Mall

The existing Brea Mall currently encompasses 1,291,433 square feet (SF) of Gross Leasable Area (GLA), of which 1,210,438 SF of GLA is now occupied, and consists of several major department stores and a central core of a mixture of retail shops and restaurant/food uses. Surrounding the retail core are several free-standing retail structures along the Brea Mall Circle, including the Olive Garden, Red Lobster, The Cheesecake Factory, and BJ's Restaurant.

As with any regional shopping center, the mall experiences periodic transitions in tenants and occupancy. The Sears department store, which is designated for demolition, was vacated in April 2018. However, currently first floor of the Sears department store has been re-occupied by Q's fashion retail store; the second floor of the Sears department store is currently still vacant.

As the above-described vacant space was not occupied on the dates that traffic counts were conducted for this study (i.e., weekday AM and PM peak period counts and Saturday midday peak period counts), and to account for trips corresponding with the mall's entitled and historically occupied square footage, trip generation for the 80,995 SF of vacant GLA was estimated based on the application of ITE rates/equations, and resulting trips were then assigned and added to the raw traffic counts collected at study intersections.

2.2 Proposed Project

The proposed Project consists of the redevelopment of 17.5-acres in the southwest portion of the Brea Mall property that includes the Sears parcel and adjoining transition areas adjacent to Nordstrom and Macy's. The proposed Project involves demolishing the former 161,990 SF Sears department store and associated auto center and 12 acres of surface parking to allow for the development of a mix of uses including retail, for-rent residential apartment, a resort-type fitness center, and a public gathering space (large "central green" and plaza).

Based on a review of the description and site plan of the retail component of the Project, up to 183,615 SF of additional retail space, inclusive of a 50,019 SF sporting goods store and a 128,000 SF health club will be constructed. The residential component of the proposed Project, which would be developed south of the Nordstrom's parking structure, includes the development of a seven-story apartment podium with up to 312 apartment homes consisting of 35 studio units, 162 one-bedroom units, and 115 two-bedroom units "wrapped" around a seven-level parking structure with a total of 538 spaces.

Table 2-1 provides the Project development summary. A review of **Table 2-1** indicates that upon completion of the Project, Brea Mall will have total GLA of 1,441,058 SF and a 312 unit apartment community. **Figure 2-2** illustrates the conceptual site plan for the retail component of the Project prepared by 5o5 Design. **Figure 2-3** illustrates the conceptual site plan for the residential component of the Project prepared by Architects Orange.

2.3 Vehicular Site Access

The Brea Mall can be accessed from three of the four surrounding streets bordering the subject property, State College Boulevard, Randolph Avenue, and Birch Street; no vehicular access is provided from Imperial Highway. Vehicular access from Randolph Avenue is currently provided by two (2) signalized intersections, whereas one (1) signalized access is provided along Birch Street. From State College Boulevard, three (3) signalized intersections provide access to the Brea Mall. No change in access to the Brea Mall is proposed as a part of the Project. Since the Project is focused to the southwest portion of the Brea Mall property the southernmost driveways along Randolph Avenue and State College Boulevard are anticipated to be the focus of Project related trips.

2.4 Pedestrian and Bicycle Circulation

Brea Mall is surrounded by other commercial and public facilities and walkability between these properties as well as from existing and future residential uses is facilitated by existing sidewalks, traffic signals at intersections that immediately border the property and crosswalks. Review of current conditions indicates that pedestrian connectivity between the mall and adjacent uses are provided via the existing sidewalk system and internal pedestrian pathways. Sidewalks are generally provided throughout the City along with crosswalks at most major intersections, and in particular sidewalks are provided along State College Boulevard, Birch Street, Randolph Avenue, and Imperial Highway bordering the site. Further, at each of the six (6) signalized intersections that provide access to the Brea Mall, crosswalks are provided to provide connectivity across the streets that border the site. With the current pedestrian system now in place, access to and from the mall is adequate and will continue to serve the existing development as well as the proposed Project.

In addition to the pedestrian connectivity, the General Plan identifies future Class II bike lanes along Birch Street and State College Boulevard adjacent to the Brea Mall. These future bikeway additions will help improve mobility and direct connection to the surrounding facilities. To provide connectivity to the Class II bike lanes on Birch Street and State College Boulevard, Class II bike lanes and/or Sharrow bike lanes are proposed on the “ring road” and the signalized entries of the Brea Mall as a part of the Project. **Figure 2-4** illustrates the conceptual bikeway plan of the Project prepared by raSmith.

TABLE 2-1

PROJECT DEVELOPMENT SUMMARY

Land Use/Project Description	Development Totals
<u>Existing Occupied Brea Mall:</u>	
▪ Existing Occupied Mall ²	1,210,438 SF GLA
<u>Existing Occupied Brea Mall + Vacancy:</u>	
▪ Existing Occupied Mall	1,210,438 SF GLA
▪ Vacant Second Story Sears Tenant ³	<u>80,995 SF GLA</u>
<i>Fully Occupied Brea Mall</i>	<i>1,291,433 SF GLA</i>
<u>Existing Occupied Brea Mall + Proposed Project:</u>	
▪ Existing Occupied Mall	1,210,438 SF GLA
▪ Existing Occupied Mall to be Demolished	-80,995 SF GLA
▪ Proposed Project Commercial	
o Sporting Goods ⁴	50,019 SF GLA
o Fitness Center ²	128,000 SF GLA
o Level 1 Mall	123,053 SF GLA
o Level 2 Mall ⁴	<u>10,543 SF GLA</u>
<i>Existing Occupied Brea Mall + Proposed Project Subtotal</i>	<i>1,441,058 SF GLA</i>
▪ Proposed Project Multifamily Homes ⁵	
o Studio	35 Units
o 1 Bedroom	162 Units
o 2 Bedroom	<u>115 Units</u>
<i>Proposed Residential</i>	<i>312 Units</i>

² Table 1, *Brea Mall Redevelopment Project Land Use Summary*, received May 1, 2019, indicates that the existing occupied mall as 1,291,433 SF. 80,995 SF (first story of 161,990 SF Sears tenant) has since been reoccupied by Q's fashion retail store for an existing occupied mall of 1,210,438 SF.

³ As the lower level of the 161,990 SF Sears tenant has been reoccupied, 80,995 SF of the upper level remains vacant.

⁴ 5o5 Design site plan, dated June 10, 2019.

⁵ AO site plan, dated June 10, 2019.



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SOURCE: GOOGLE

KEY

- = BREA MALL
- = PROJECT SITE

FIGURE 2-1

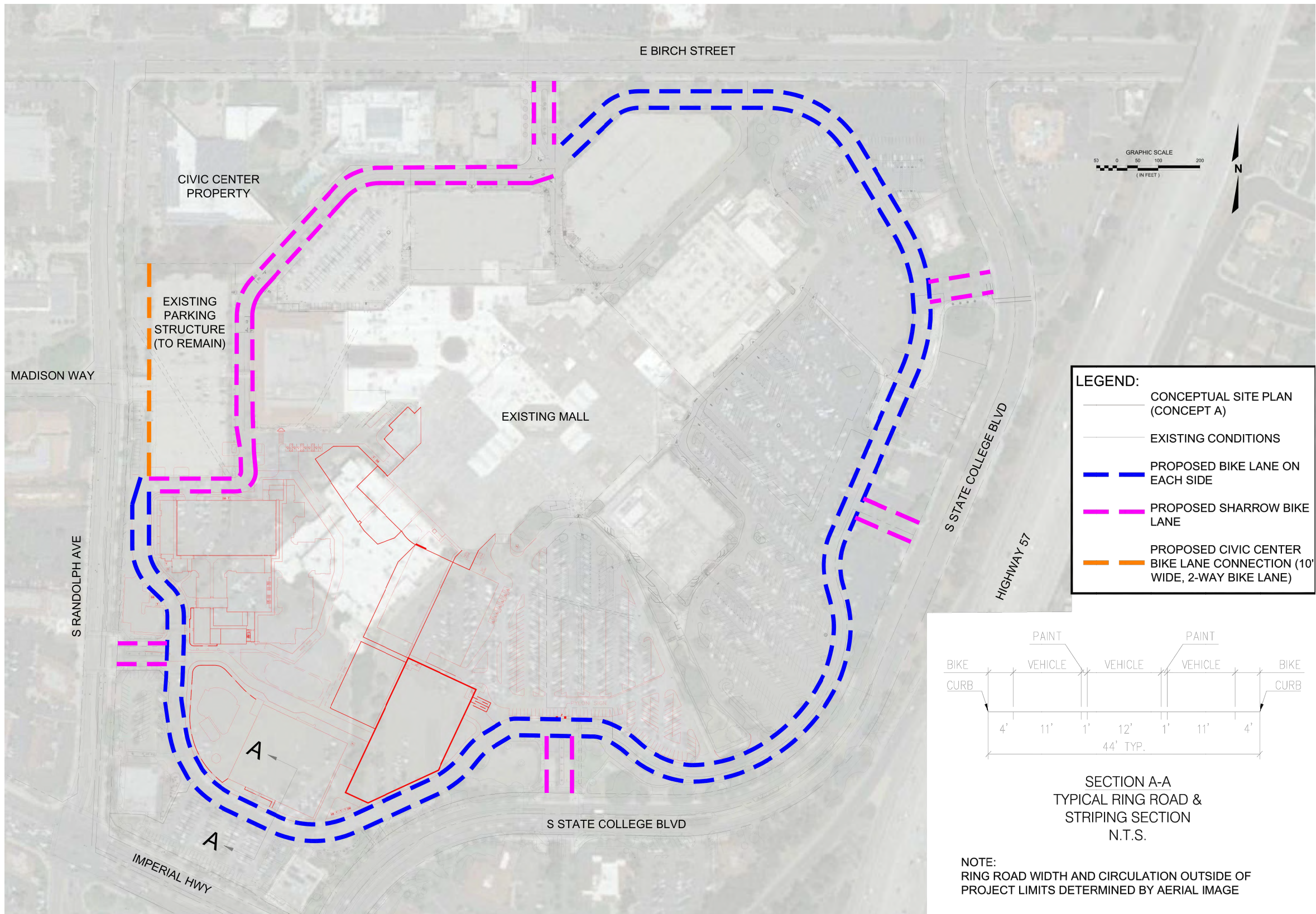
EXISTING AERIAL PHOTOGRAPH
BREA MALL MIXED-USE PROJECT, BREA





SOURCE: CITY OF BREA

FIGURE 2-2



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SOURCE: RASMITH

FIGURE 2-4

CONCEPTUAL BIKEWAY PLAN
BREA MALL MIXED-USE PROJECT, BREA

3.0 EXISTING CONDITIONS

3.1 Existing Street System

The principal local network of streets serving the project site includes Lambert Road, Birch Street, Imperial Highway, Brea Boulevard, and State College Boulevard. The following discussion provides a brief synopsis of these key area streets. The descriptions are based on an inventory of existing roadway conditions.

Lambert Road is a six-lane, divided roadway west of Kraemer Boulevard and a four-lane, divided roadway east of Kraemer Boulevard, oriented in the east-west direction. The posted speed limit on Lambert Road is 45 miles per hour (mph) west of SR-57 Freeway and 50 miles per hour (mph) east of SR-57 Freeway. On-street parking is not permitted along this roadway. Traffic signals control the study intersections of Lambert Road at Puente Street, Brea Boulevard, State College Boulevard, SR-57 SB Ramps, SR-57 NB Ramps, and Santa Fe Road/Kraemer Boulevard. Lambert Road is designated as a Major Arterial in the City's Master Plan of Roadways.

Birch Street is a four-lane, divided roadway oriented in the east-west direction that borders the Brea Mall on the north. The posted speed limit on Birch Street is 50 miles per hour (mph). On-street parking is not permitted along this roadway. Traffic signals control the study intersections of Birch Street at Brea Boulevard, Randolph Avenue, State College Boulevard, S Associated Road, N Associated Road, and Kraemer Boulevard. Birch Street Road is designated as a Primary Arterial in the City's Master Plan of Roadways.

Imperial Highway is a six-lane, divided roadway generally oriented in the east-west direction. The posted speed limit on Imperial Highway is 45 miles per hour (mph) west of the SR-57 Freeway and 50 miles per hour (mph) east of the SR-57 Freeway. On-street parking is not permitted along this roadway. A traffic signal controls the study intersections of Imperial Highway at Harbor Boulevard, Puente Street, Brea Boulevard, Randolph Avenue, State College Boulevard, SR-57 SB Ramps, SR-57 NB Ramps, Associated Road, Placentia Avenue, and Kraemer Boulevard. Imperial Highway is designated as a Smart Street in the City's Master Plan of Roadways.

Brea Boulevard is a four-lane, divided roadway generally oriented in the north-south direction. The posted speed limit on Brea Boulevard is 40 miles per hour (mph) south of Imperial Highway and 35 miles per hour (mph) north of Imperial Highway. On-street parking is not permitted along this roadway. A traffic signal controls the study intersections of Brea Boulevard at Bastanchury Road, Imperial Highway, Birch Street, and Lambert Road. Brea Boulevard is designated as a Primary Arterial in the City's Master Plan of Roadways.

State College Boulevard is a four-lane, divided roadway generally oriented in the north-south direction that borders the Brea Mall on the east. The posted speed limit on State College Boulevard is 40 miles per hour (mph). On-street parking is not permitted along this roadway. A traffic signal controls the study intersections of State College Boulevard at Bastanchury Road, Imperial Highway, Birch Street, and Lambert Road. State College Boulevard is designated as a Primary Arterial in the City's Master Plan of Roadways.

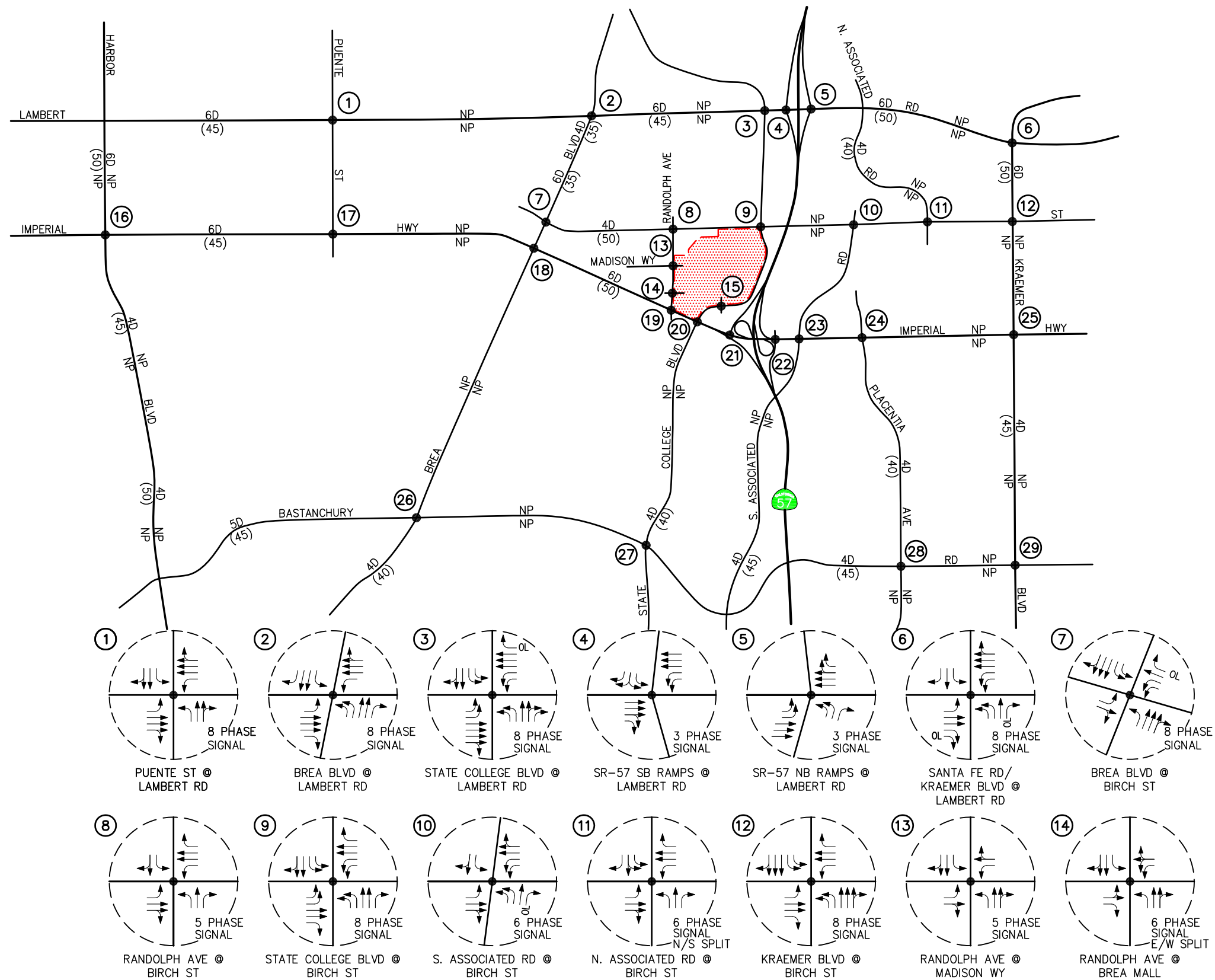
Randolph Avenue is a four-lane, divided roadway oriented in the north-south direction that borders the Brea Mall on the west. The posted speed limit on Randolph Avenue is 40 miles per hour (mph). On-street parking is not permitted along this roadway. Traffic signals control the study intersections of Randolph Avenue at Madison Way/Brea Mall and Brea Mall.

Figure 3-1 presents an inventory of the existing roadway conditions for the arterials and intersections evaluated in this report. This figure identifies the number of travel lanes for key arterials, as well as intersection configurations and controls for the key area study intersections.

3.2 Existing Public Transit

Public transit bus service is provided in the project area by the Orange County Transportation Authority (OCTA). Within the subject property, the Brea Transit Center is Five (5) OCTA bus routes operate within the vicinity of the Project site on Birch Street and State College Boulevard, which consist of the following:

- OCTA Route 57 (Brea to Newport Beach): Route 57 is a local bus route serving the Cities of Brea, Fullerton, Anaheim, Orange, Santa Ana, Costa Mesa, and Newport Beach. The major routes of travel include State College Boulevard and Bristol Street. Nearest to the project site are bus stops along State College Boulevard at the intersections of Imperial Highway and Birch Street. Route 57 operates on approximate 15-minute headways during weekdays and 30-minute headways on weekends. The Brea Mall Transit Center is served by this bus route.
- OCTA Route 129 (La Habra to Anaheim): Route 129 is a community bus route serving the Cities of Anaheim, Placentia, Yorba Linda, Brea, and La Habra. The major routes of travel include La Habra Boulevard, Brea Boulevard, Birch Street, and Kraemer Boulevard. Nearest to the project site are bus stops along Brea Boulevard at the intersection of Birch Street. Route 129 operates on approximate 30-minute headways during weekdays and 60-minute headways on weekends. The Brea Mall Transit Center is served by this bus route.
- OCTA Route 143 (La Habra to Brea): Route 143 is a community bus route serving the Cities of Fullerton, Brea, and La Habra. The major routes of travel include Whittier Boulevard, Harbor Boulevard, Brea Boulevard, and Birch Street. Nearest to the project site are bus stops on Brea Boulevard at Imperial Highway, Birch Street at Randolph Avenue, Birch Street at State College Boulevard, and at Brea Mall. Route 143 operates on approximate 75-minute headways during weekdays and 65-minute headways on weekends. The Brea Mall area is served by this bus route.
- OCTA Route 153 (Brea to Anaheim): Route 153 is a community bus route serving the Cities of Brea, Placentia, Fullerton, Anaheim, and Orange. The major routes of travel include Placentia Avenue. Nearest to the project site are bus stops on Birch Street at the intersection with State College Boulevard. Route 153 operates on approximate 60-minute headways during weekdays and weekends. The Brea Mall Transit Center is served by this bus route.
- OCTA Route 213 (Brea to Irvine Express). Route 213 is an express bus route serving the Cities of Brea, Placentia, Fullerton, Anaheim, Orange, Tustin, Santa Ana, and Irvine via the SR-55 Freeway. Nearest to the project site are bus stops on Brea Boulevard at the intersection with Birch Street. Route 213 operates on approximate 30-minute headways during weekday peak



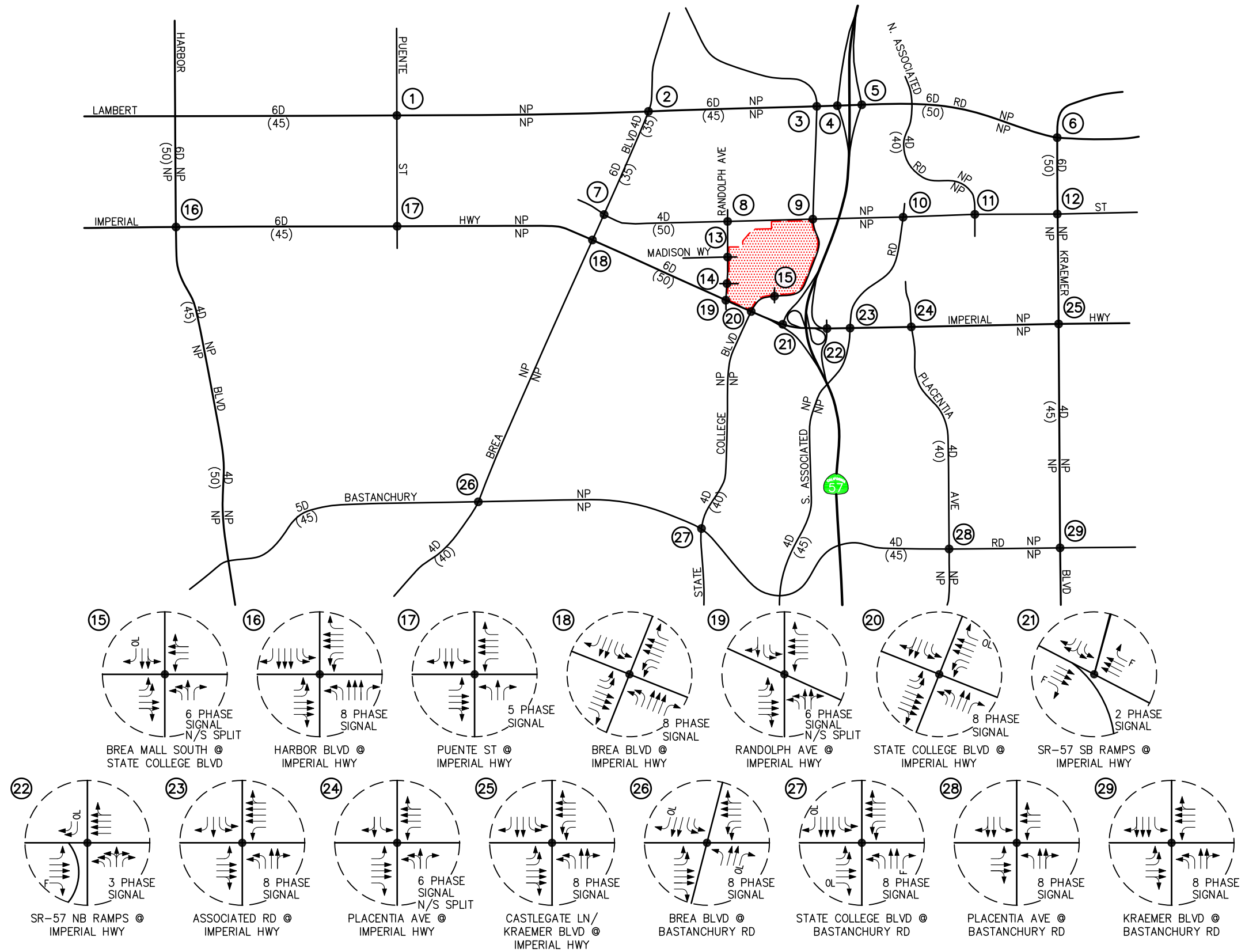


FIGURE 3-1B

**EXISTING ROADWAY CONDITIONS
AND INTERSECTION CONTROLS**

BREA MALL EXPANSION, BREA

hours; no bus service is provided on the weekends. The Brea Mall Transit Center is served by this bus route.

Figure 3-2 graphically illustrates the transit routes of OCTA within the vicinity of the Project site. **Figure 3-3** graphically illustrates the directional transit routes of OCTA within the Brea Mall site. **Figure 3-4** identifies the location of the existing bus stops in proximity to the Project site.

As shown in *Figure 3-3*, access to public transit is provided via bus stops along Birch Street and State College Boulevard, inclusive of the site's signalized intersections. Further a transit center/hub is located within the existing Brea Mall site and is served by four (4) OCTA bus routes.

3.3 Existing Bikeway Plan

The City of Brea promotes bicycling as a means of mobility and a way in which to improve the quality of life within its community. The Bikeway Plan recognizes the needs of bicycle users and aims to create a complete and safe bicycle network throughout the City. The City of Brea Bike Plan (existing and proposed) is shown on **Figure 3-5**. In close proximity to the site, an existing Class II bike lane is provided along Birch Street, from just west of State College Boulevard to the east, east of SR-57 Freeway and State College Boulevard, north of Birch Street. The Tracks at Brea, which are separated east/west Class I bikeway facility, is located on block to the north of the Brea Mall. There is a proposed Class II bike lane along Birch Street to the west and along State College Boulevard to the south.

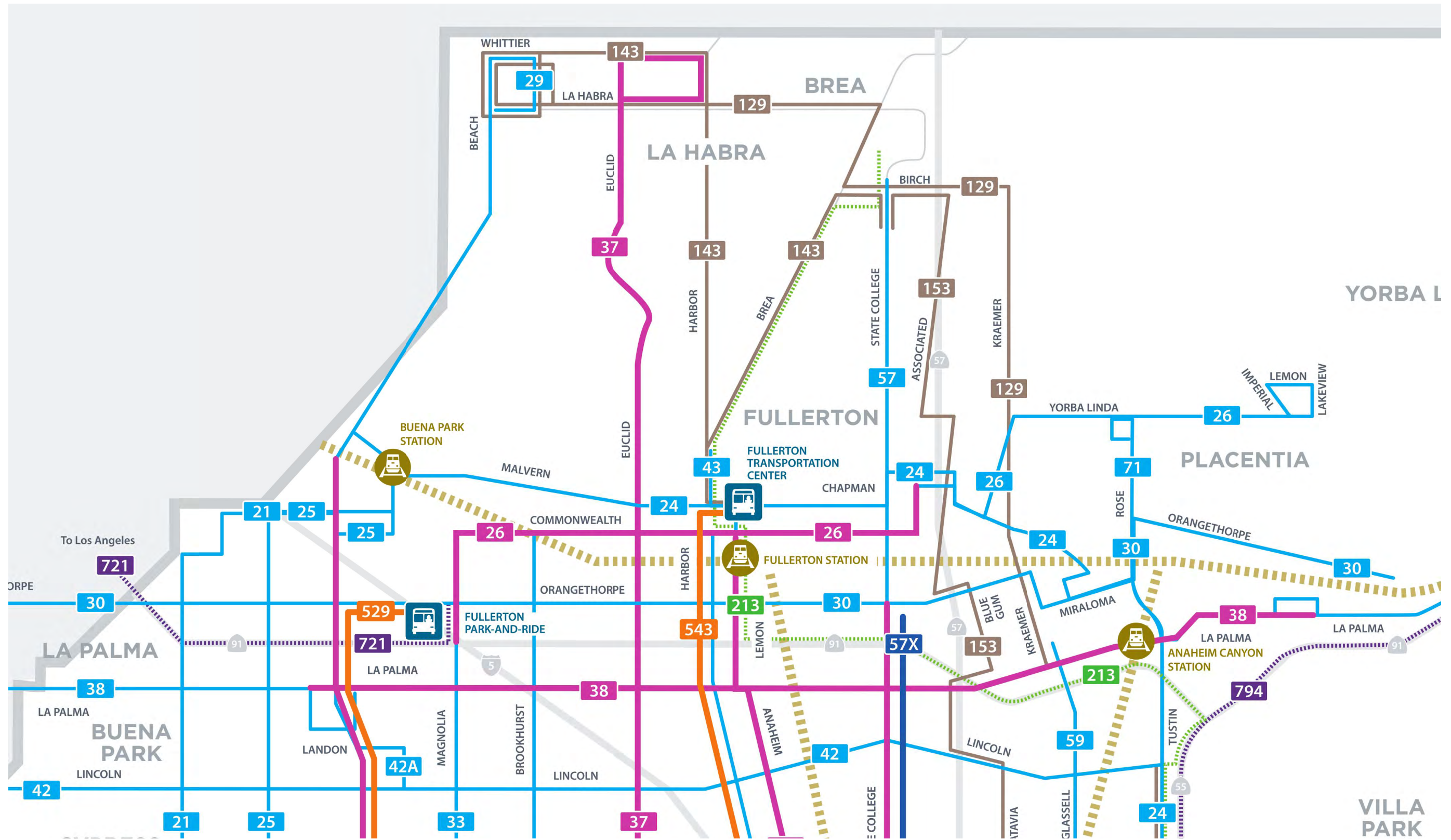
3.4 Existing Traffic Volumes

Twenty-nine (29) key study intersections and twenty-three (23) roadway segments have been identified as the locations at which to evaluate existing and future traffic operating conditions. Some portion of potential project-related traffic will pass through each of these intersections, and their analysis will reveal the expected relative impacts of the project. These key locations were selected for evaluation based on discussions with City of Brea staff and in consideration of Orange County CMP requirements.

Existing weekday daily, AM peak hour and PM peak hour and weekend daily and Midday peak hour traffic volumes for the twenty-nine (29) key study intersections and twenty-three (23) roadway segments were obtained from manual turning movement counts conducted by National Data and Surveying Services in 2018 or 2019. The 2018 count locations have been grown by 1% for a baseline Year 2019 traffic condition.

As discussed previously, approximately 80,995 SF GLA of mall space was not occupied on the dates that traffic counts were conducted. To address this, and to account for trips corresponding with the mall's entitled and historically occupied square footage, trip generation for this floor area was estimated based on the application of ITE rates/equations, and resulting trips were then assigned to the street system and added to the raw traffic counts collected at the key intersections.

Figures 3-6 and **3-7** illustrate the existing weekday AM and PM peak hour traffic volumes at the twenty-nine (29) key study intersections evaluated in this report, respectively. **Figure 3-7** also



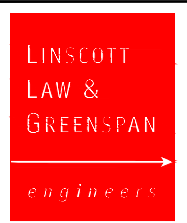
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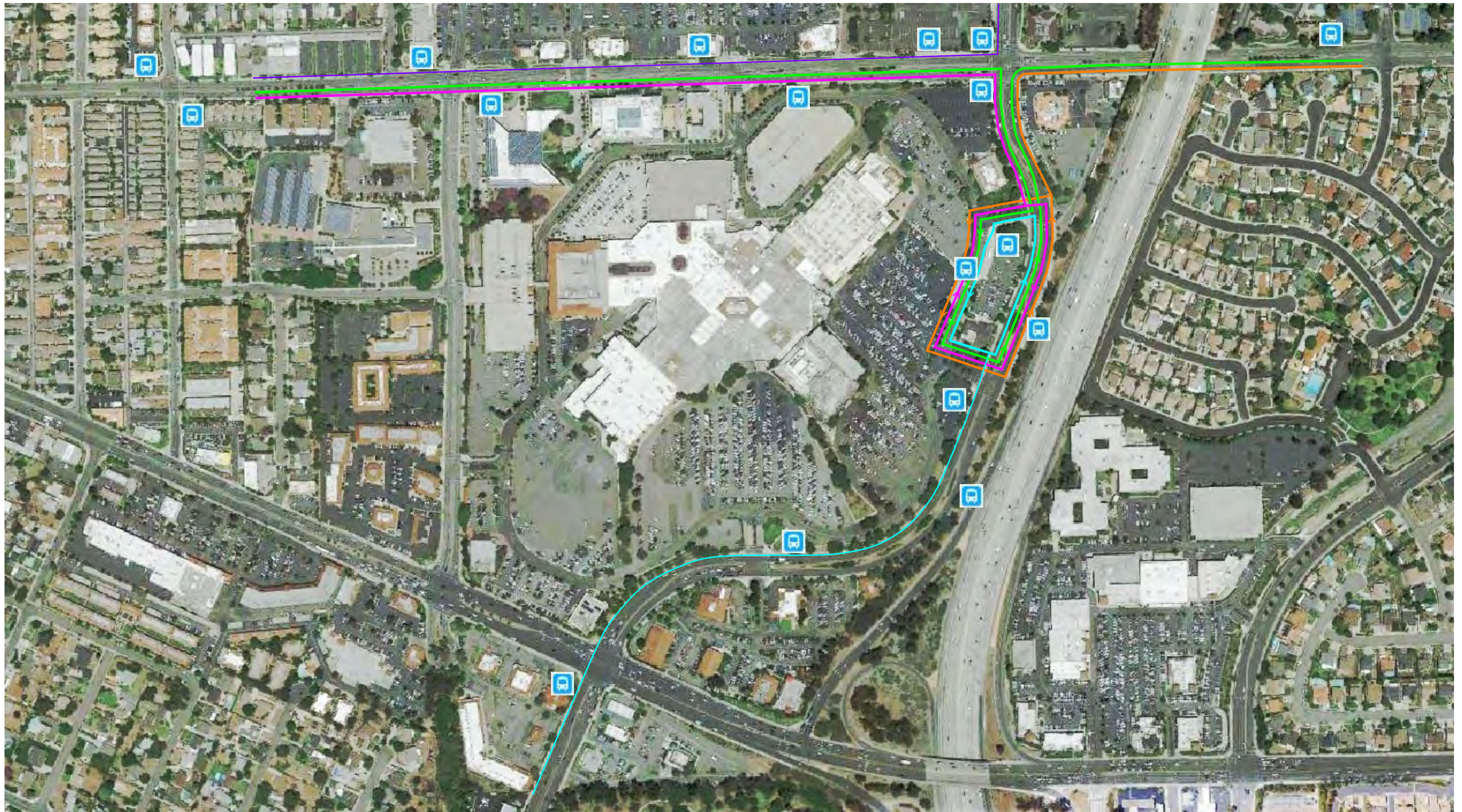
SOURCE: OCTA

FIGURE 3-2

OCTA ROUTES

BREA MALL MIXED-USE PROJECT, BREA





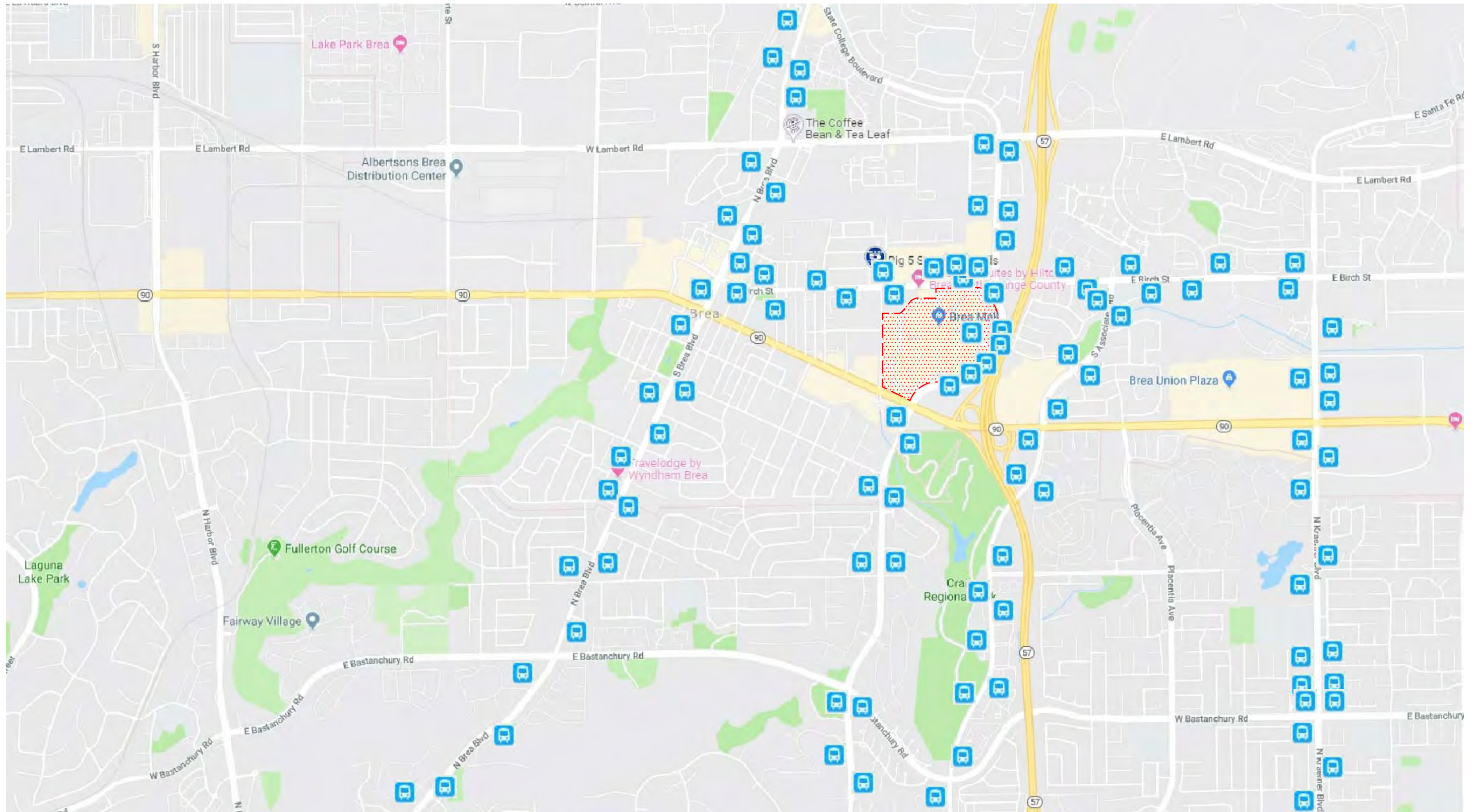
SOURCE: CITY OF BREa

KEY

- = ROUTE 57
- = ROUTE 129
- = ROUTE 213
- = ROUTE 143
- = ROUTE 153
- D = TRANSIT STOP

FIGURE 3-3

OCTA ROUTES WITHIN BREa MALL SITE
BREa MALL MIXED-USE PROJECT, BREa



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SOURCE: GOOGLE

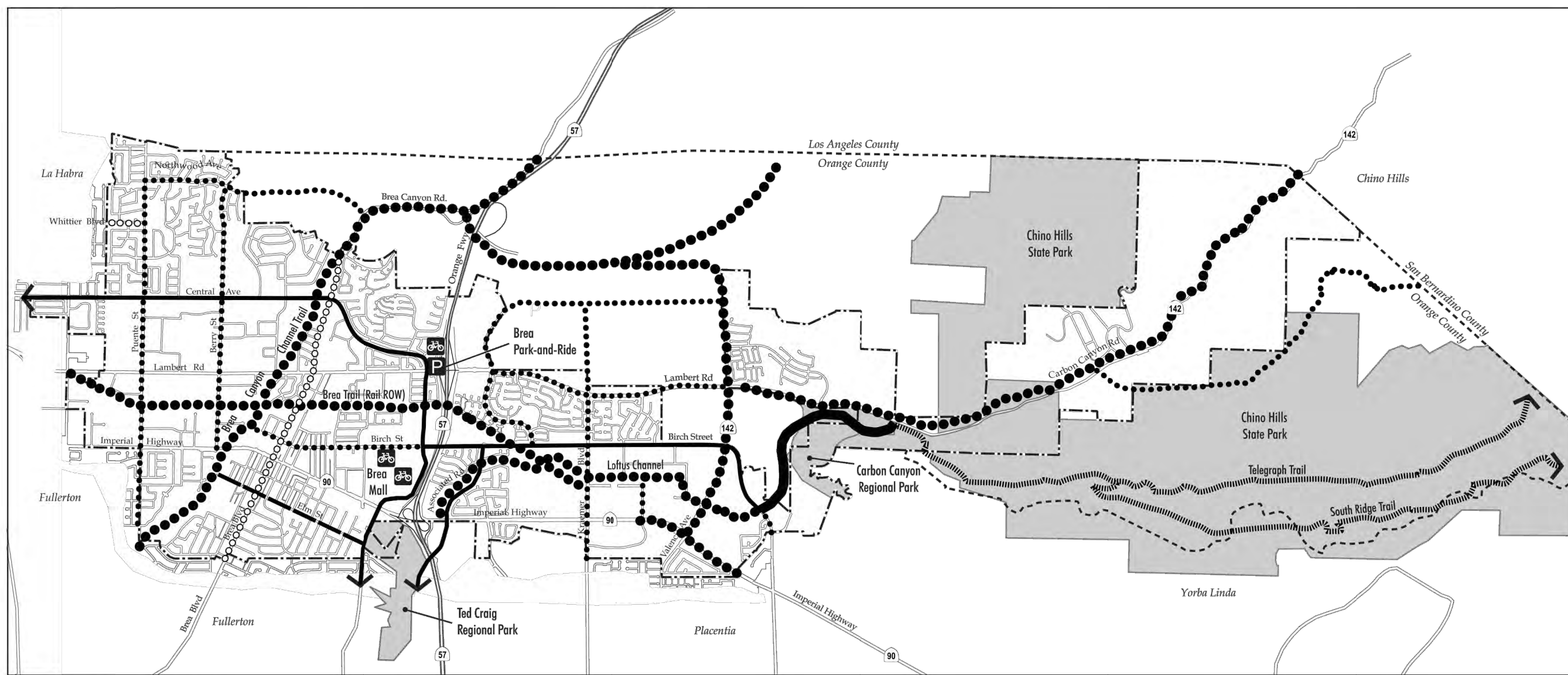
KEY

- = PROJECT SITE
- = TRANSIT STOP

FIGURE 3-4

TRANSIT STOP LOCATIONS
BREA MALL MIXED-USE PROJECT, BREA

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- Legend**
- City Boundary
 - - - Sphere of Influence
- Bike Ways**
- Bike Path (Class I)
 - Bike Lane (Class II)
 - Bike Route (Class III)
 - Off Road (Unpaved)
- Bike Ways (Proposed)**
- Bike Path (Class I)
 - Bike Lane (Class II)
 - Bike Route (Class III)
- P** Park and Ride
- Bike Parking Facility

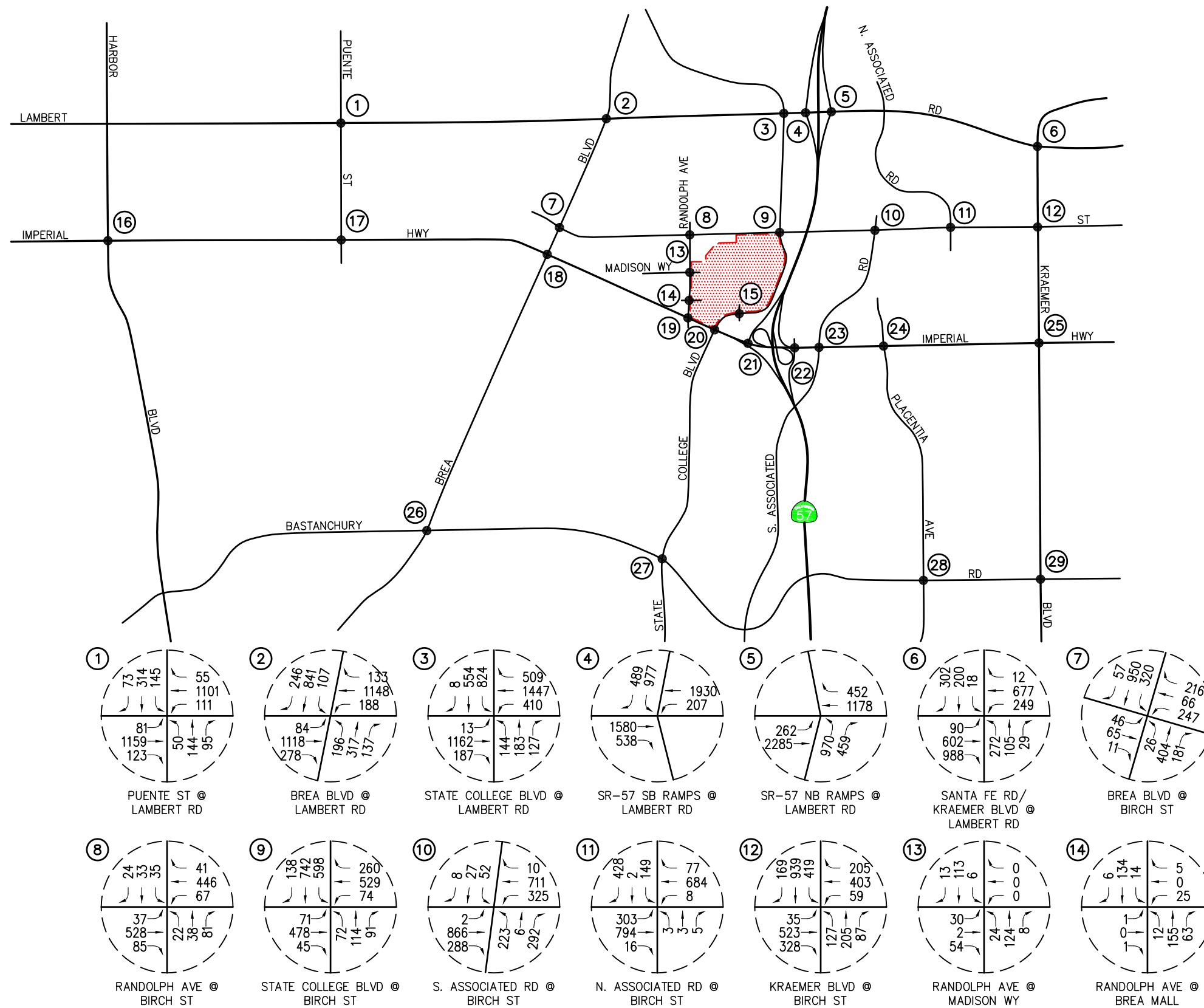
SOURCE: CITY OF BREA GENERAL PLAN

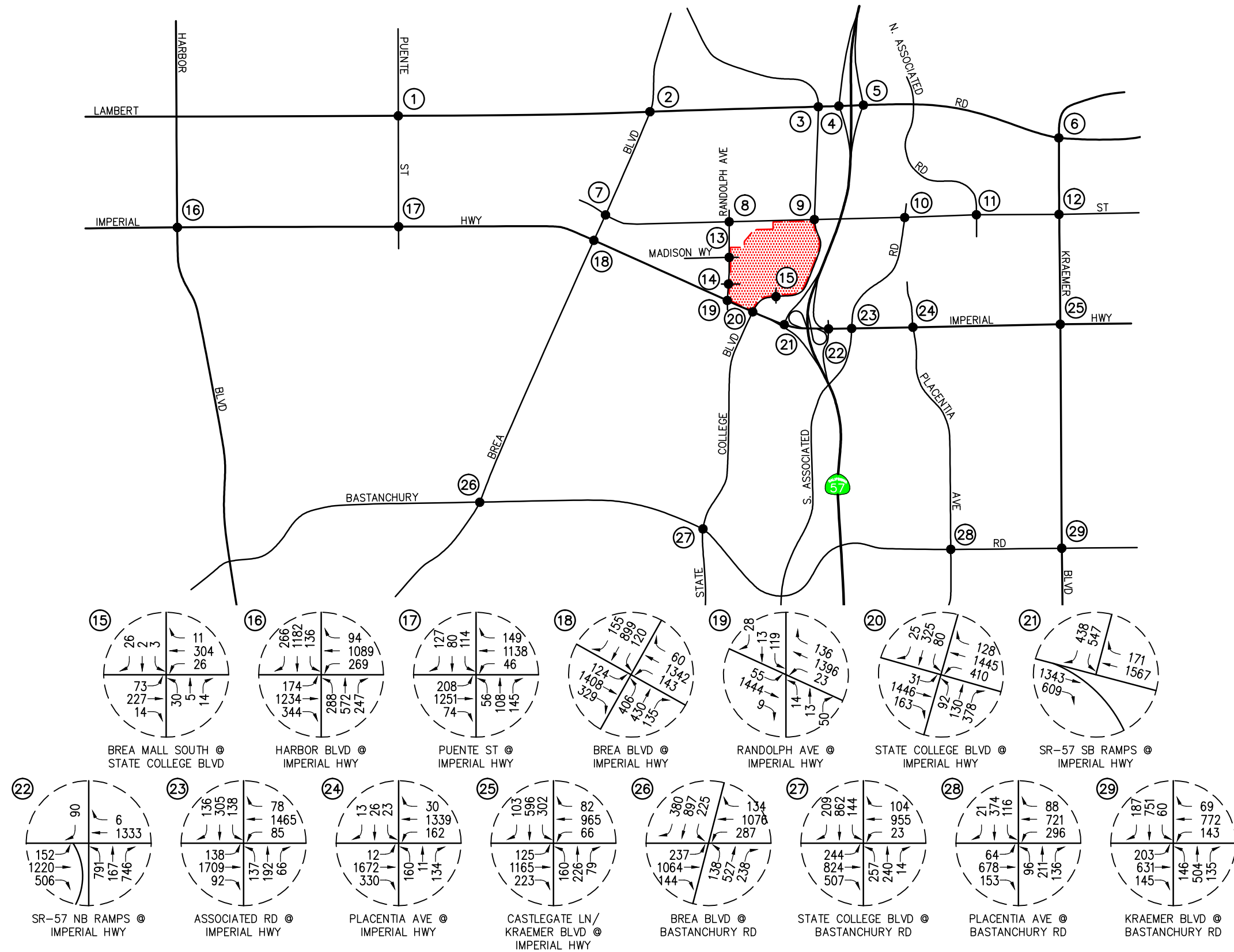
LINSCOTT
LAW &
GREENSPAN
engineers

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NO SCALE

FIGURE 3-5

CITY OF BREA BIKE PLAN
BREA MALL MIXED-USE PROJECT, BREA





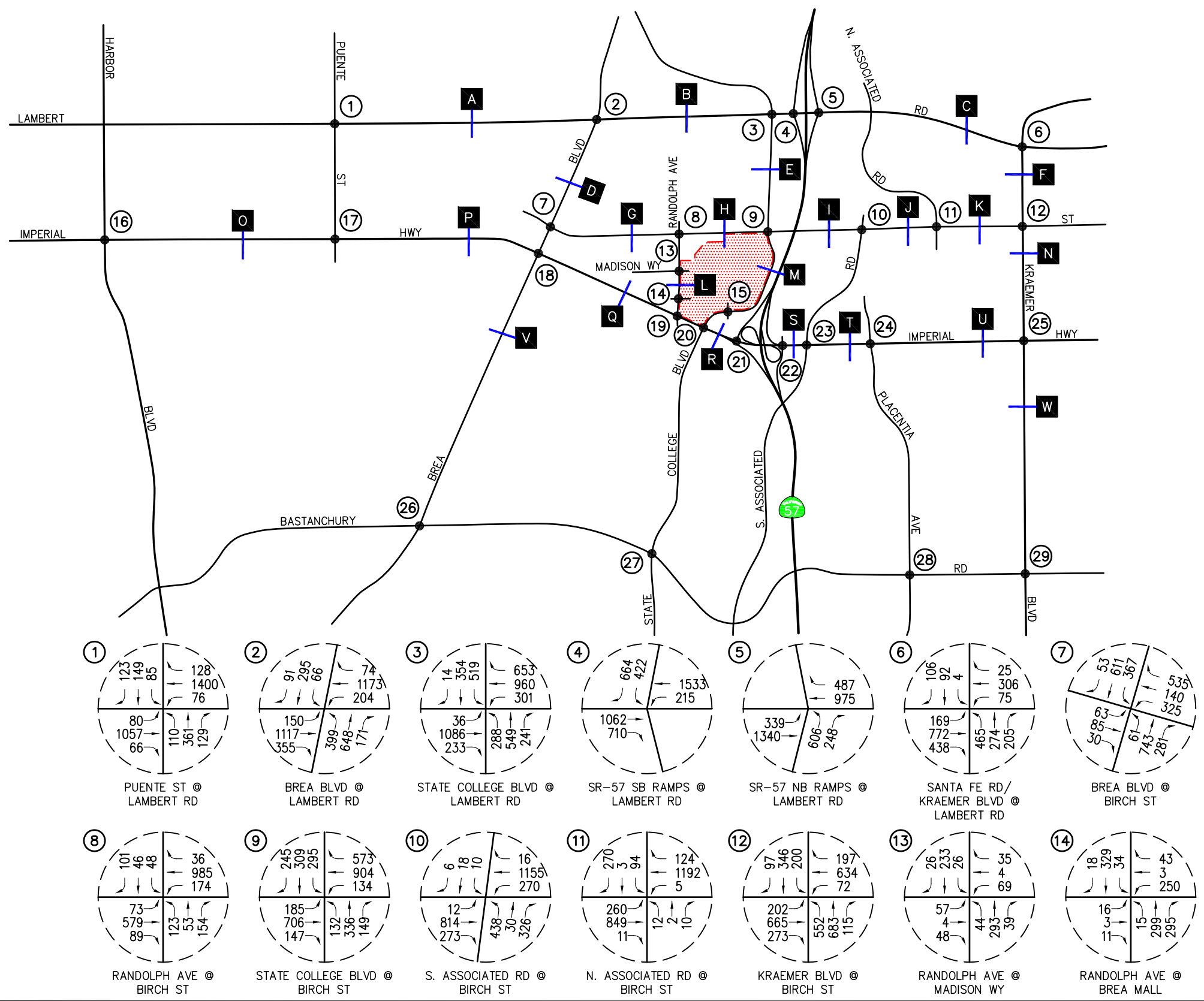
KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = BREA MALL

FIGURE 3-6B

EXISTING AM PEAK HOUR TRAFFIC VOLUMES
 BREA MALL MIXED-USE PROJECT, BREA

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LOCATION	VOLUME
A	34,552
B	37,156
C	33,433
D	27,156
E	21,756
F	16,763
G	17,868
H	19,341
I	24,742
J	24,245
K	20,757
L	7,610
M	13,577
N	19,885
O	42,299
P	56,302
Q	53,549
R	72,542
S	53,855
T	51,706
U	51,786
V	30,661
W	19,886



KEY

#

= STUDY INTERSECTION (PEAK HOUR)

#

= STUDY ROADWAY SEGMENT (DAILY)

= BREJA MALL

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LAW &
GREENSPAN
engineers

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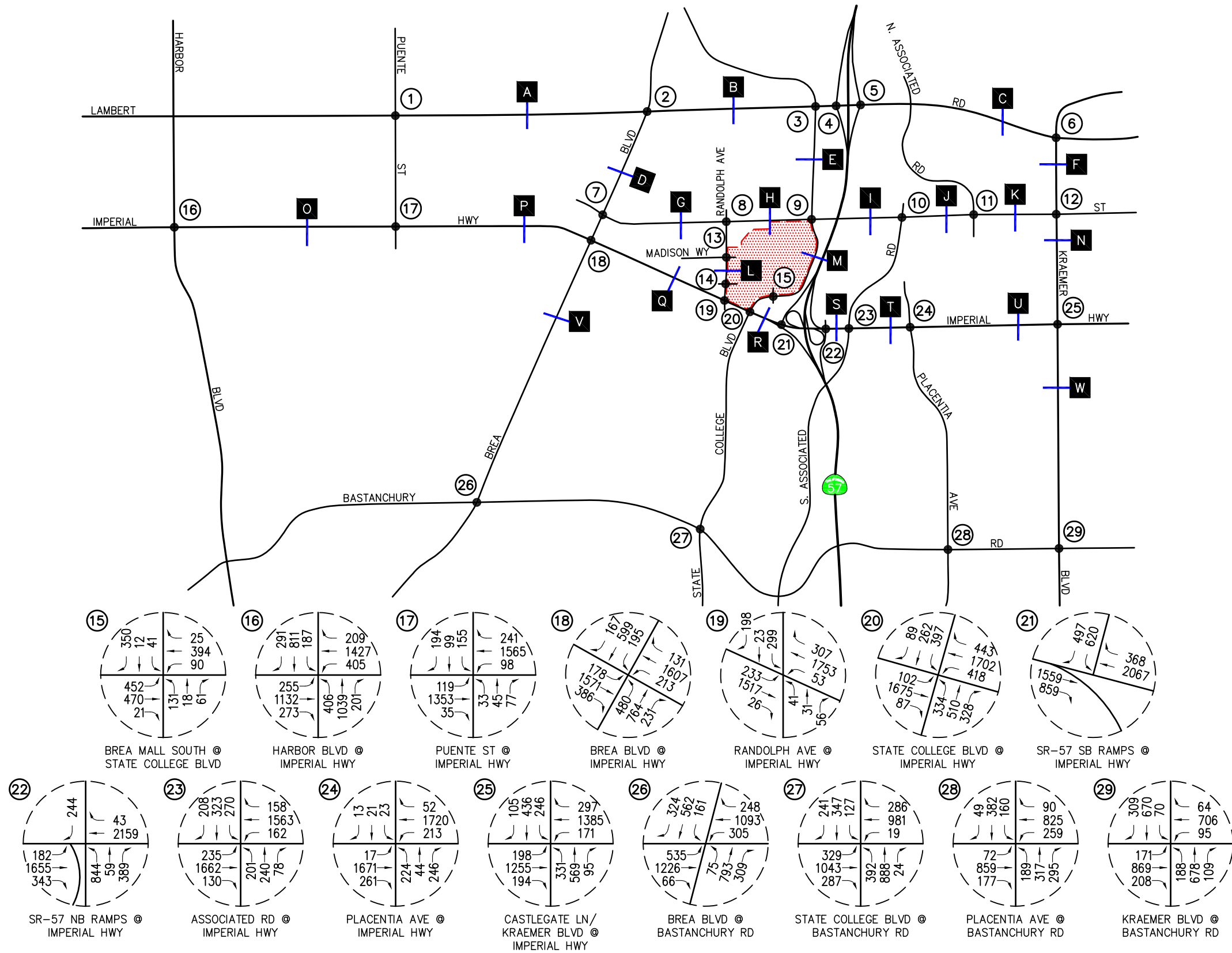
NO SCALE

FIGURE 3-7A

EXISTING PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREJA

LOCATION	VOLUME
A	34,552
B	37,156
C	33,433
D	27,156
E	21,756
F	16,763
G	17,868
H	19,341
I	24,742
J	24,245
K	20,757
L	7,610
M	13,577
N	19,885
O	42,299
P	56,302
Q	53,549
R	72,542
S	53,855
T	51,706
U	51,786
V	30,661
W	19,886



KEY

① = STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

■ = BREA MALL

FIGURE 3-7B

EXISTING PM PEAK HOUR AND DAILY TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREA



NO SCALE

presents the existing average weekday daily traffic volumes for the twenty-three (23) roadway segments in the vicinity of the proposed Project.

Figure 3-8 illustrates the existing weekend (Saturday) Midday peak hour traffic volumes at the twenty-nine (29) key study intersections evaluated in this report, respectively. **Figure 3-8** also presents the existing average weekend daily traffic volumes for the twenty-three (23) roadway segments in the vicinity of the proposed Project.

Appendix B contains the detailed peak hour and daily traffic count sheets for the key intersections and roadway segments evaluated in this report.

3.5 Level Of Service (LOS) Analysis Methodologies

Existing weekday AM and PM peak hour and Weekend (Saturday) Midday peak hour operating conditions for the twenty-nine (29) key study intersections were evaluated using the *Intersection Capacity Utilization (ICU)* methodology for signalized intersections as well as the methodology outlined in the *Highway Capacity Manual*. Per the City's direction, the Intersection Capacity Utilization (ICU) method will be used for the purpose of consistency with the General Plan. The Highway Capacity Manual (HCM) method will be used for the key study intersections under Brea and/or Caltrans jurisdiction for the purpose of providing an additional layer of analysis.

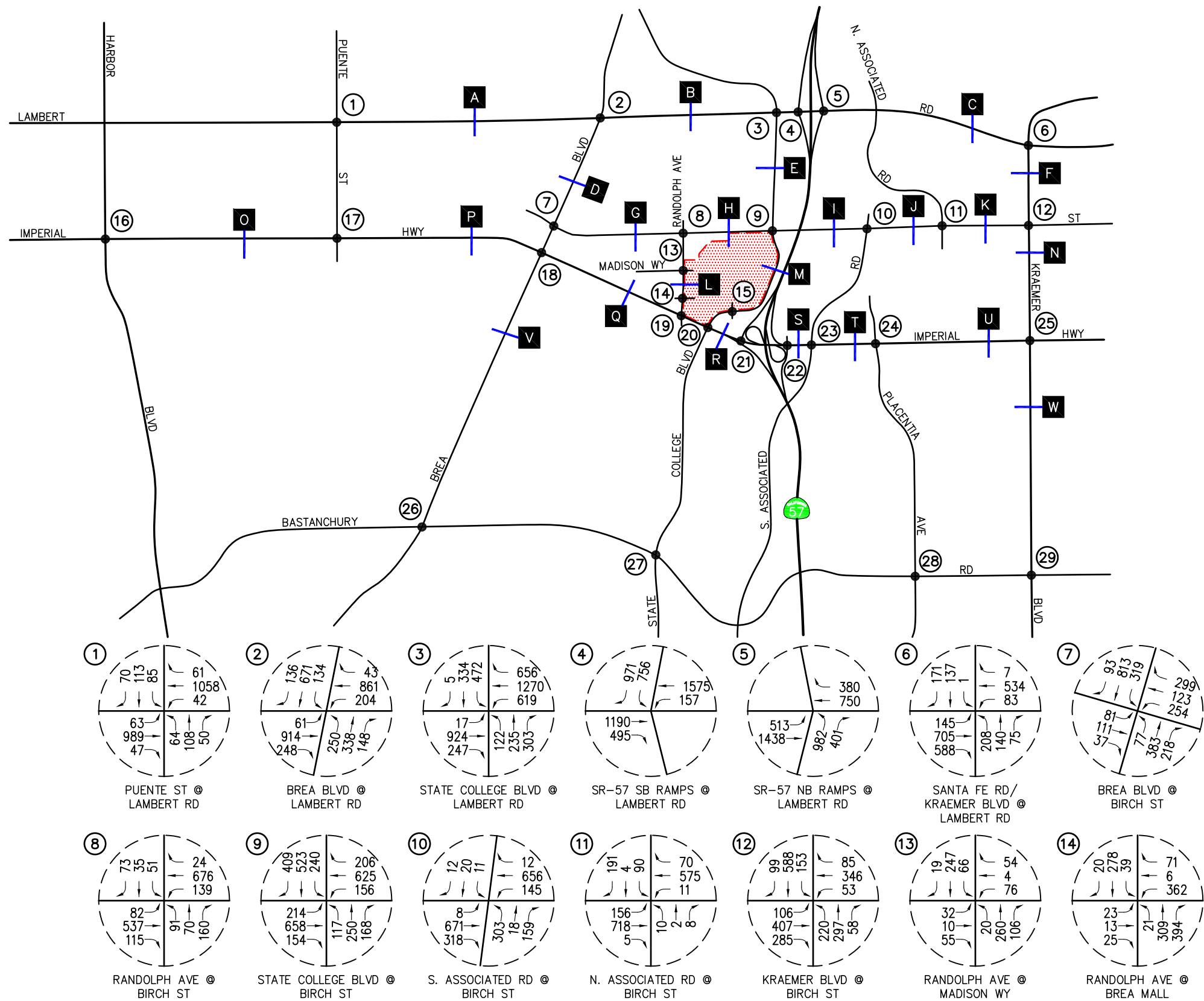
3.5.1 Intersection Capacity Utilization (ICU) Method of Analysis

In conformance with City of Brea and Orange County CMP requirements, existing weekday AM and PM peak hour and Weekend (Saturday) Midday peak hour operating conditions for the key signalized study intersections were evaluated using the Intersection Capacity Utilization (ICU) method. The ICU technique is intended for signalized intersection analysis and estimates the volume to capacity (V/C) relationship for an intersection based on the individual V/C ratios for key conflicting traffic movements. The ICU numerical value represents the percent signal (green) time, and thus capacity, required by existing and/or future traffic. It should be noted that the ICU methodology assumes uniform traffic distribution per intersection approach lane and optimal signal timing. It is noted that the two (2) study intersections within the City of Fullerton jurisdiction (Intersections No. 26 and 27) were evaluated using the HCM methodology only per their criteria and has been omitted from the ICU tables.

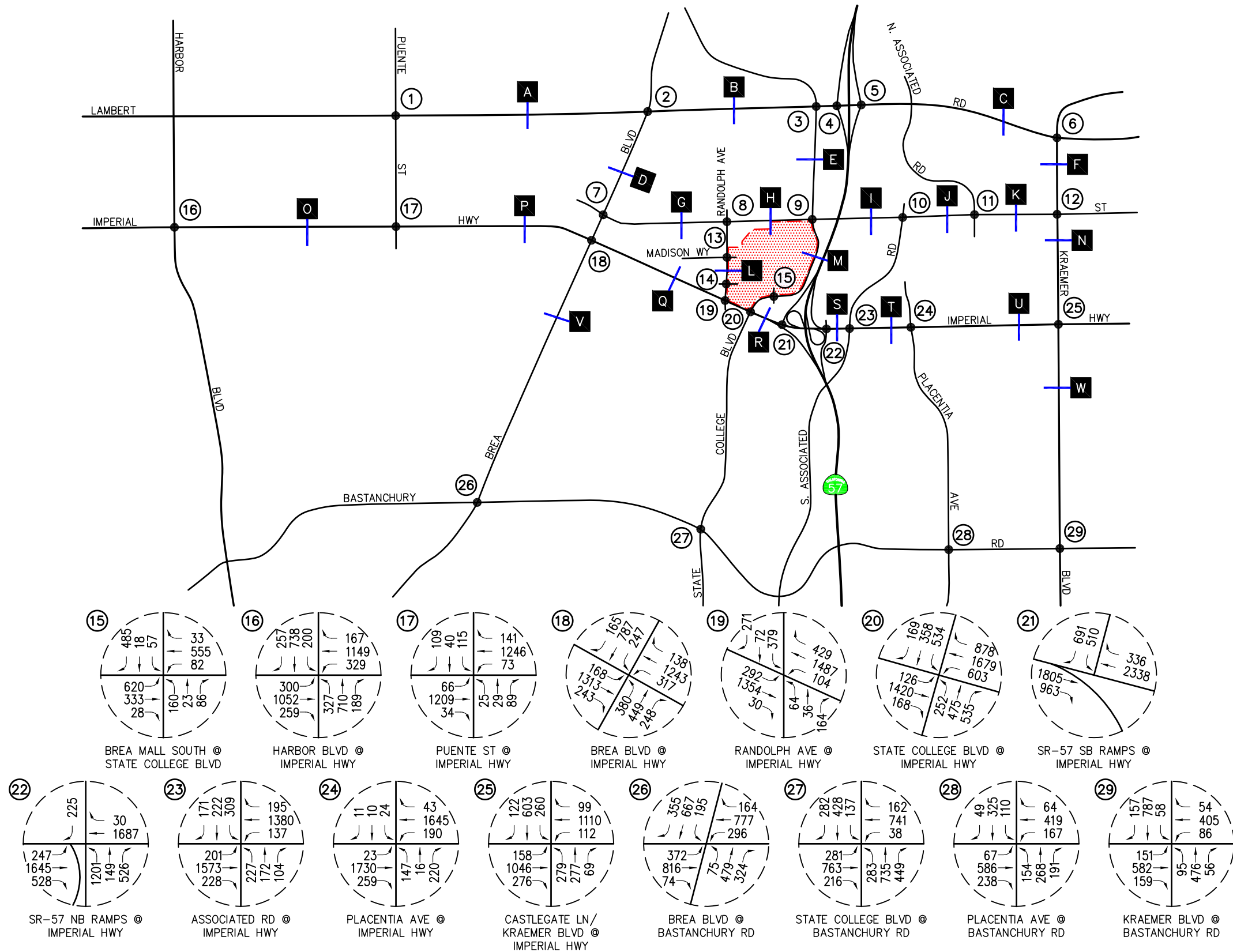
Per City of Brea, City of La Habra, and City of Placentia requirements, the ICU calculations use a lane capacity of 1,700 vehicles per hour (vph) for through and all turn lanes. A clearance adjustment factor of 0.05 was added to each Level of Service calculation.

The ICU value translates to a Level of Service (LOS) estimate, which is a relative measure of the intersection performance. The ICU value is the sum of the critical volume to capacity ratios at an intersection; it is not intended to be indicative of the LOS of each of the individual turning movements. The six qualitative categories of Level of Service have been defined along with the corresponding ICU value range and are shown in **Table 3-1**.

LOCATION	VOLUME
A	35,917
B	38,622
C	34,755
D	28,236
E	22,626
F	17,427
G	18,582
H	17,352
I	25,721
J	25,205
K	21,579
L	7,828
M	14,127
N	20,670
O	43,988
P	58,552
Q	55,710
R	75,471
S	56,012
T	53,773
U	53,844
V	31,887
W	20,671



LOCATION	VOLUME
A	35,917
B	38,622
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E	22,626
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H	17,352
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N	20,670
O	43,988
P	58,552
Q	55,710
R	75,471
S	56,012
T	53,773
U	53,844
V	31,887
W	20,671



KEY

= STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

[Red Hatched Box] = BREA MALL

FIGURE 3-8B

**EXISTING WEEKEND (SATURDAY) MIDDAY
PEAK HOUR AND DAILY TRAFFIC VOLUMES**
BREA MALL MIXED-USE PROJECT, BREA

3.5.2 Highway Capacity Manual (HCM) Method of Analysis (Signalized Intersections)

Existing weekday AM and PM peak hour and Weekend (Saturday) Midday peak hour operating conditions for key study intersections under City of Brea, City of Fullerton and/or Caltrans jurisdiction were evaluated using the methodology outlined in *Chapter 19 of the Highway Capacity Manual 6 (HCM 6)* for signalized intersections, the methodology outlined in *Chapter 20 of the HCM 6* for two-way stop-controlled intersections. It is noted that the two (2) study intersections within the City of Placentia jurisdiction (Intersections No. 28 and 29) were evaluated using the ICU methodology only per their criteria and has been omitted from the HMC tables.

Based on the HCM operations method of analysis, level of service for signalized intersections and approaches is defined in terms of control delay, which is a measure of the increase in travel time due to traffic signal control, driver discomfort, and fuel consumption. Control delay includes the delay associated with vehicles slowing in advance of an intersection, the time spent stopped on an intersection approach, the time spent as vehicles move up in the queue, and the time needed for vehicles to accelerate to their desired speed. LOS criteria for traffic signals are stated in terms of the control delay in seconds per vehicle. The LOS thresholds established for the automobile mode at a signalized intersection are shown in **Table 3-2**.

3.5.3 Highway Capacity Manual (HCM) Method of Analysis (Unsignalized Intersections)

The HCM unsignalized methodology for stop-controlled intersections was utilized for the analysis of the unsignalized intersections. LOS criteria for unsignalized intersections differ from LOS criteria for signalized intersections as signalized intersections are designed for heavier traffic and therefore a greater delay. Unsignalized intersections are also associated with more uncertainty for users, as delays are less predictable, which can reduce users' delay tolerance.

Two-way stop-controlled intersections are comprised of a major street, which is uncontrolled, and a minor street, which is controlled by stop signs. Level of service for a two-way stop-controlled intersection is determined by the computed or measured control delay. The control delay by movement, by approach, and for the intersection as a whole is estimated by the computed capacity for each movement. LOS is determined for each minor-street movement (or shared movement) as well as major-street left turns. The worst side street approach delay is reported. LOS is not defined for the intersection as a whole or for major-street approaches, as it is assumed that major-street through vehicles experience zero delay. The HCM control delay value range for two-way stop-controlled intersections is shown in **Table 3-3**.

3.5.4 Basic Freeway Segments

The basic freeway segment criteria are based on peak hour *HCM 6* density analysis. The capacities are based on information contained in the *HCM 6*. Existing traffic count data for the analyzed freeway segments was obtained from the Caltrans website.

Basic freeway segment levels of service are determined from segment density. **Table 3-4** presents the correlation between LOS and density in terms of passenger cars per mile per lane (pc/mi/ln) for freeway basic freeway segments.

3.5.5 Freeway Merge And Diverge Segments

Freeway merge and diverge segment analysis is based on peak hour *HCM 6* density analysis for freeway-to-arterial interchanges. According to *HCM 6* methodology, the ramp merge and diverge segments focus on an influential area of 1,500 feet, including the acceleration or deceleration lane(s) and adjacent freeway ramps. The methodology incorporates three fundamental steps:

- Determination of the traffic entering the freeway lanes upstream of the merge or at the beginning of the deceleration lane at diverge;
- Determination of the capacity for the segment; and
- Determination of the density of traffic flow within the ramp influence area and its level of service.

The level of service (LOS) for freeway merge and diverge segments is determined by traffic density based on criteria outlined in the *HCM 6*. **Table 3-5** presents the correlation between LOS and density in terms of passenger cars per mile per lane (pc/mi/ln) for freeway merge and diverge segments.

3.6 Level of Service Criteria

According to City of Brea, City of Fullerton, and City of Placentia, LOS D is the minimum acceptable condition that should be maintained during the morning and evening peak commute hours at intersections.

The City of La Habra has also established LOS D as its criterion for an acceptable level of service at City jurisdiction intersections. For intersections located along a Congestion Management Plan (CMP) network, LOS E is considered acceptable within the City of La Habra. However, LOS D is considered to be the acceptable level of service at all La Habra locations in order to be conservative.

Caltrans “endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D” on State highway facilities”; it does not require that LOS “D” (shall) be maintained. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. Caltrans has determined that all state owned facilities that operate below LOS D should be identified and improved to an acceptable LOS. The *Caltrans Traffic Impact Study Guidelines dated December 2002* does state that if an existing state owned facility operates at less than LOS D, the existing service level should be maintained. At locations within the City of Brea but under the jurisdiction of Caltrans (i.e. study locations located along Imperial (SR-90) Highway), inclusive of the ramp intersections at the SR-57 Freeway/Lambert Road Interchange and SR-57 Freeway/Imperial Highway Interchange, Caltrans LOS standards would apply. Based on the above, LOS D is the acceptable condition that should be maintained for all key study intersections during the morning and evening peak commute hours with the exception of those within the City of La Habra where LOS E is defined in the CMP for Orange County as the acceptable limit.

TABLE 3-1
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (ICU METHODOLOGY)

Level of Service (LOS)	Intersection Capacity Utilization Value (V/C)	Level of Service Description
A	≤ 0.600	EXCELLENT. No vehicle waits longer than one red light, and no approach phase is fully used.
B	0.601 – 0.700	VERY GOOD. An occasional approach phase is fully utilized; many drivers begin to feel somewhat restricted within groups of vehicles.
C	0.701 – 0.800	GOOD. Occasionally drivers may have to wait through more than one red light; backups may develop behind turning vehicles.
D	0.801 – 0.900	FAIR. Delays may be substantial during portions of the rush hours, but enough lower volume periods occur to permit clearing of developing lines, preventing excessive backups.
E	0.901 – 1.000	POOR. Represents the most vehicles intersection approaches can accommodate; may be long lines of waiting vehicles through several signal cycles.
F	> 1.000	FAILURE. Backups from nearby locations or on cross streets may restrict or prevent movement of vehicles out of the intersection approaches. Potentially very long delays with continuously increasing queue lengths.

TABLE 3-2
LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS (HCM METHODOLOGY)⁶

Control Delay (sec/veh)	Level of Service (LOS)	Level of Service Description
≤ 10	A	This level of service occurs when the v/c ratio is low and either progression is exceptionally favorable or the cycle length is very short.
> 10-20	B	This level generally occurs when the v/c ratio is low and either progression is highly favorable or the cycle length is short.
> 20-35	C	Average traffic delays. These higher delays may result when progression is favorable or the cycle length is moderate. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.
> 35-55	D	Long traffic delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop and individual cycle failures are noticeable.
> 55-80	E	Very long traffic delays. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.
> 80	F	Severe congestion. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors to such delay levels.

⁶ Source: *Highway Capacity Manual*, Chapter 18: Signalized Intersections.

TABLE 3-3
LEVEL OF SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS (HCM METHODOLOGY)⁷

Control Delay (sec/veh)	Level of Service (LOS)	Level of Service Description
0-10	A	Little or no delay
> 10-15	B	Short traffic delays
> 15-20	C	Average traffic delays
> 25-35	D	Long traffic delays
> 35-50	E	Very long traffic delays
> 50	F	Severe congestion

⁷ Source: *Highway Capacity Manual*, Chapter 19: Two-Way Stop-Controlled Intersections. The LOS criteria apply to each lane on a given approach and to each approach on the minor street. LOS is not calculated for major-street approaches or for the intersection as a whole.

TABLE 3-4
BASIC FREEWAY SEGMENTS LEVEL OF SERVICE CRITERIA (HCM METHODOLOGY)⁸

LOS	Basic Freeway Segment Density (pc/mi/ln)
A	≤ 11.0
B	$> 11.0 - 18.0$
C	$> 18.0 - 26.0$
D	$> 26.0 - 35.0$
E	$> 35.0 - 45.0$
F	> 45.0

⁸ Source: *Highway Capacity Manual 6*, Chapter 12: Basic Freeway and Multilane Highway Segments.

TABLE 3-5
 FREEWAY MERGE AND DIVERGE SEGMENTS LEVEL OF SERVICE CRITERIA (HCM METHODOLOGY)⁹

LOS	Freeway Ramp Density (pc/mi/ln)	Level of Service Description
A	≤ 10.0	Unrestricted operations
B	$> 10.0 - 20.0$	Merging and diverging maneuvers noticeable to drivers
C	$> 20.0 - 28.0$	Influence area speeds begin to decline
D	$> 28.0 - 35.0$	Influence area turbulence becomes intrusive
E	> 35.0	Turbulence felt by virtually all drivers
F	Demand Exceeds Capacity	Ramp and freeway queues form

⁹ Source: *Highway Capacity Manual 6*, Chapter 14: Freeway Merge and Diverge Segments.

3.7 Existing Level of Service Results

3.7.1 Existing Conditions Intersection Capacity Analysis (ICU Methodology)

Table 3-6 summarizes the existing Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hour service level calculations for the twenty-seven (27) key study intersections evaluated under ICU analysis based on existing traffic volumes and current street geometrics. Review of *Table 3-6* indicates that the intersection of State College Boulevard at Imperial Highway currently operates at unacceptable LOS during the Weekend (Saturday) Midday peak hour. The remaining twenty-six (26) key study intersections currently operate an acceptable service levels during the Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hours. It is noted that the two (2) study intersections within the City of Fullerton jurisdiction (Intersections No. 26 and 27) were evaluated using the HCM methodology only per their criteria and has been omitted from the ICU tables

Appendix C presents the ICU LOS calculation worksheets for the twenty-seven (27) key study intersections for the Weekday AM peak hour, Weekday PM peak hour, and Weekend (Saturday) Midday peak hours.

3.7.2 Existing Conditions Intersection Capacity Analysis (HCM Methodology)

Table 3-7 summarize the existing peak hour service level calculations for the twenty-seven (27) key study intersections evaluated during the Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hours based on existing traffic volumes and current street geometrics based on the HCM Method of Analysis. Review of *Table 3-7* indicates that the intersection of State College Boulevard at Imperial Highway currently operates an unacceptable LOS during the Weekday PM and Weekend (Saturday) Midday peak hours. The remaining twenty-six (26) key study intersections currently operate an acceptable service levels during the Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hours. It is noted that the two (2) study intersections within the City of Placentia jurisdiction (Intersections No. 28 and 29) were evaluated using the ICU methodology only per their criteria and has been omitted from the HMC tables.

Appendix D presents the HCM LOS calculation worksheets for the twenty-seven (27) key study intersections for the Weekday AM peak hour, Weekday PM peak hour, and Weekend (Saturday) Midday peak hours.

TABLE 3-6
EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Jurisdiction	Minimum Acceptable LOS	Control Type	Time Period	ICU	LOS
1. Puente Street at Lambert Road	Brea	D	8Ø Traffic Signal	AM PM Sat MD	0.522 0.591 0.403	A A A
2. Brea Boulevard at Lambert Road	Brea	D	8Ø Traffic Signal	AM PM Sat MD	0.685 0.618 0.620	B B B
3. State College Boulevard at Lambert Road	Brea	D	8Ø Traffic Signal	AM PM Sat MD	0.672 0.647 0.649	B B B
4. SR-57 SB Ramps at Lambert Road	Brea/ Caltrans	D	3Ø Traffic Signal	AM PM Sat MD	0.716 0.587 0.697	C A B
5. SR-57 NB Ramps at Lambert Road	Brea/ Caltrans	D	3Ø Traffic Signal	AM PM Sat MD	0.783 0.543 0.656	C A B
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	Brea	D	8Ø Traffic Signal	AM PM Sat MD	0.591 0.498 0.444	A A A
7. Brea Boulevard at Birch Street	Brea	D	8Ø Traffic Signal	AM PM Sat MD	0.380 0.603 0.435	A B A
8. Randolph Avenue at Birch Street	Brea	D	5Ø Traffic Signal	AM PM Sat MD	0.338 0.541 0.448	A A A
9. State College Boulevard at Birch Street	Brea	D	8Ø Traffic Signal	AM PM Sat MD	0.506 0.643 0.605	A B B
10. S Associated Road at Birch Street	Brea	D	6Ø Traffic Signal	AM PM Sat MD	0.592 0.592 0.491	A A A

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 3-6 (CONTINUED)
EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Jurisdiction	Minimum Acceptable LOS	Control Type	Time Period	ICU	LOS
11. N Associated Road at Birch Street	Brea	D	6Ø Traffic Signal	AM PM Sat MD	0.520 0.616 0.370	A B A
12. Kraemer Boulevard at Birch Street	Brea	D	8Ø Traffic Signal	AM PM Sat MD	0.532 0.605 0.448	A B A
13. Randolph Avenue at Madison Way	Brea	D	5Ø Traffic Signal	AM PM Sat MD	0.134 0.234 0.279	A A A
14. Randolph Avenue at Brea Mall	Brea	D	6Ø Traffic Signal	AM PM Sat MD	0.132 0.343 0.430	A A A
15. Brea Mall South at State College Boulevard	Brea	D	6Ø Traffic Signal	AM PM Sat MD	0.176 0.423 0.562	C A A
16. Harbor Boulevard at Imperial Highway	La Habra/ Fullerton/ Caltrans	D ¹⁰	8Ø Traffic Signal	AM PM Sat MD	0.755 0.735 0.651	C C B
17. Puente Street at Imperial Highway	Brea/ Fullerton/ Caltrans	D	5Ø Traffic Signal	AM PM Sat MD	0.548 0.563 0.457	A A A
18. Brea Boulevard at Imperial Highway	Brea/ Caltrans	D	8Ø Traffic Signal	AM PM Sat MD	0.752 0.738 0.744	C C C
19. Randolph Avenue at Imperial Highway	Brea/ Caltrans	D	6Ø Traffic Signal	AM PM Sat MD	0.402 0.618 0.688	A B B
20. State College Boulevard at Imperial Highway	Brea/ Caltrans	D	8Ø Traffic Signal	AM PM Sat MD	0.660 0.778 0.981	B C E

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

¹⁰ According to City of La Habra guidelines, LOS E is acceptable at this location but is shown as LOS D to be conservative.

TABLE 3-6 (CONTINUED)
EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Jurisdiction	Minimum Acceptable LOS	Control Type	Time Period	ICU	LOS
21. SR-57 SB Ramps at Imperial Highway	Brea/ Caltrans	D	2Ø Traffic Signal	AM PM Sat MD	0.550 0.674 0.744	A B C
22. SR-57 NB Ramps at Imperial Highway	Brea/ Caltrans	D	4Ø Traffic Signal	AM PM Sat MD	0.605 0.671 0.724	B B C
23. Associated Road at Imperial Highway	Brea/ Caltrans	D	8Ø Traffic Signal	AM PM Sat MD	0.673 0.746 0.681	B C B
24. Castlegate Lane/Placentia Avenue at Imperial Highway	Brea/ Caltrans	D	6Ø Traffic Signal	AM PM Sat MD	0.575 0.668 0.645	A B B
25. Kraemer Boulevard at Imperial Highway	Brea/ Caltrans	D	8Ø Traffic Signal	AM PM Sat MD	0.564 0.706 0.602	A C B
28. Placentia Avenue at Bastanchury Road	Placentia	D	8Ø Traffic Signal	AM PM Sat MD	0.641 0.781 0.591	B C A
29. Kraemer Boulevard at Bastanchury Road	Placentia	D	8Ø Traffic Signal	AM PM Sat MD	0.589 0.695 0.532	A B A

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 3-7
EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersection	Jurisdiction	Minimum Acceptable LOS	Control Type	Time Period	Delay (sec/veh)	LOS
1. Puente Street at Lambert Road	Brea	D	8Ø Traffic Signal	AM PM Sat MD	25.9 s/v 27.0 s/v 17.7 s/v	C C B
2. Brea Boulevard at Lambert Road	Brea	D	8Ø Traffic Signal	AM PM Sat MD	38.6 s/v 38.4 s/v 37.9 s/v	D D D
3. State College Boulevard at Lambert Road	Brea	D	8Ø Traffic Signal	AM PM Sat MD	34.5 s/v 38.5 s/v 38.3 s/v	C D D
4. SR-57 SB Ramps at Lambert Road	Brea/ Caltrans	D	3Ø Traffic Signal	AM PM Sat MD	37.8 s/v 21.8 s/v 30.5 s/v	D C C
5. SR-57 NB Ramps at Lambert Road	Brea/ Caltrans	D	3Ø Traffic Signal	AM PM Sat MD	32.2 s/v 21.0 s/v 25.5 s/v	C C C
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	Brea	D	8Ø Traffic Signal	AM PM Sat MD	33.1 s/v 30.6 s/v 24.9 s/v	C C C
7. Brea Boulevard at Birch Street	Brea	D	8Ø Traffic Signal	AM PM Sat MD	26.0 s/v 34.4 s/v 28.4 s/v	C C C
8. Randolph Avenue at Birch Street	Brea	D	5Ø Traffic Signal	AM PM Sat MD	15.9 s/v 22.5 s/v 21.2 s/v	B C C
9. State College Boulevard at Birch Street	Brea	D	8Ø Traffic Signal	AM PM Sat MD	38.7 s/v 32.6 s/v 38.6 s/v	D C D
10. S Associated Road at Birch Street	Brea	D	6Ø Traffic Signal	AM PM Sat MD	29.5 s/v 27.5 s/v 21.1 s/v	C C C

Notes:

- **Bold HCM/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 3-7 (CONTINUED)
EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersection	Jurisdiction	Minimum Acceptable LOS	Control Type	Time Period	Delay (sec/veh)	LOS
11. N Associated Road at Birch Street	Brea	D	6Ø Traffic Signal	AM PM Sat MD	27.4 s/v 27.4 s/v 18.2 s/v	C C B
12. Kraemer Boulevard at Birch Street	Brea	D	8Ø Traffic Signal	AM PM Sat MD	36.8 s/v 48.0 s/v 33.7 s/v	D D C
13. Randolph Avenue at Madison Way	Brea	D	5Ø Traffic Signal	AM PM Sat MD	17.9 s/v 18.2 s/v 18.7 s/v	B B B
14. Randolph Avenue at Brea Mall	Brea	D	6Ø Traffic Signal	AM PM Sat MD	8.4 s/v 18.9 s/v 23.9 s/v	A B C
15. Brea Mall South at State College Boulevard	Brea	D	6Ø Traffic Signal	AM PM Sat MD	15.7 s/v 27.7 s/v 34.0 s/v	B C C
16. Harbor Boulevard at Imperial Highway	La Habra/ Fullerton/ Caltrans	D ¹¹	8Ø Traffic Signal	AM PM Sat MD	45.8 s/v 45.1 s/v 40.5 s/v	D D D
17. Puente Street at Imperial Highway	Brea/ Fullerton/ Caltrans	D	5Ø Traffic Signal	AM PM Sat MD	20.6 s/v 20.9 s/v 15.1 s/v	C C B
18. Brea Boulevard at Imperial Highway	Brea/ Caltrans	D	8Ø Traffic Signal	AM PM Sat MD	45.7 s/v 40.3 s/v 43.5 s/v	D D D
19. Randolph Avenue at Imperial Highway	Brea/ Caltrans	D	6Ø Traffic Signal	AM PM Sat MD	13.2 s/v 26.7 s/v 49.1 s/v	B C D
20. State College Boulevard at Imperial Highway	Brea/ Caltrans	D	8Ø Traffic Signal	AM PM Sat MD	35.5 s/v 55.7 s/v 123.5 s/v	D E F

Notes:

- **Bold HCM/LOS** values indicate adverse service levels based on the City LOS standards.

¹¹ According to City of La Habra guidelines, LOS E is acceptable at this location but is shown as LOS D to be conservative.

TABLE 3-7 (CONTINUED)
EXISTING PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersection	Jurisdiction	Minimum Acceptable LOS	Control Type	Time Period	Delay (sec/veh)	LOS
21. SR-57 SB Ramps at Imperial Highway	Brea/ Caltrans	D	2Ø Traffic Signal	AM PM Sat MD	16.2 s/v 17.6 s/v 20.6 s/v	B B C
22. SR-57 NB Ramps at Imperial Highway	Brea/ Caltrans	D	4Ø Traffic Signal	AM PM Sat MD	30.4 s/v 27.8 s/v 34.3 s/v	C C C
23. Associated Road at Imperial Highway	Brea/ Caltrans	D	8Ø Traffic Signal	AM PM Sat MD	29.8 s/v 44.3 s/v 36.0 s/v	C D D
24. Castlegate Lane/Placentia Avenue at Imperial Highway	Brea/ Caltrans	D	6Ø Traffic Signal	AM PM Sat MD	20.0 s/v 29.7 s/v 24.7 s/v	B C C
25. Kraemer Boulevard at Imperial Highway	Brea/ Caltrans	D	8Ø Traffic Signal	AM PM Sat MD	28.8 s/v 37.6 s/v 32.6 s/v	C D C
26. Brea Boulevard at Bastanchury Road	Fullerton	D	8Ø Traffic Signal	AM PM Sat MD	44.1 s/v 42.5 s/v 37.7 s/v	D D D
27. State College Boulevard at Bastanchury Road	Fullerton	D	8Ø Traffic Signal	AM PM Sat MD	33.6 s/v 51.4 s/v 37.0 s/v	C D D

Notes:

- **Bold HCM/LOS** values indicate adverse service levels based on the City LOS standards.

4.0 TRAFFIC FORECASTING METHODOLOGY

In order to estimate the traffic impact characteristics of the proposed Project, a multi-step process has been utilized. The first step is traffic generation, which estimates the total arriving and departing traffic on a peak hour and daily basis. The traffic generation potential is forecast by applying the appropriate vehicle trip generation equations or rates to the project development tabulation.

The second step of the forecasting process is traffic distribution, which identifies the origins and destinations of inbound and outbound project traffic. These origins and destinations are typically based on demographics and existing/expected future travel patterns in the study area.

The third step is traffic assignment, which involves the allocation of project traffic to study area streets and intersections. Traffic assignment is typically based on minimization of travel time, which may or may not involve the shortest route, depending on prevailing operating conditions and travel speeds. Traffic distribution patterns are indicated by general percentage orientation, while traffic assignment allocates specific volume forecasts to individual roadway links and intersection turning movements throughout the study area.

With the forecasting process complete and project traffic assignments developed, the impact of the proposed project is isolated by comparing operational (LOS) conditions at selected key intersections using expected future traffic volumes with and without forecast project traffic. The need for site-specific and/or cumulative local area traffic improvements can then be evaluated and the significance of the project's impacts identified.

5.0 PROJECT TRAFFIC CHARACTERISTICS

5.1 Project Traffic Generation

Traffic generation is expressed in vehicle trip ends, defined as one-way vehicular movements, either entering or exiting the generating land use. Generation equations and/or rates used in the traffic forecasting procedure are found in the 10th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE) [Washington D.C., 2017] and empirical trip generation rates developed from studies of existing Lifetime Fitness facilities.

Table 5-1 summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and also presents the project's forecast peak hour and daily traffic volumes. As shown in the upper portion of *Table 5-1*, ITE Land Use 221: Multifamily Housing (Mid-Rise) trip rates and ITE Land Use 820: Shopping Center equations, and empirical rates from existing Lifetime Fitness facilities will be used to forecast the trip generation potential of a fully occupied existing Brea Mall and site, as well as the Project.

It should be noted that traffic patterns near Malls vary by time of year (i.e. holiday seasons). However, standard engineering practice consist of forecasting trips during a "typical" weekday and "typical" Saturday periods (non-holiday season). Therefore this standard practice has been applied in this report. It is very common for large shopping centers to have parking management plans in place to manage peak seasonal demands that are specific to its needs. It is anticipated that the current practices of the Brea Mall as it relates to seasonal peaks will continue to apply and/or be adjusted accordingly.

A review of the middle portion of *Table 5-1* indicates that a fully occupied Brea Mall (including the currently vacant second story of Sears) (Row B) is forecast to generate approximately 30,817 Weekday daily trips, with 757 trips (469 inbound, 288 outbound) produced in the Weekday AM peak hour and 3,247 trips (1,559 inbound, 1,688 outbound) produced in the Weekday PM peak hour on a "typical" weekday. A fully occupied Brea Mall is forecast to generate 39,183 Saturday daily trips, with 4,204 trips (2,186 inbound, 2,018 outbound) produced in the Saturday Midday peak hour on a "typical" Saturday.

The lower portion of *Table 5-1* presents the trip generation associated with the existing occupied Brea Mall and the additional proposed Project uses (Row C). A review of lower portion of this table indicates that the proposed Project with the existing Brea Mall is forecast to generate approximately 34,957 Weekday daily trips, with 1,072 trips (634 inbound, 438 outbound) produced in the Weekday AM peak hour and 3,671 trips (1,840 inbound, 1,831 outbound) produced in the Weekday PM peak hour on a "typical" weekday. The proposed Project with the existing Brea Mall is forecast to generate 43,214 Saturday daily trips, with 4,645 trips (2,358 inbound, 2,287 outbound) produced in the Saturday Midday peak hour on a "typical" Saturday.

When the proposed Project is compared to an existing fully occupied Brea Mall site, the proposed Project is forecast to generate 4,140 more Weekday daily trips, 315 more Weekday AM peak hour trips, 424 more Weekday PM peak hour trips, 4,031 more Saturday daily trips, and 441 more

Saturday Midday peak hour trips. The potential impact of these added Project trips has been evaluated in this traffic analysis.

5.2 Project Traffic Distribution and Assignment

Figures 5-1 and **5-2** presents the Project Trip Distribution for the commercial and residential components, respectively. The Project Trip Distribution for the retail and residential components have been distributed and assigned to the adjacent street system based on Project Select Zone model runs and have been further refined based on the following considerations:

- Recognition that the Brea Mall draws traffic from the surrounding region, and is not just a local area attraction.
- location of site access points in relation to the surrounding street system,
- the site's immediate proximity to major traffic carriers and regional access routes, such as the SR-57 Freeway and SR-90 (Imperial Highway),
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- presence of traffic congestion in the surrounding vicinity,
- ingress/egress availability at the project site, and
- input by City Staff.

It should be noted that Project traffic has been distributed to the Brea Mall's existing site access intersections of Randolph Avenue at Brea Mall and Brea Mall South at State College Boulevard due to the location of the proposed Project in the southwest portion of the Brea Mall site. From a review of *Figure 5-1*, approximately 36% and 54% of the Project's new commercial traffic is forecast to utilize Randolph Avenue at Brea Mall and Brea Mall South at State College Boulevard, respectively. As shown in *Figure 5-2*, approximately 83% and 17% of the Project's residential traffic utilize Randolph Avenue at Brea Mall and Brea Mall South at State College Boulevard, respectively,

The anticipated weekday AM and PM peak hour and weekend (Saturday) midday peak hour project traffic volumes associated with the proposed Project are presented in **Figures 5-3, 5-4** and **5-5**, respectively. *Figures 5-4* and *5-5* also present the weekday and weekend daily Project traffic volumes, respectively. The traffic volume assignments presented in *Figures 5-3, 5-4* and *5-5* reflect the traffic distribution characteristics shown in *Figures 5-1* and *5-2* and the traffic generation forecast presented in *Table 5-1*.

5.3 Existing Plus Project Traffic Conditions

The Existing Plus Project traffic conditions have been generated based upon existing conditions and the estimated Project traffic. These forecast traffic conditions have been prepared to assess the potential impacts of the Project upon the circulation system as it currently exists. This traffic volume scenario and the related intersection capacity analyses will identify the roadway improvements necessary to mitigate the direct traffic impacts of the Project, if any.

Figures 5-6, 5-7 and **5-8** present projected weekday AM and PM peak hour and weekend (Saturday) midday peak hour traffic volumes at the twenty-nine (29) key study intersections with the addition of

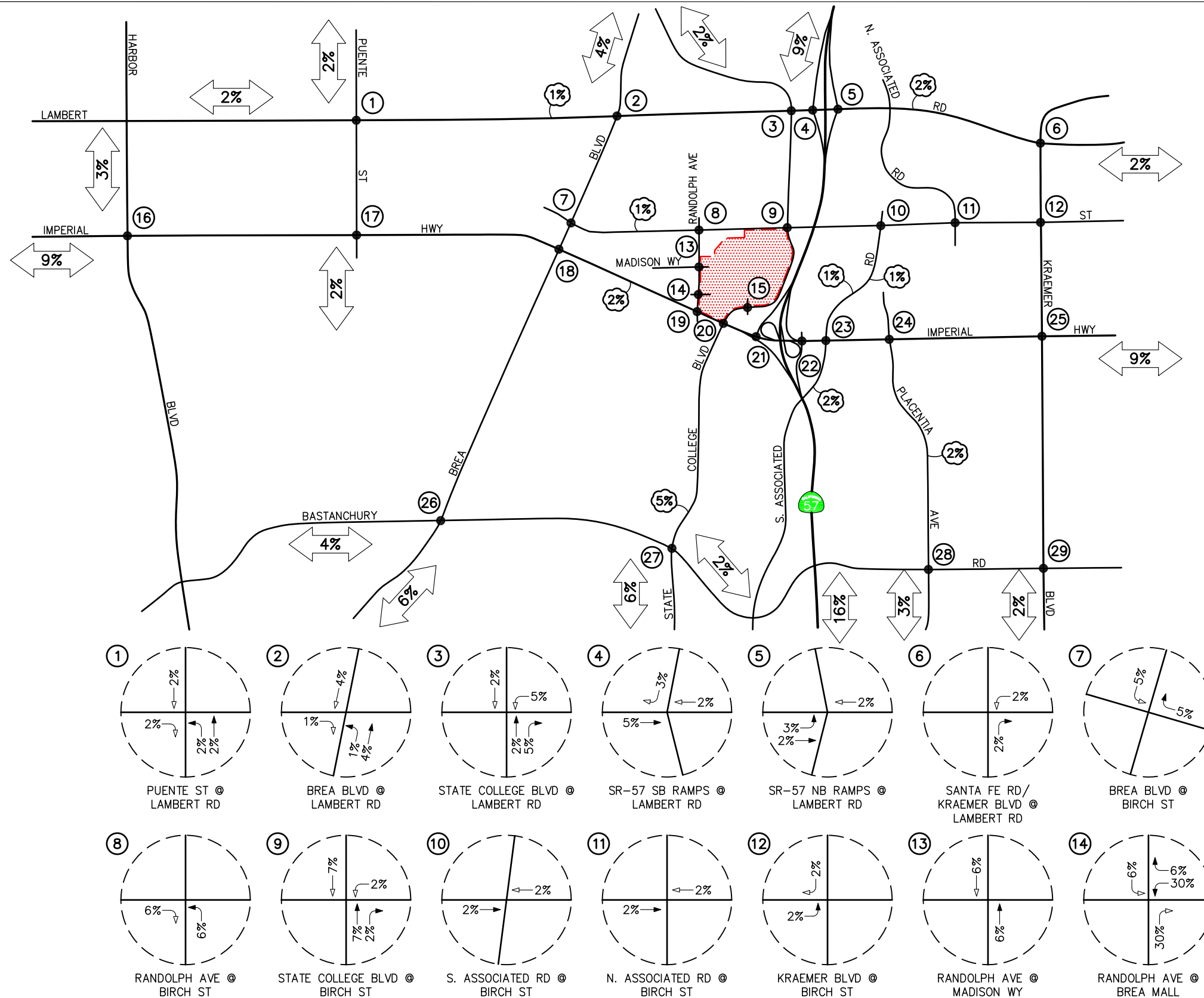
the trips generated by the proposed Project to existing traffic volumes, respectively. *Figures 5-7 and 5-8* also presents the Existing Plus Project daily traffic volumes for a weekday and weekend, respectively.

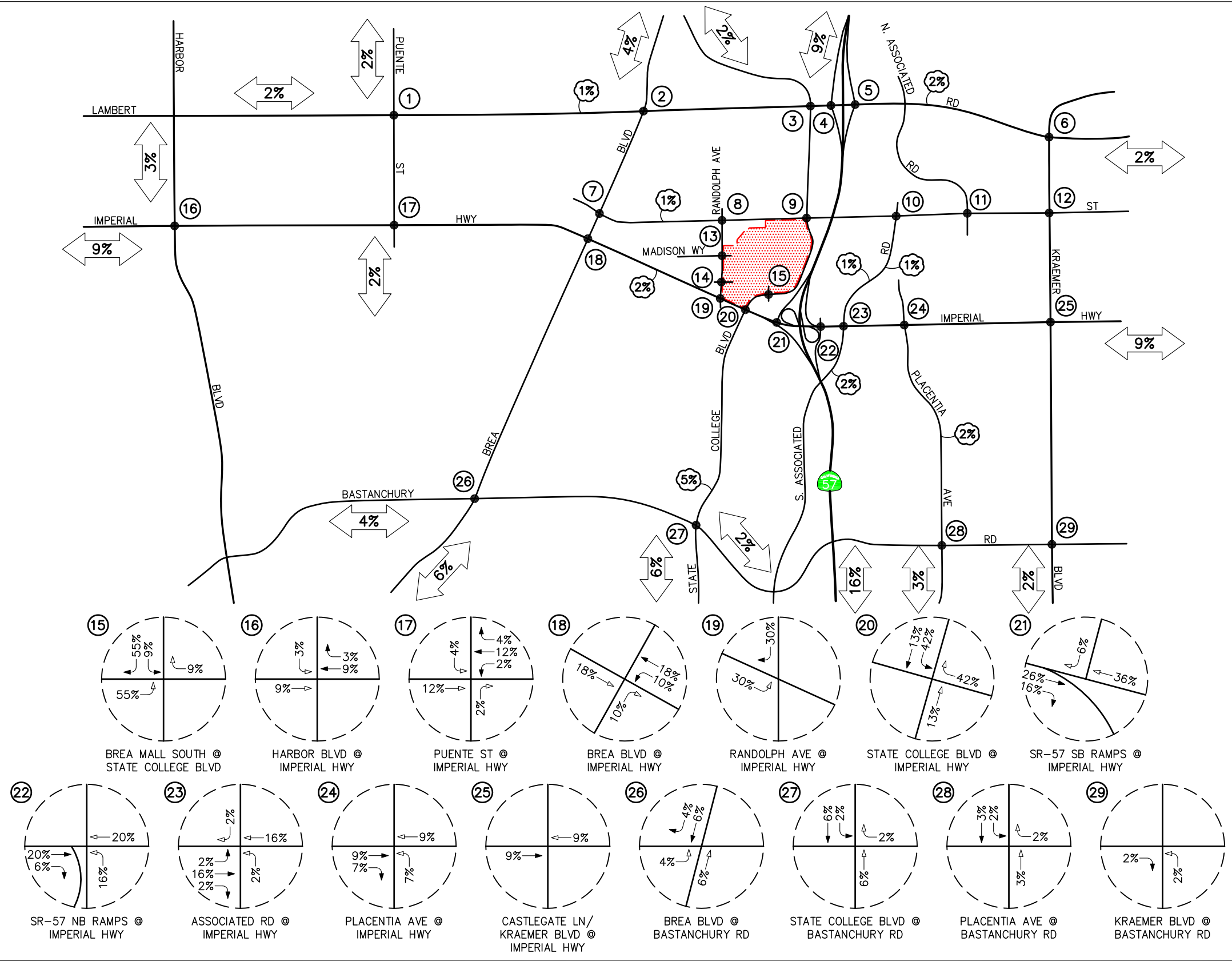
TABLE 5-1
PROJECT TRAFFIC GENERATION RATES AND FORECAST¹²

ITE Land Use Code/ Project Description	Weekday							Saturday			
	Daily 2-Way	AM Peak Hour			PM Peak Hour			Daily 2-Way	MD Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total		Enter	Exit	Total
<u>Trip Generation Factors:</u>											
• 221: Multifamily Housing (Mid-Rise) (TE/DU) ¹³	5.44	26%	74%	0.36	61%	39%	0.44	4.91	49%	51%	0.44
• 820: Shopping Center (TE/TSF GLA)	Eq. ¹⁴	62%	38%	Eq. ¹⁴	48%	52%	Eq. ¹⁴	Eq. ¹⁴	52%	48%	Eq. ¹⁴
• Empirical Life Time Fitness/Health Club (TE/TSF) ¹⁵	27.44	1.02	0.51	1.53	1.85	0.97	2.83	26.35	1.04	1.79	2.83
<u>[A] Existing Occupied Brea Mall:</u>											
• Existing Shopping Center (1,210,438 SF)	32,766	469	288	757	1,651	1,788	3,439	41,824	2,308	2,130	4,438
Pass-by Reduction ¹⁶	<u>-3,277</u>	<u>-23</u>	<u>-15</u>	<u>-38</u>	<u>-165</u>	<u>-179</u>	<u>-344</u>	<u>-4,182</u>	<u>-231</u>	<u>-213</u>	<u>-444</u>
<u>[A] Existing Occupied Brea Mall Subtotal</u>	29,489	446	273	719	1,486	1,609	3,095	37,642	2,077	1,917	3,994
<u>[B] Existing Occupied Brea Mall + Vacancy:</u>											
• Fully Occupied Shopping Center (1,291,433 SF) ¹⁷	34,241	494	303	797	1,732	1,876	3,608	43,537	2,429	2,242	4,671
Pass-by Reduction ¹⁶	<u>-3,424</u>	<u>-25</u>	<u>-15</u>	<u>-40</u>	<u>-173</u>	<u>-188</u>	<u>-361</u>	<u>-4,354</u>	<u>-243</u>	<u>-224</u>	<u>-467</u>
<u>[B] Fully Occupied Brea Mall Total</u>	30,817	469	288	757	1,559	1,688	3,247	39,183	2,186	2,018	4,204
<u>[C] Existing Occupied Brea Mall + Proposed Project:</u>											
• Proposed Shopping Center (1,313,058 SF) ¹⁸	34,630	501	307	808	1,753	1,900	3,653	43,988	2,461	2,272	4,733
Internal Capture ¹⁹	<u>-747</u>	<u>-1</u>	<u>-1</u>	<u>-2</u>	<u>-22</u>	<u>-39</u>	<u>-61</u>	<u>-674</u>	<u>-29</u>	<u>-31</u>	<u>-60</u>
<u>Proposed Shopping Center Subtotal</u>	33,883	500	306	806	1,731	1,861	3,592	43,314	2,432	2,241	4,673
Pass-by Reduction ¹⁶	<u>-3,388</u>	<u>-25</u>	<u>-15</u>	<u>-40</u>	<u>-173</u>	<u>-186</u>	<u>-359</u>	<u>-4,331</u>	<u>-243</u>	<u>-224</u>	<u>-467</u>
<u>Proposed Shopping Center Subtotal</u>	30,495	475	291	766	1,558	1,675	3,233	38,983	2,189	2,017	4,206
• Proposed Health Club (128,000 SF)	3,512	131	65	196	237	125	362	3,373	133	229	362
• Proposed Residential (312 DU)	1,697	29	83	112	84	53	137	1,532	67	70	137
Internal Capture ¹⁹	<u>-747</u>	<u>-1</u>	<u>-1</u>	<u>-2</u>	<u>-39</u>	<u>-22</u>	<u>-61</u>	<u>-674</u>	<u>-31</u>	<u>-29</u>	<u>-60</u>
<u>Proposed Residential Subtotal</u>	950	28	82	110	45	31	76	858	36	41	77
<u>[C] Existing Occupied Brea Mall + Proposed Project Total</u>	34,957	634	438	1,072	1,840	1,831	3,671	43,214	2,358	2,287	4,645
[D] Net Trip Generation											
[C] (Existing Occupied Brea Mall + Proposed Project)	4,140	165	150	315	281	143	424	4,031	172	269	441
– [B] (Existing Occupied Brea Mall + Vacancy)											

Notes:
TE/TSF GLA = Trip End per Thousand Square Feet Gross Leasable Area
TE/DU = Trip End per Dwelling Unit

¹² Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).
¹³ Mid-Rise Multifamily Housing consists of buildings that are between 3 and 10 levels.
¹⁴ Trip Generation rates based on the following equations:
▪ Weekday Daily: $\text{Ln}(T) = 0.68\text{Ln}(X) + 5.57$
▪ Weekday AM Peak Hour: $T = 0.50(X) + 151.78$
▪ Weekday PM Peak Hour: $\text{Ln}(T) = 0.74\text{Ln}(X) + 2.89$
▪ Saturday Daily: $\text{Ln}(T) = 0.62\text{Ln}(X) + 6.24$
▪ Saturday Peak Hour of Generator: $\text{Ln}(T) = 0.79\text{Ln}(X) + 2.79$
¹⁵ Source: *Northshore Mall Redevelopment Traffic Impact and Access Study Appendix Table A-2*, prepared by VHB, dated April 2018. Based on trip rates from empirical count data collected by VHB at Life Time Fitness facilities in Westwood and Framingham, Massachusetts.
¹⁶ The pass-by trip reductions applied to retail trips are 10% for Weekday Daily, 5% for Weekday AM peak hour, 10% for Weekday PM peak hour, 10% for Saturday Daily, and 10% for Saturday Midday peak hour.
¹⁷ The fully occupied Brea Mall includes the existing 1,210,438 SF of occupied mall and 80,995 SF of second floor Sears vacancy.
¹⁸ The proposed Brea Mall includes the existing 1,210,438 SF of occupied mall, 80,995 SF of the occupied first floor of the Sears building to be demolished, and 183,615 SF of additional commercial.
¹⁹ Consistent with the *Trip Generation Handbook*, published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail and residential components of the Project. As there is no Saturday internal capture worksheets available, Weekday Daily and Weekday PM peak hour calculations have been applied to Saturday Daily and Saturday Midday peak hour.





KEY

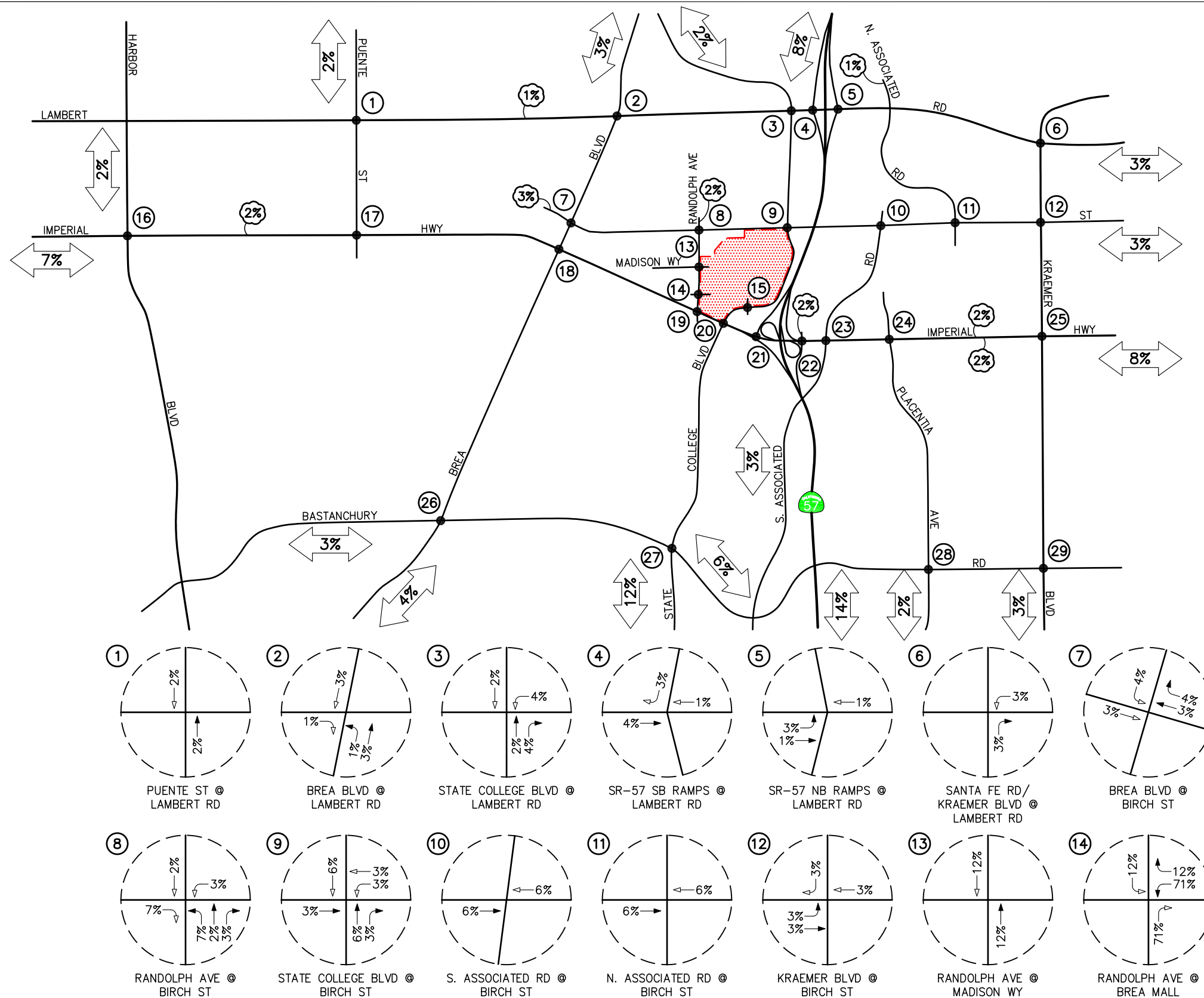
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- ← = INBOUND PERCENTAGE
- = OUTBOUND PERCENTAGE
- [Red Hatched Box] = PROJECT SITE

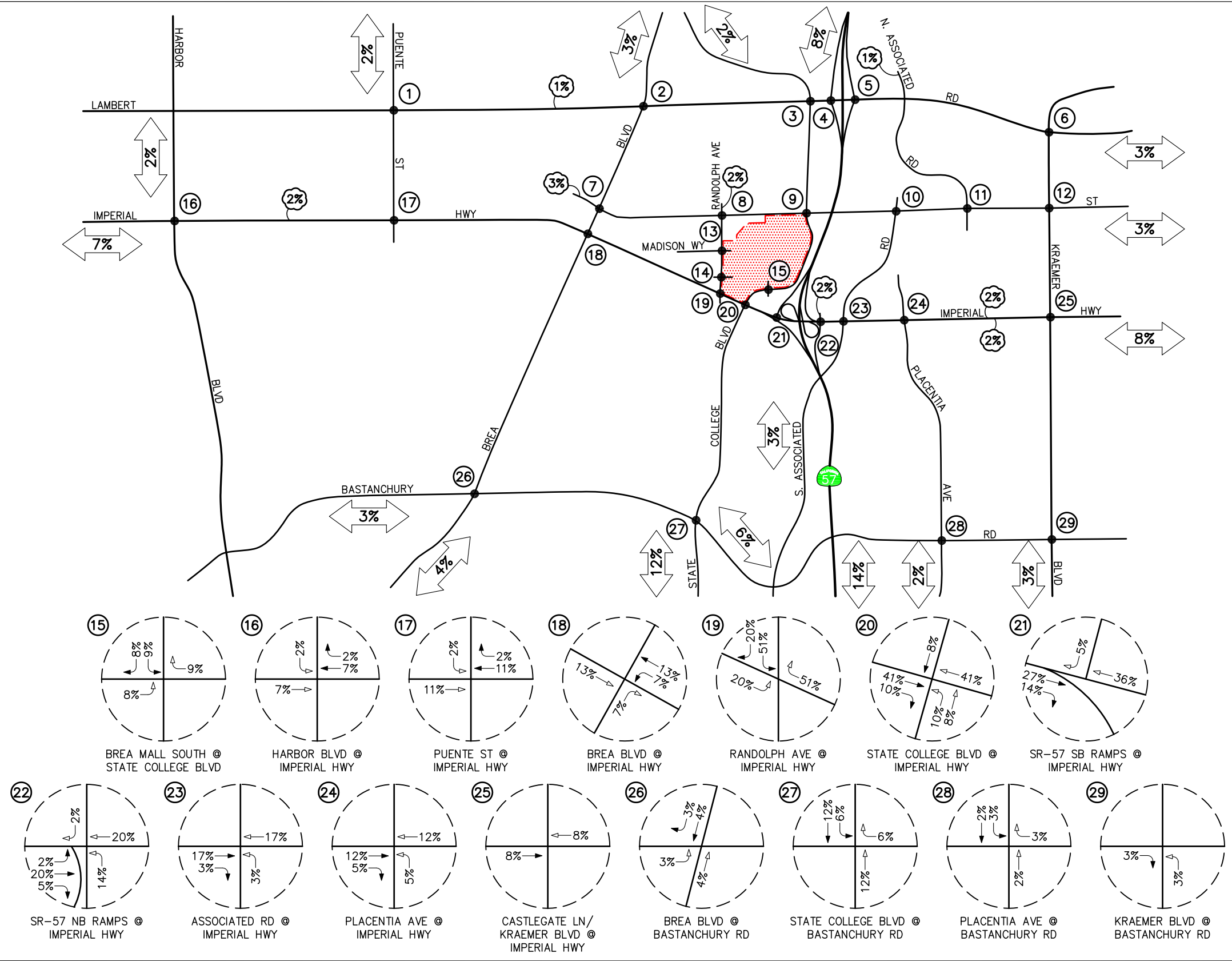
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LAW &
GREENSPAN**
engineers

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NO SCALE

FIGURE 5-1B

PROJECT TRIP DISTRIBUTION – COMMERCIAL
BREMA MALL MIXED-USE PROJECT, BREMA





KEY

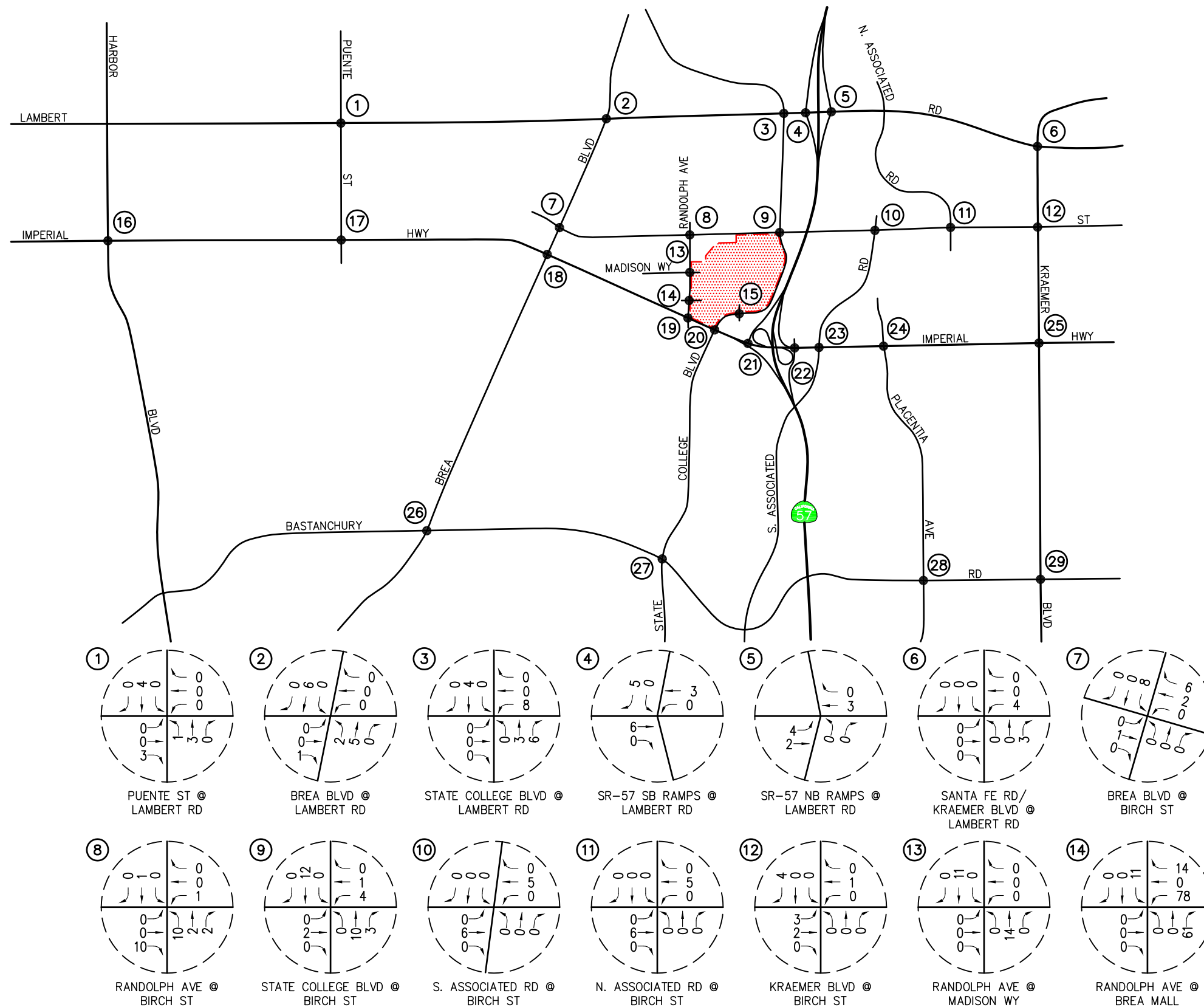
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- ← = INBOUND PERCENTAGE
- = OUTBOUND PERCENTAGE
- [Red Shaded Box] = PROJECT SITE

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FIGURE 5-2B

PROJECT TRIP DISTRIBUTION – RESIDENTIAL
BREA MALL MIXED-USE PROJECT, BREA



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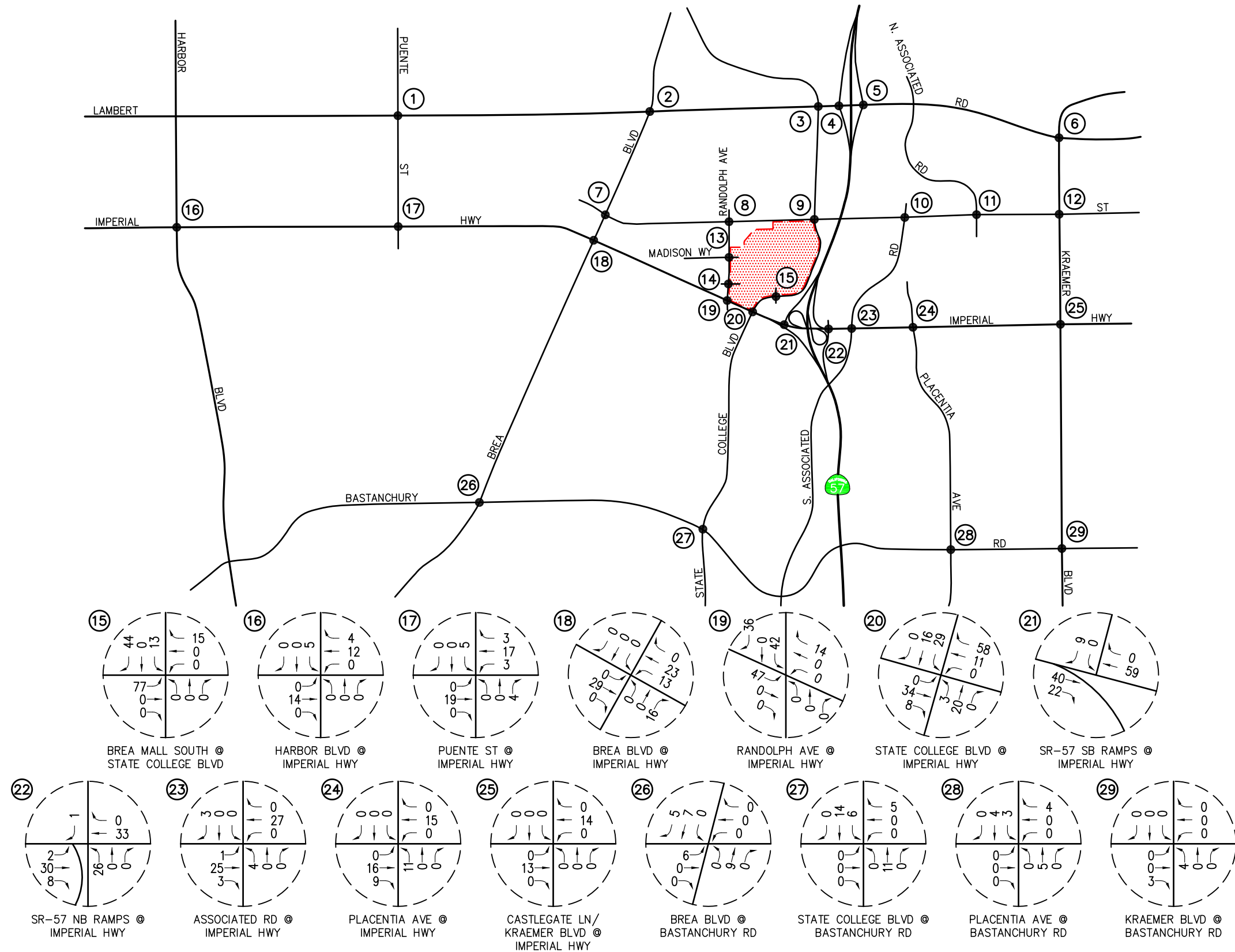
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[Red Hatched Box] = BREA MALL



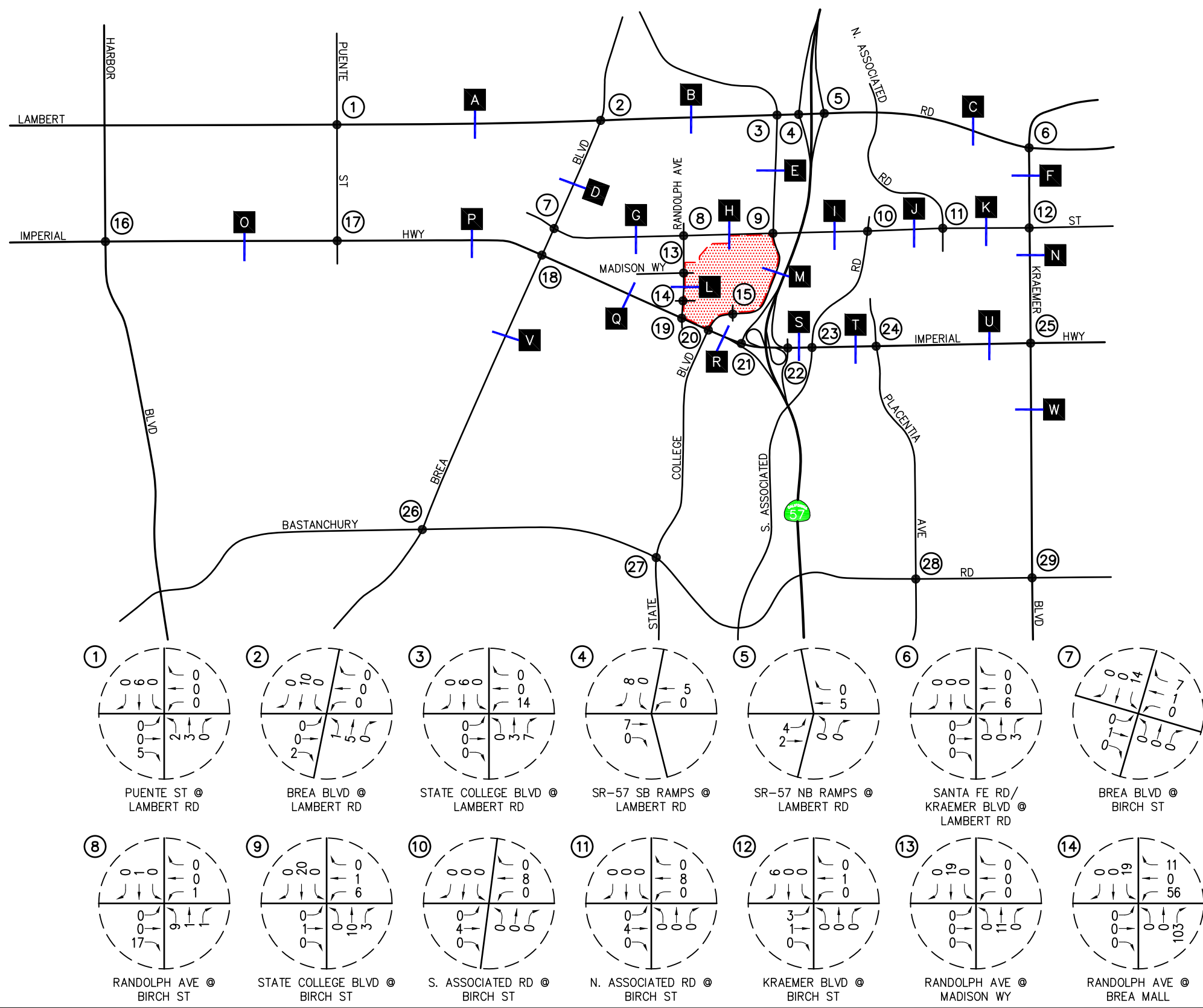
FIGURE 5-3A

WEEKDAY AM PEAK HOUR PROJECT TRAFFIC VOLUMES
BREA MALL MIXED-USE PROJECT, BREA



n:\4000\2194099 - brea mall expansion & improvement, brea\dwg\4099 f5-4a.dwg LDP 09:38:18 11-13-2019 agular

LOCATION	VOLUME
A	42
B	0
C	74
D	198
E	280
F	93
G	258
H	29
I	121
J	121
K	121
L	1,262
M	373
N	0
O	488
P	698
Q	1,147
R	1,730
S	828
T	672
U	401
V	386
W	0



KEY

#

= STUDY INTERSECTION (PEAK HOUR)

#

= STUDY ROADWAY SEGMENT (DAILY)

= BREA MALL

FIGURE 5-4A

WEEKDAY PM PEAK HOUR AND DAILY PROJECT TRAFFIC VOLUMES

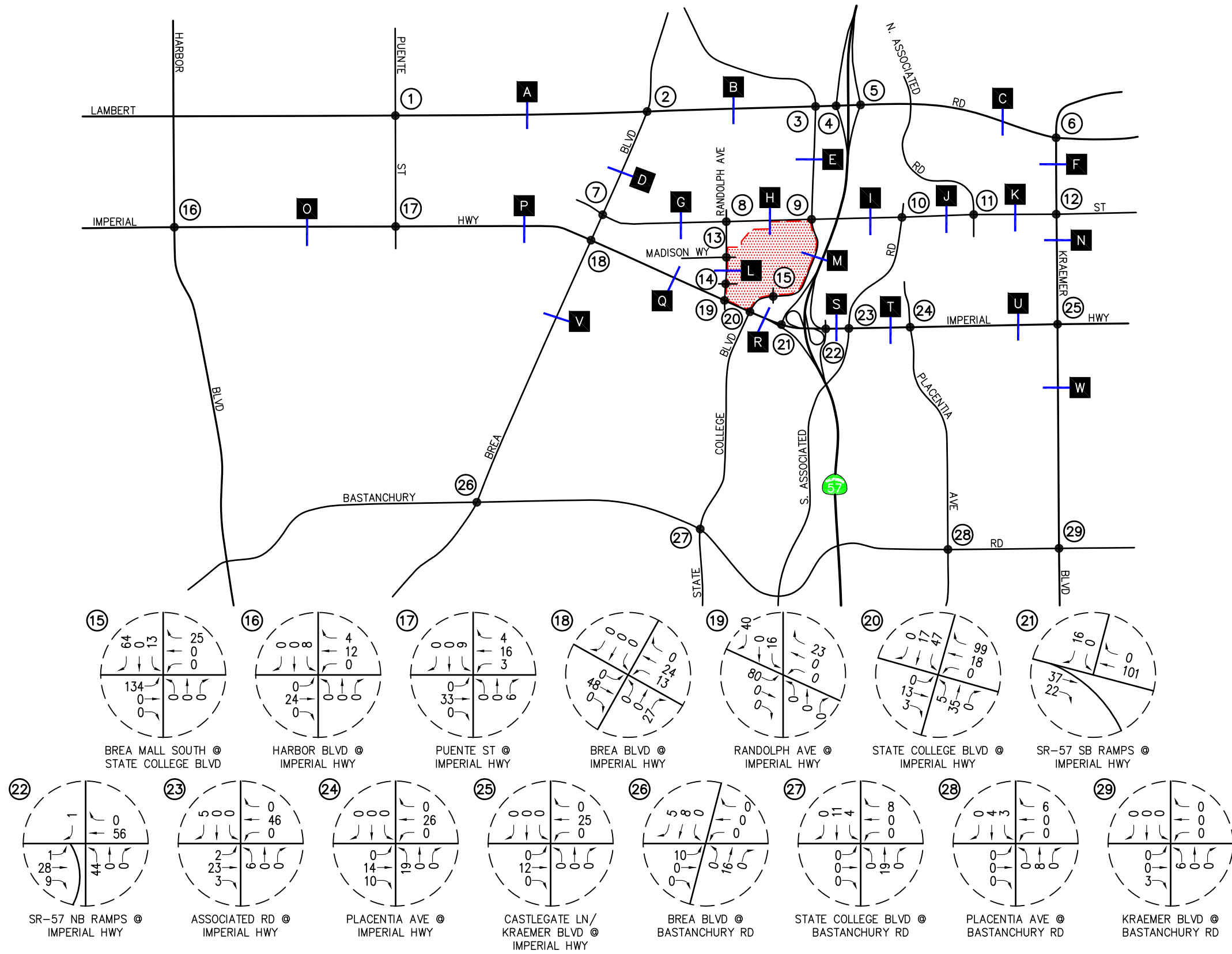
BREA MALL MIXED-USE PROJECT, BREA

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engineers

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NO SCALE

LOCATION	VOLUME
A	42
B	0
C	74
D	198
E	280
F	93
G	258
H	29
I	121
J	121
K	121
L	1,262
M	373
N	0
O	488
P	698
Q	1,147
R	1,730
S	828
T	672
U	401
V	386
W	0



KEY

- # = STUDY INTERSECTION (PEAK HOUR)
- # = STUDY ROADWAY SEGMENT (DAILY)
- [Red Dotted Area] = BREA MALL

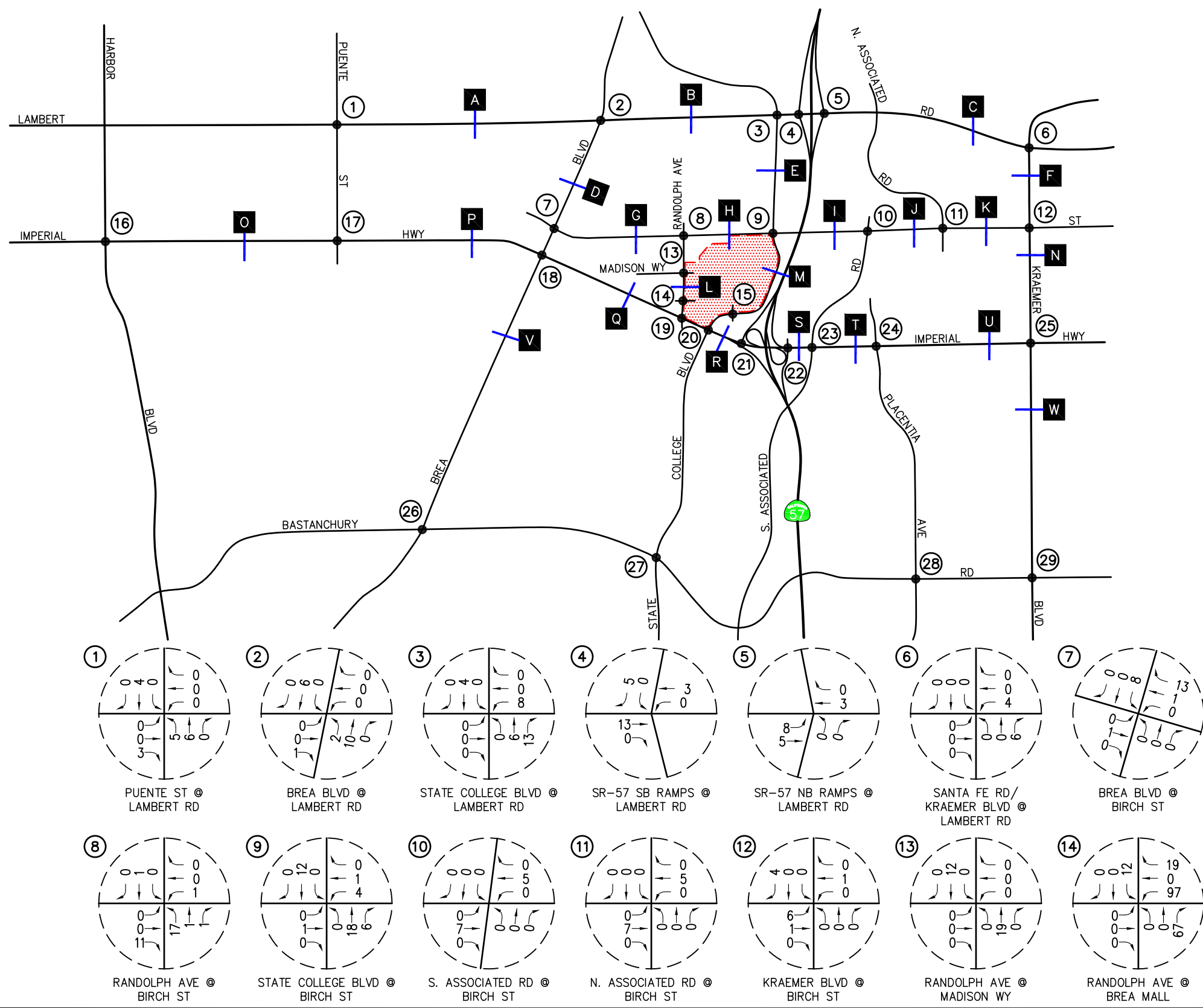
FIGURE 5-4B

WEEKDAY PM PEAK HOUR AND DAILY PROJECT TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREA

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LOCATION	VOLUME
A	41
B	0
C	72
D	193
E	273
F	89
G	250
H	26
I	114
J	114
K	114
L	1,245
M	363
N	0
O	475
P	683
Q	1,124
R	1,885
S	807
T	654
U	389
V	377
W	0



KEY

#

= STUDY INTERSECTION (PEAK HOUR)

#

= STUDY ROADWAY SEGMENT (DAILY)

= BREA MALL

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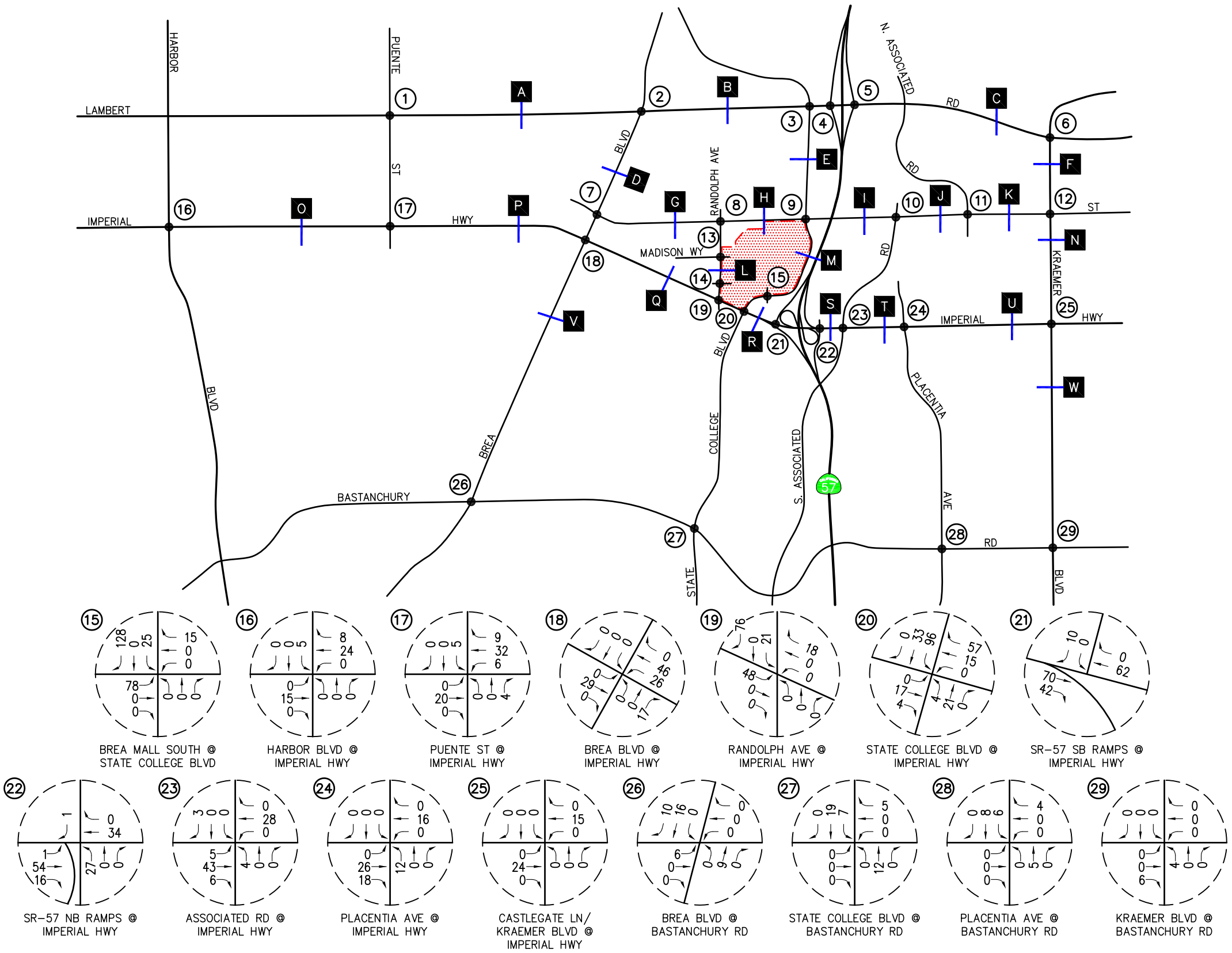
N
NO SCALE

FIGURE 5-5A

WEEKEND (SATURDAY) MIDDAY PEAK HOUR
AND DAILY PROJECT TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	41
B	0
C	72
D	193
E	273
F	89
G	250
H	26
I	114
J	114
K	114
L	1,245
M	363
N	0
O	475
P	683
Q	1,124
R	1,885
S	807
T	654
U	389
V	377
W	0



KEY

= STUDY INTERSECTION (PEAK HOUR)

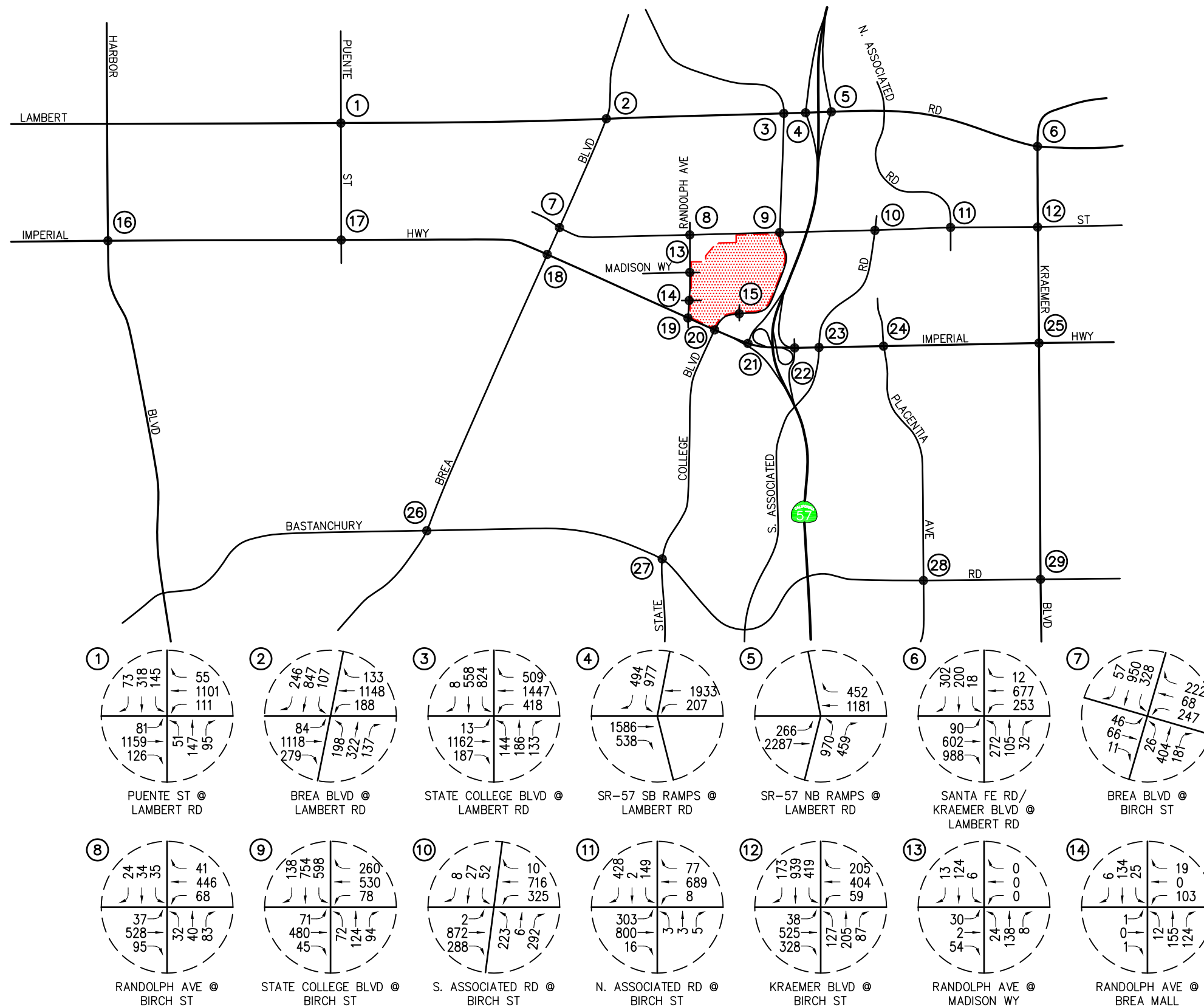
= STUDY ROADWAY SEGMENT (DAILY)

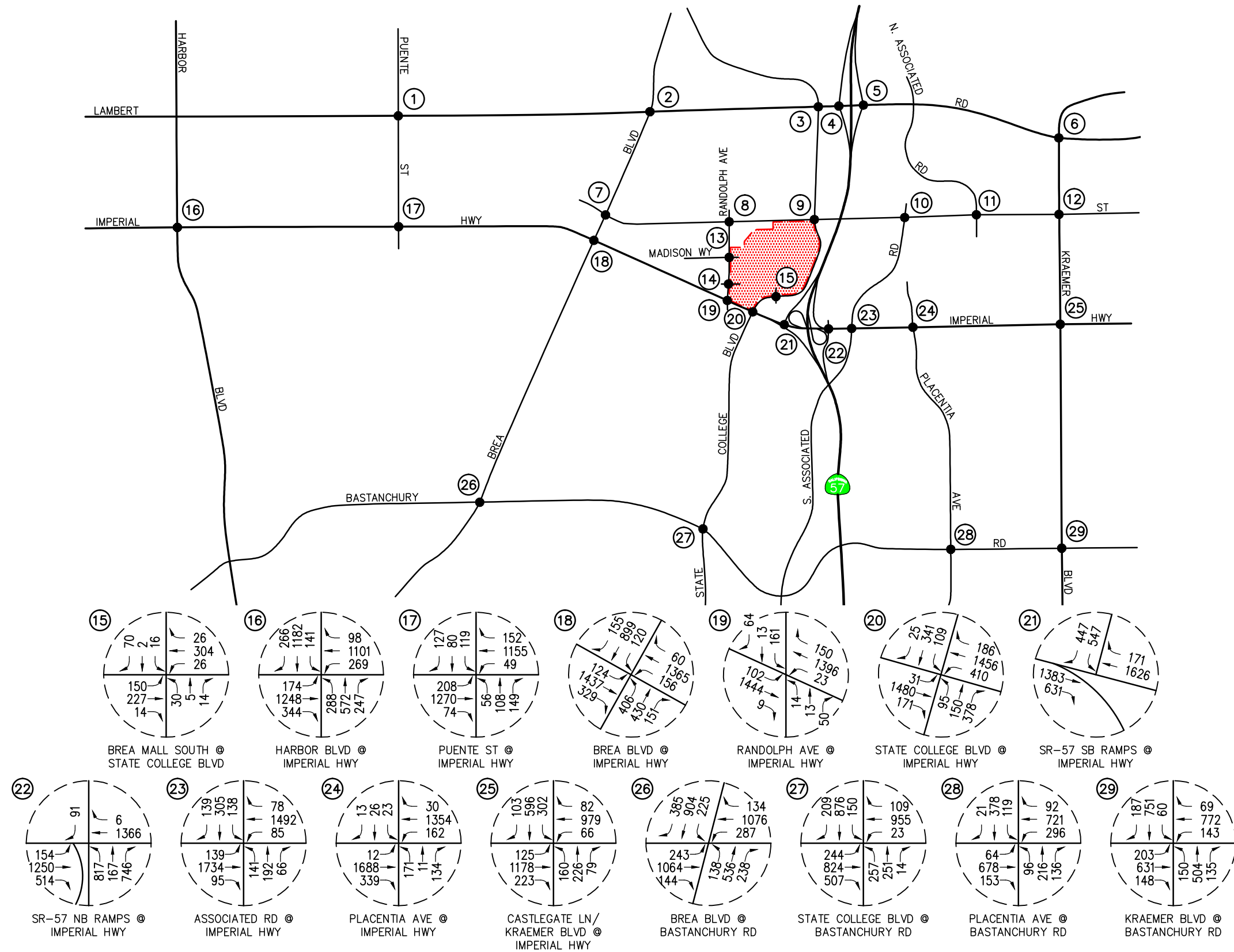
■ = BREA MALL

FIGURE 5-5B

WEEKEND (SATURDAY) MIDDAY PEAK HOUR
AND DAILY PROJECT TRAFFIC VOLUMES
BREA MALL MIXED-USE PROJECT, BREA





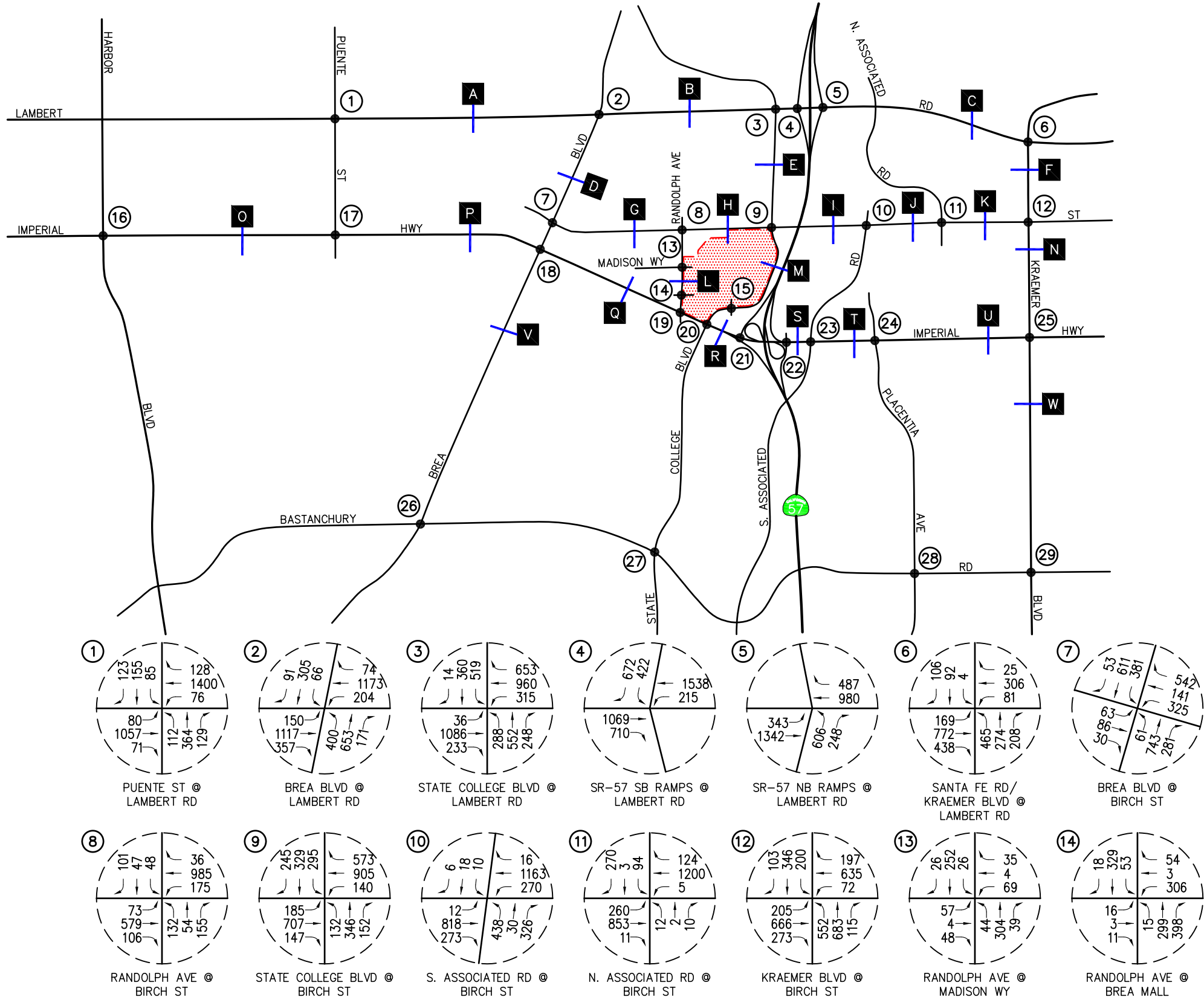


KEY
 # = STUDY INTERSECTION
 [Red Hatched Box] = BREA MALL

FIGURE 5-6B

**EXISTING PLUS PROJECT WEEKDAY
 AM PEAK HOUR TRAFFIC VOLUMES**
 BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	34,594
B	37,156
C	33,507
D	27,354
E	22,036
F	16,856
G	18,126
H	19,370
I	24,863
J	24,366
K	20,878
L	8,872
M	13,950
N	19,885
O	42,787
P	57,000
Q	54,696
R	74,272
S	54,683
T	52,378
U	52,187
V	31,047
W	19,886



KEY

① = STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

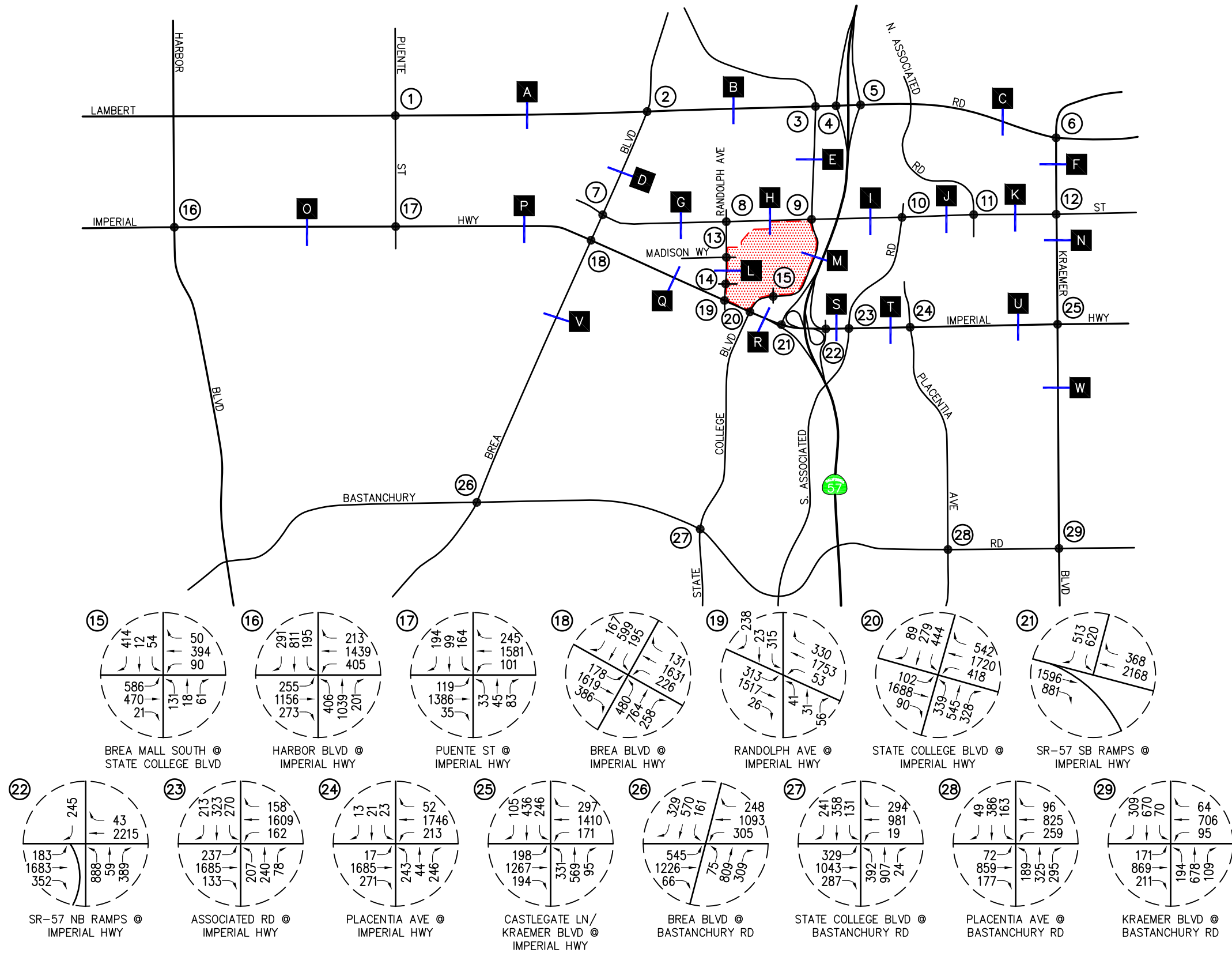
[Red Hatched Box] = BREA MALL

FIGURE 5-7A

**EXISTING PLUS PROJECT WEEKDAY
PM PEAK HOUR AND DAILY TRAFFIC VOLUMES**
BREA MALL MIXED-USE PROJECT, BREA

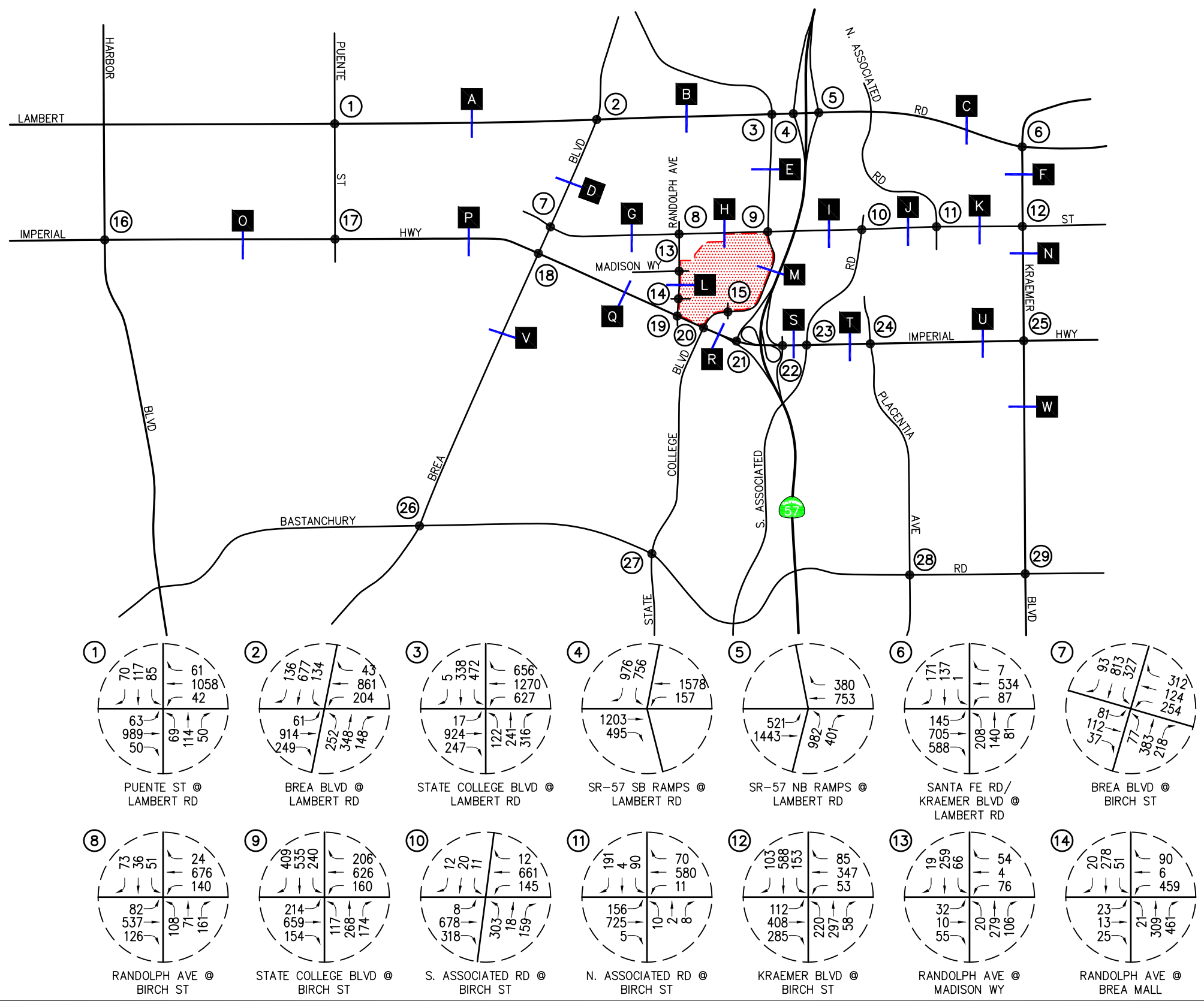


LOCATION	VOLUME
A	34,594
B	37,156
C	33,507
D	27,354
E	22,036
F	16,856
G	18,126
H	19,370
I	24,863
J	24,366
K	20,878
L	8,872
M	13,950
N	19,885
O	42,787
P	57,000
Q	54,696
R	74,272
S	54,683
T	52,378
U	52,187
V	31,047
W	19,886



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LOCATION	VOLUME
A	35,958
B	38,622
C	34,827
D	28,429
E	22,899
F	17,516
G	18,832
H	17,378
I	25,835
J	25,319
K	21,693
L	9,073
M	14,490
N	20,670
O	44,463
P	59,235
Q	56,834
R	77,156
S	56,819
T	54,427
U	54,233
V	32,264
W	20,671



KEY

#

= STUDY INTERSECTION (PEAK HOUR)

#

= STUDY ROADWAY SEGMENT (DAILY)

= BREA MALL

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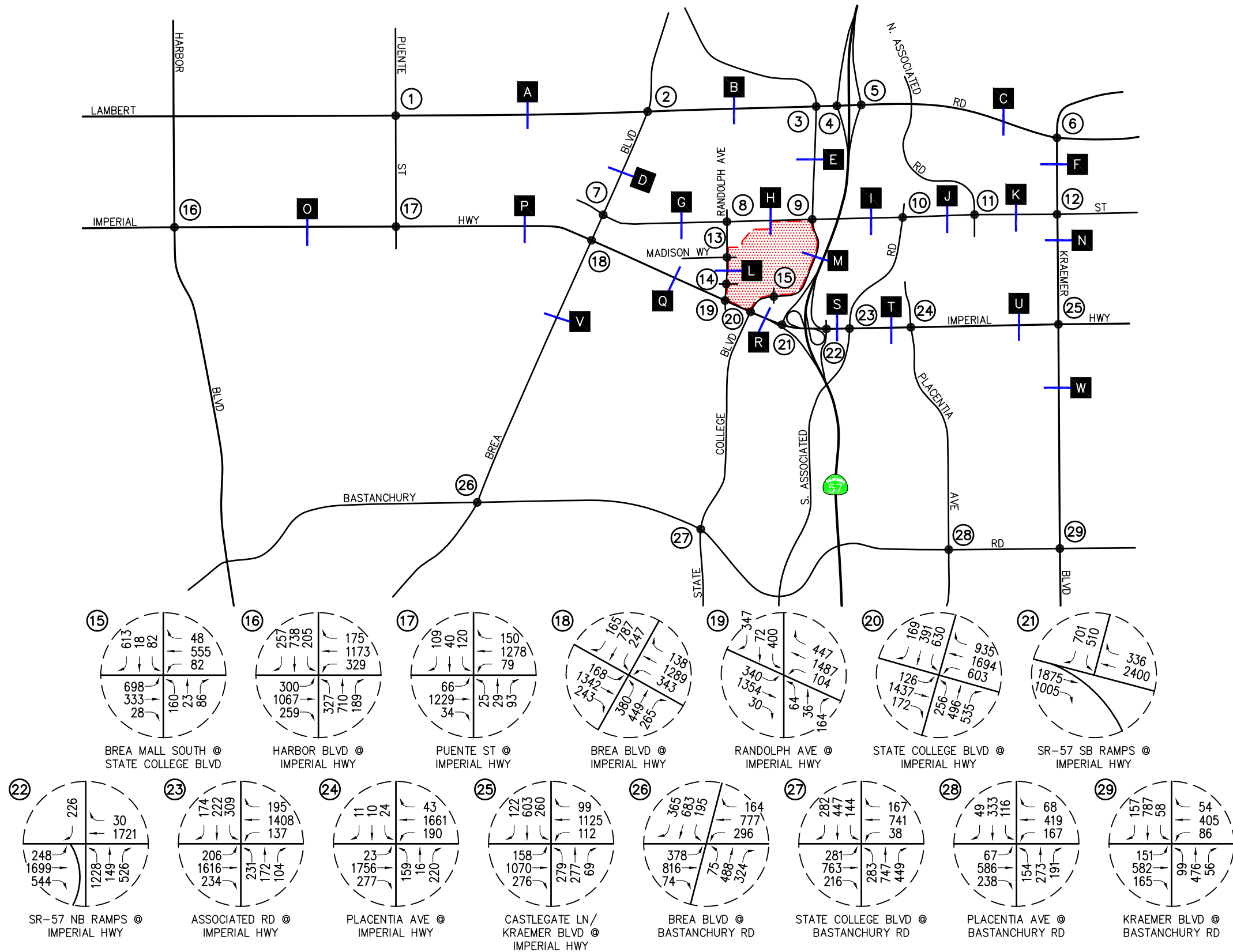
NO SCALE

FIGURE 5-8A

EXISTING PLUS PROJECT WEEKEND (SATURDAY)
MIDDAY PEAK HOUR AND DAILY TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	35,958
B	38,622
C	34,827
D	28,429
E	22,899
F	17,516
G	18,832
H	17,378
I	25,835
J	25,319
K	21,693
L	9,073
M	14,490
N	20,670
O	44,463
P	59,235
Q	56,834
R	77,156
S	56,819
T	54,427
U	54,233
V	32,264
W	20,671



6.0 FUTURE TRAFFIC CONDITIONS

6.1 Ambient Traffic Growth

Horizon year, background traffic growth estimates have been calculated using an ambient traffic growth factor. The ambient traffic growth factor is intended to include unknown and future related projects in the study area, as well as account for regular growth in traffic volumes due to the development of projects outside the study area. The future growth in traffic volumes has been calculated at one percent (1.0%) per year. Applied to the Year 2019 existing traffic volumes, this factor results in an 3.0% growth in existing volumes to the near-term horizon year 2022.

6.2 Related Projects Traffic Characteristics

In order to make a realistic estimate of future on-street conditions prior to implementation of the proposed Project, the status of other known development projects (related projects) within the area of the proposed project has been researched at the City of Brea, City of La Habra, and City of Fullerton. With this information, the potential impact of the proposed Project can be evaluated within the context of the cumulative impact of all ongoing development.

Based on our research during the scoping process, there are six (6) related projects in the City of Brea and one (1) related projects in the City of Fullerton that are being processed for approval. All of these related projects have been included as part of the cumulative background setting.

Table 6-1 provides a brief description for each of the seven (7) related projects. *Figure 6-1* graphically illustrates the location of the seven (7) related projects. These related projects are expected to generate vehicular traffic, which may affect the operating conditions of the key study intersections. In addition to the development projects noted in *Table 6-1*, roadway/interchange improvements associated with the SR-57 Lambert Interchange improvement project, now under construction, have been included in the Year 2022 and Year 2040 cumulative traffic conditions (See Section 10.1 for additional information).

Table 6-2 summarizes the trip generation potential for all seven (7) related projects on a weekday daily and peak hour basis and on a weekend (Saturday) basis and midday peak hour. As shown, the related projects are expected to generate 28,114 weekday daily trips, with 2,303 trips (1,134 inbound, 1,169 outbound) anticipated during the weekday AM peak hour and 2,571 trips (1,272 inbound, 1,299 outbound) produced during the weekday PM peak hour. On a weekend (Saturday), the related projects are forecast to generate 27,156 weekend daily trips, with 2,527 trips (1,301 inbound, 1,226 outbound) anticipated during the weekend midday peak hour.

The weekday AM and PM peak hour traffic volumes associated with six (6) of the seven (7) related projects in the Year 2022 are presented in *Figures 6-2* and *6-3*, respectively, whereas the weekend (Saturday) midday peak hour traffic volumes are presented in *Figure 6-4*. *Figures 6-3* and *6-4* also present the weekday and weekend daily related project traffic volumes. Per the direction of City staff the Brea 265 Specific Plan Project has been included as a related project as part of only Year 2040 background traffic conditions.

TABLE 6-1
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS²⁰

No.	Description	Location/Address	Size
<u>City of Brea</u> ²¹			
1.	CVS	390 N. Brea Boulevard	13,000 SF Pharmacy with Drive-Through, 1,700 SF Coffee Shop with Drive-through
2.	Brea Place	State College Boulevard at Birch Street	653 DU Apartments, 5,000 SF Office, 150 Room Hotel ²²
3.	Downtown Hotel	220 S. Brea Boulevard	116 Room Hotel, 4,000 SF High Turnover Sit Down Restaurant
4.	Mercury Apartments	Southwest corner of Berry Street at Mercury Lane	120 DU Apartments
5.	Brea Plaza Expansion Project	409-477 S. Associated Road & 1555, 1609, 1623, 1643 E. Imperial Highway	Demolish 18,750 SF Movie Theater and 7,500 SF Restaurant; Construct 150 Room Hotel, 4,997 SF Restaurant, 16,914 SF Office
6.	Brea 265 Specific Plan ¹⁹	South of Lambert Road/Carbon Canyon Road, north of Rose Drive, east of Valencia Avenue and west of Carbon Canyon Regional Park	1,100 residential units, consisting of 606 single-family homes and 494 multi-family residential units.
<u>City of Fullerton</u>			
7.	Beckman Business Center	4300 North Harbor Boulevard	522,250 SF Warehousing, 166,185 SF General Light Industrial, 248,230 SF Manufacturing, 42,000 SF Office

²⁰ Source: City of Brea, Fullerton, and La Habra Planning Departments.

²¹ Per the direction of City staff the Brea 265 Specific Plan Project has been included as a related project as part of Year 2040 background traffic conditions.

²² The traffic impact analysis conservatively evaluated 790 units as originally planned, which would result in higher traffic volumes in the cumulative scenarios.



- KEY**
- 1. CVS
 - 2. BREA PLACE
 - 3. DOWNTOWN HOTEL
 - 4. MERCURY APARTMENTS
 - 5. BREA PLAZA
 - 6. BREA 265 SPECIFIC PLAN
 - 7. BECKMAN BUSINESS CENTER

SOURCE: GOOGLE
KEY

- # = CUMULATIVE PROJECT LOCATION
- [Red Dotted Pattern] = BREA MALL

FIGURE 6-1

LOCATION OF CUMULATIVE PROJECTS
BREA MALL MIXED-USE PROJECT, BREA

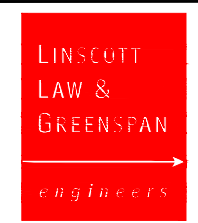


TABLE 6-2
CUMULATIVE PROJECTS TRAFFIC GENERATION FORECAST²³

Cumulative Project Description		Weekday Daily 2-Way	AM Peak Hour			PM Peak Hour			Weekend Daily 2-Way	Midday Peak Hour		
			Enter	Exit	Total	Enter	Exit	Total		Enter	Exit	Total
1.	CVS	2,323	62	58	120	62	61	123	3,460	85	85	170
2.	Brea Place	7,086	130	310	440	325	213	538	7,671	332	332	664
3.	Downtown Hotel	1,257	47	36	83	46	39	85	1,313	64	53	117
4.	Mercury Apartments	653	11	32	43	32	21	53	589	26	27	53
5.	Brea Plaza Expansion	1,691	69	76	145	64	54	118	1,229	61	47	108
6.	Brea 265 Specific Plan ²⁴	9,337	164	512	676	552	325	877	9,802	491	418	909
7.	Beckman Business Center ²⁵	5,767	651	145	796	191	586	777	3,092	242	264	506
Cumulative Projects Total Trip Generation Potential		28,114	1,134	1,169	2,303	1,272	1,299	2,571	27,156	1,301	1,226	2,527

²³ Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).

²⁴ Per the direction of City staff the Brea 265 Specific Plan Project has been included as a related project as part of Year 2040 background traffic conditions.

²⁵ Source: *Beckman Business Center EIR Traffic Impact Analysis*, prepared by LLG Engineers., dated November 10, 2016. Although this development is completely constructed, it is currently partially occupied. Hence to provide a conservative assessment, all buildings are assumed to be vacant.

6.3 Year 2040 Traffic Conditions

As coordinated with City staff, the Year 2040 traffic volume forecasts for this traffic study were developed via the utilization of the OCTAM4.0 Year 2040 traffic model provided by OCTA. Specifically, daily, AM peak period and PM peak period link traffic volumes were provided by OCTA for the existing base year (i.e. Year 2012) and for the Year 2040 year. The AM peak period corresponds to a three-hour morning commute period while the PM peak period corresponds to a four-hour afternoon commute period. Using the peak period model runs and the OCTA approved peak hour factors (i.e. AM = 0.3566 and PM = 0.2662), the one-hour peak hour link traffic volumes were determined. These future year 2040 link traffic volumes were post-processed based on the relationship of the base year validation model run output to the base year ground traffic counts resulting in anticipated Year 2040 without project daily traffic volumes for the key roadway segments and AM peak hour/PM peak hour turning movements for the key study intersections.

Appendix E presents the post-processing worksheets.

6.4 Year 2022 and Year 2040 Traffic Volumes

6.4.1 Year 2022 Traffic Volumes

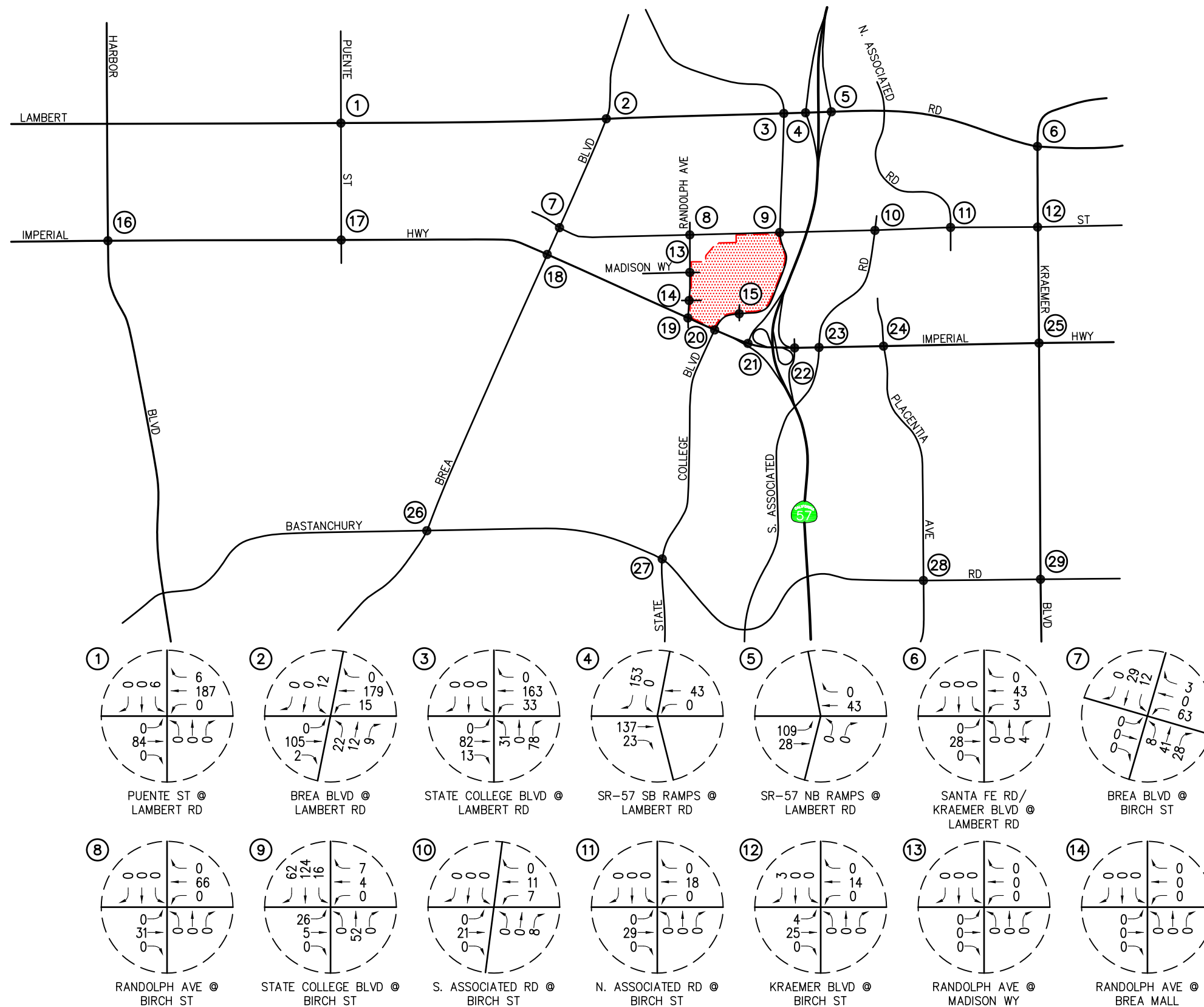
Figures 6-5, 6-6 and 6-7 present the weekday AM and PM peak hour and weekend (Saturday) midday peak hour cumulative traffic volumes (existing traffic + ambient growth + related projects) at the twenty-nine (29) key study intersections for the Year 2022, respectively. **Figures 6-6 and 6-7** also presents the Year 2022 daily cumulative traffic volumes during a weekday and weekend, respectively.

Figures 6-8, 6-9 and 6-10 illustrate the Year 2022 forecast AM and PM peak hour traffic volumes, with the inclusion of the trips generated by the proposed Project, respectively. **Figures 6-9 and 6-10** also presents the Year 2022 daily cumulative plus project traffic volumes.

6.4.2 Year 2040 Traffic Volumes

Figures 6-11, 6-12 and 6-13 present the anticipated Year 2040 AM and PM peak hour cumulative traffic volumes at the twenty-nine (29) key study intersections, respectively. **Figures 6-12 and 6-13** also presents the Year 2040 daily cumulative traffic volumes.

Figures 6-14, 6-15 and 6-16 illustrate the anticipated Year 2040 forecast AM and PM peak hour traffic volumes, with the inclusion of the trips generated by the proposed Project, respectively. **Figures 6-15 and 6-16** also presents the Year 2040 daily cumulative plus project traffic volumes.



KEY

= STUDY INTERSECTION

[Red Dotted Area] = BREA MALL

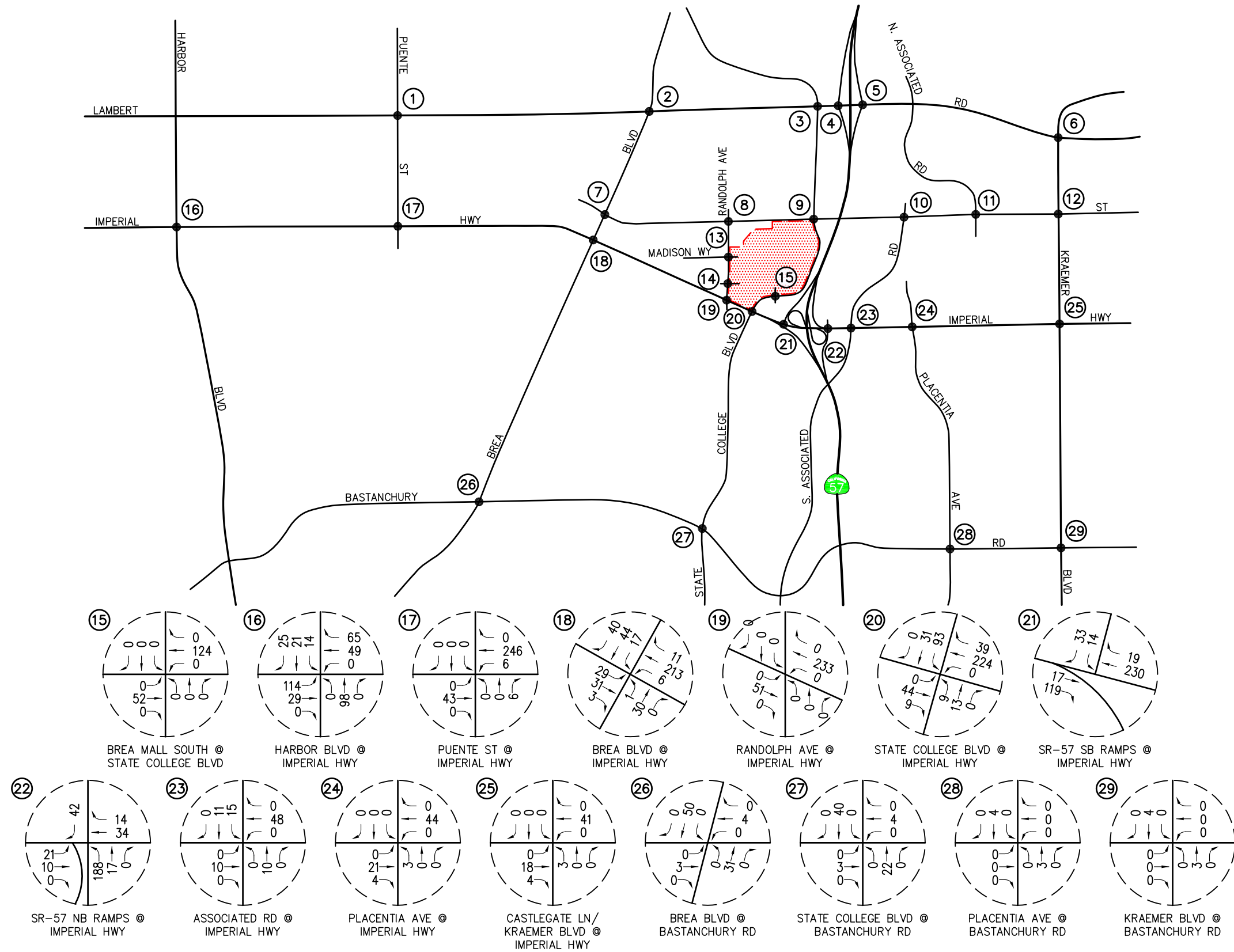


FIGURE 6-2A

WEEKDAY AM PEAK HOUR

CUMULATIVE PROJECTS TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREA



n:\4000\2194099 - brea mall expansion & improvement, brea\dwg\4099 f6-3a.dwg LDP 15:57:06 11-13-2019 agular

LOCATION	VOLUME
A	3,650
B	3,204
C	848
D	1,495
E	7,088
F	85
G	1,943
H	1,566
I	503
J	672
K	672
L	0
M	2,834
N	0
O	2,282
P	2,723
Q	2,277
R	4,028
S	522
T	691
U	607
V	1,365
W	85

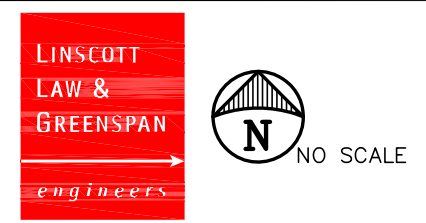
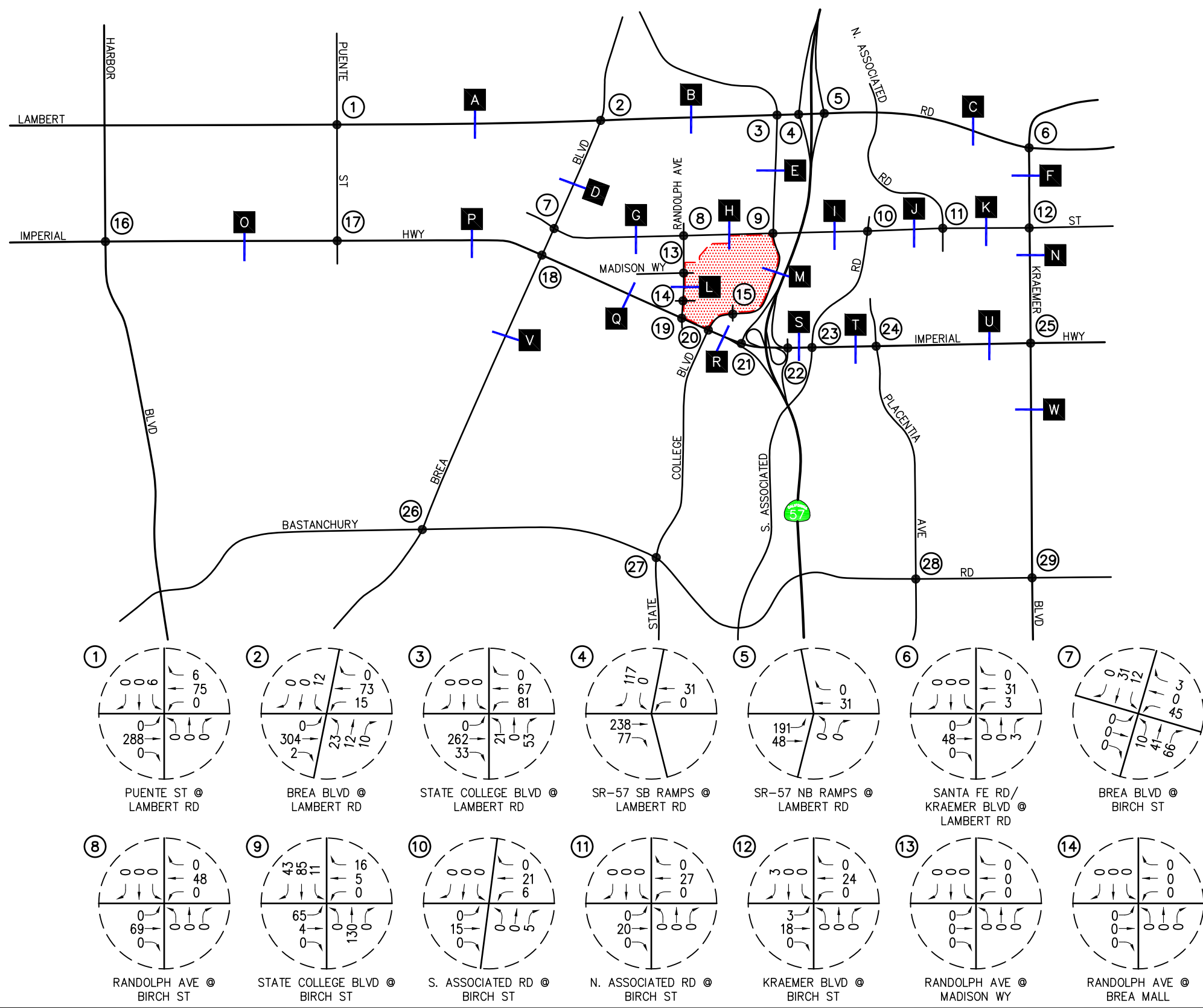
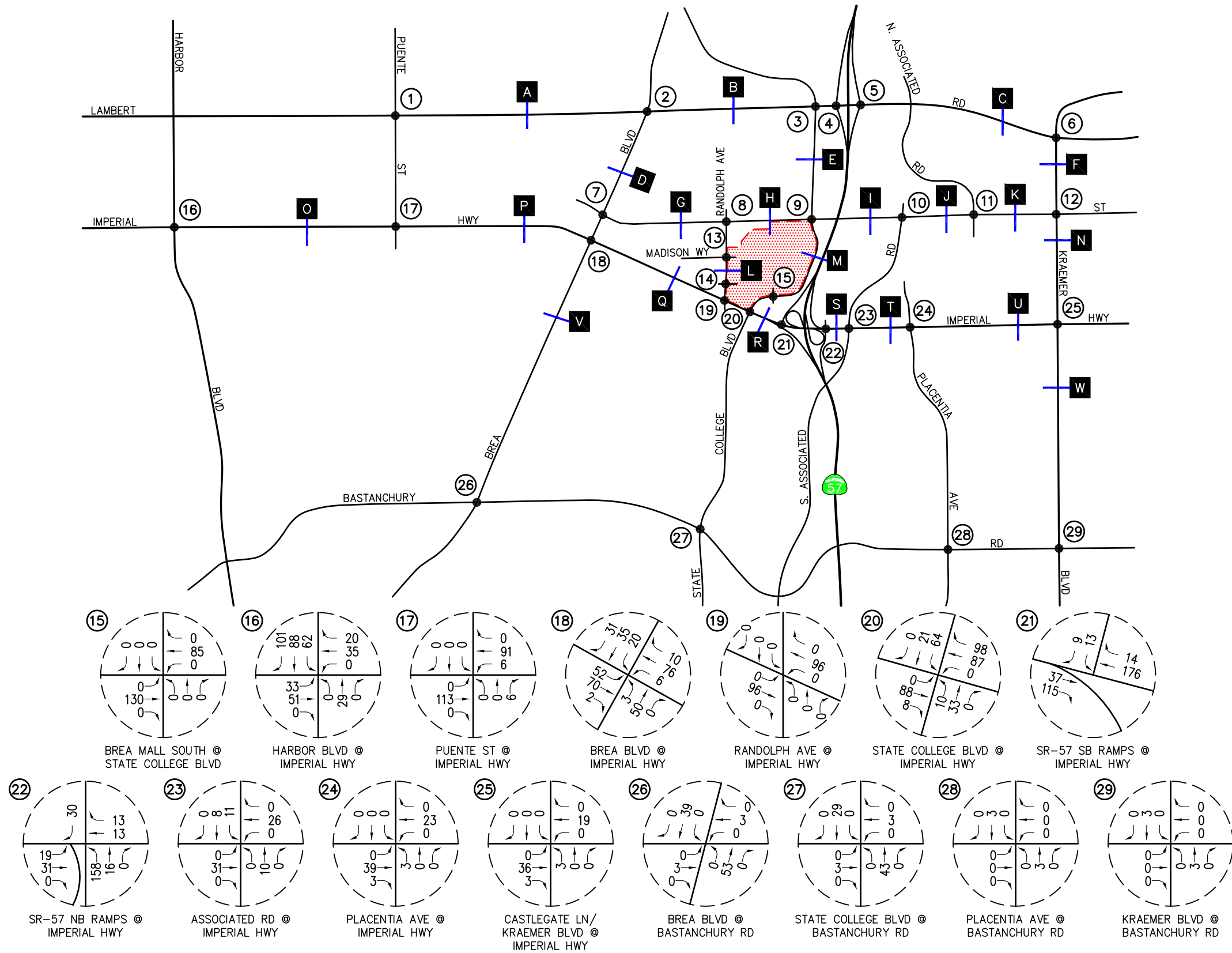


FIGURE 6-3A

WEEKDAY PM PEAK HOUR AND DAILY CUMULATIVE PROJECTS TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	3,650
B	3,204
C	848
D	1,495
E	7,088
F	85
G	1,943
H	1,566
I	503
J	672
K	672
L	0
M	2,834
N	0
O	2,282
P	2,723
Q	2,277
R	4,028
S	522
T	691
U	607
V	1,365
W	85



KEY

= STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

[Red Hatched Box] = BREA MALL

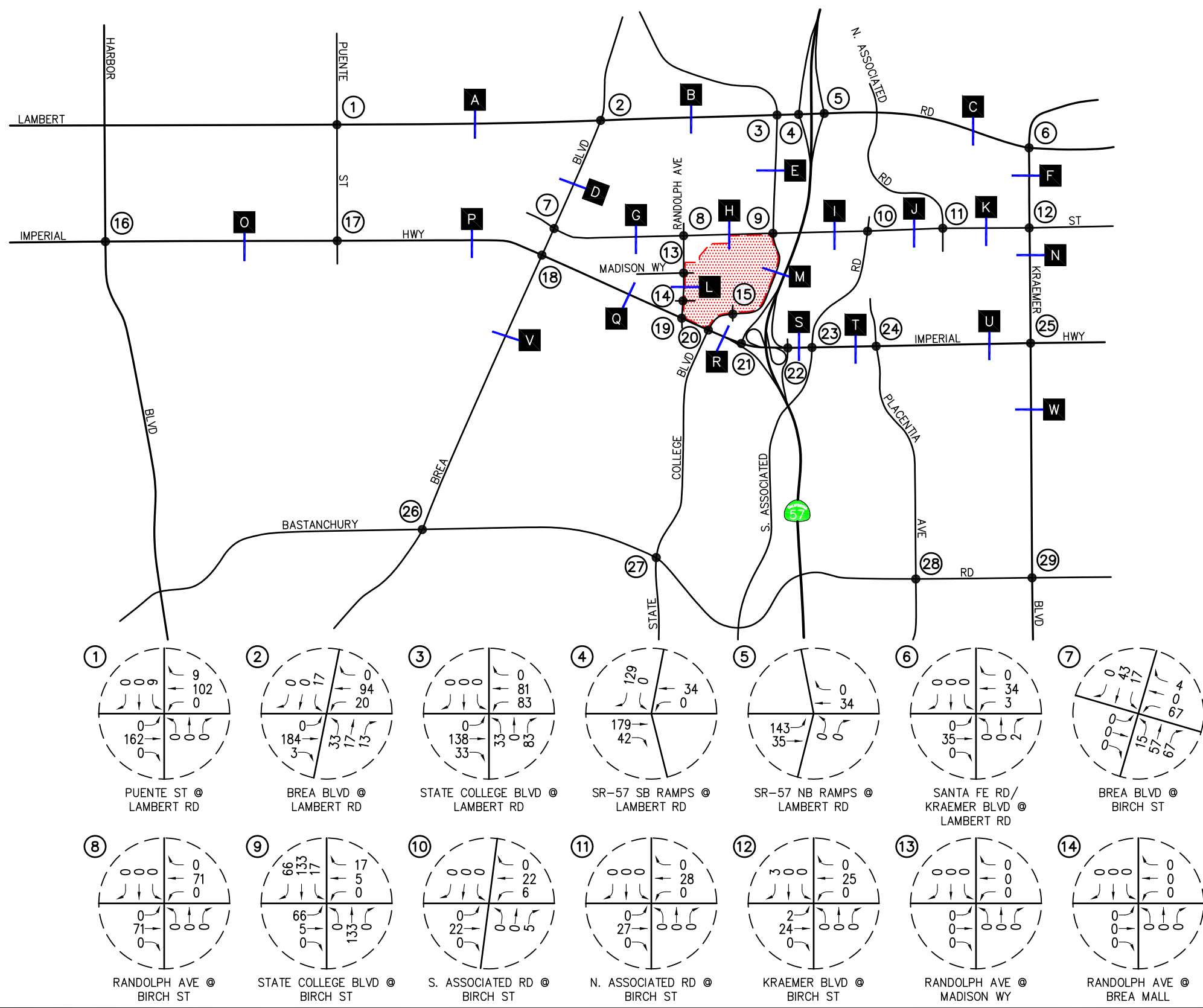


FIGURE 6-3B

WEEKDAY PM PEAK HOUR AND DAILY CUMULATIVE PROJECTS TRAFFIC VOLUMES
BREA MALL MIXED-USE PROJECT, BREA

n:\4000\2194099 - brea mall expansion & improvement, brea\dwg\4099 f6-4a.dwg LDP 15:59:11 11-13-2019 agular

LOCATION	VOLUME
A	3,185
B	2,401
C	725
D	1,955
E	7,871
F	61
G	2,117
H	1,736
I	586
J	709
K	709
L	0
M	3,068
N	0
O	1,802
P	2,355
Q	1,809
R	3,679
S	337
T	460
U	398
V	1,645
W	61



KEY

#

= STUDY INTERSECTION (PEAK HOUR)

#

= STUDY ROADWAY SEGMENT (DAILY)

= BREA MALL

FIGURE 6-4A

WEEKEND (SATURDAY) MIDDAY PEAK HOUR AND DAILY CUMULATIVE PROJECTS TRAFFIC VOLUMES

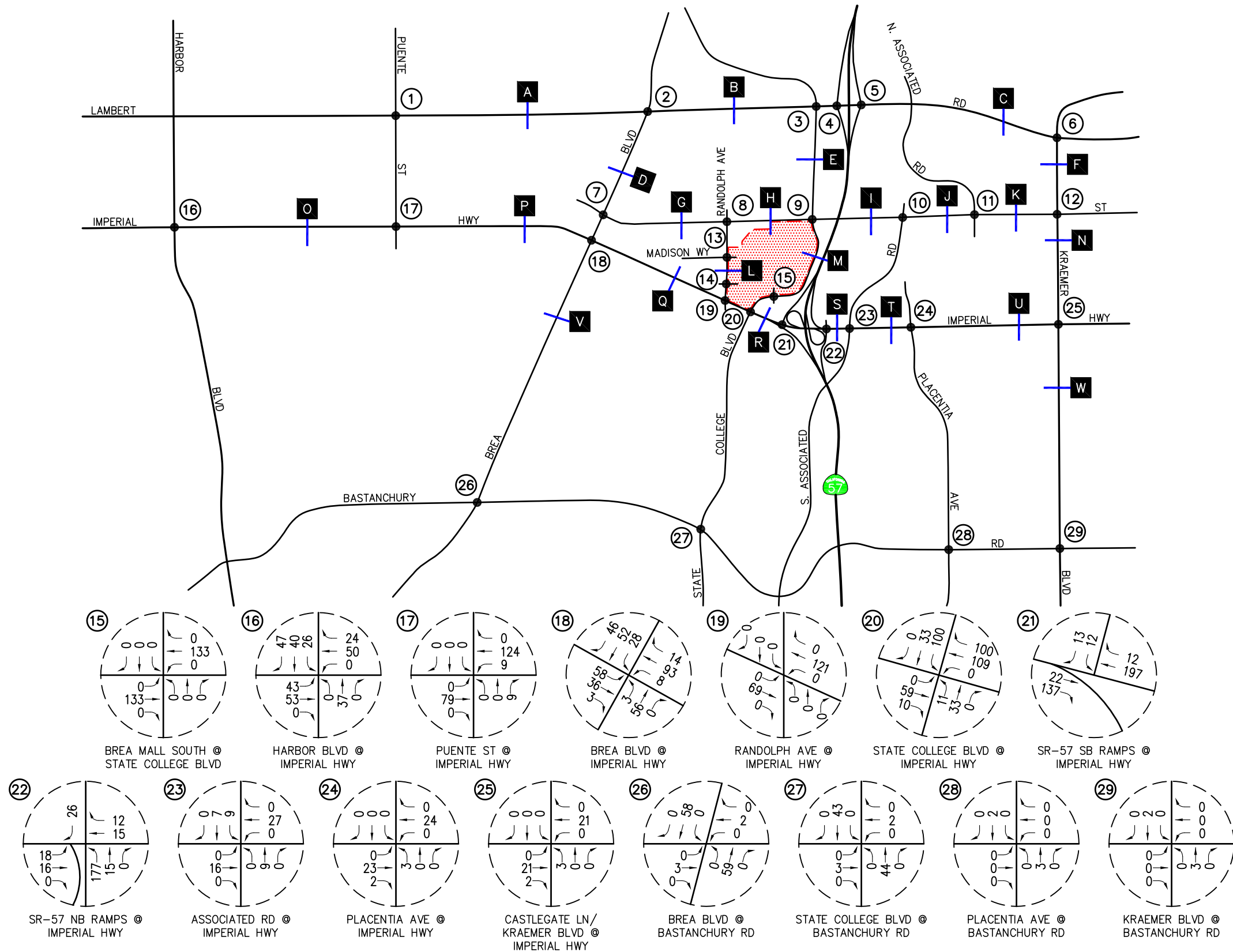
BREA MALL MIXED-USE PROJECT, BREA

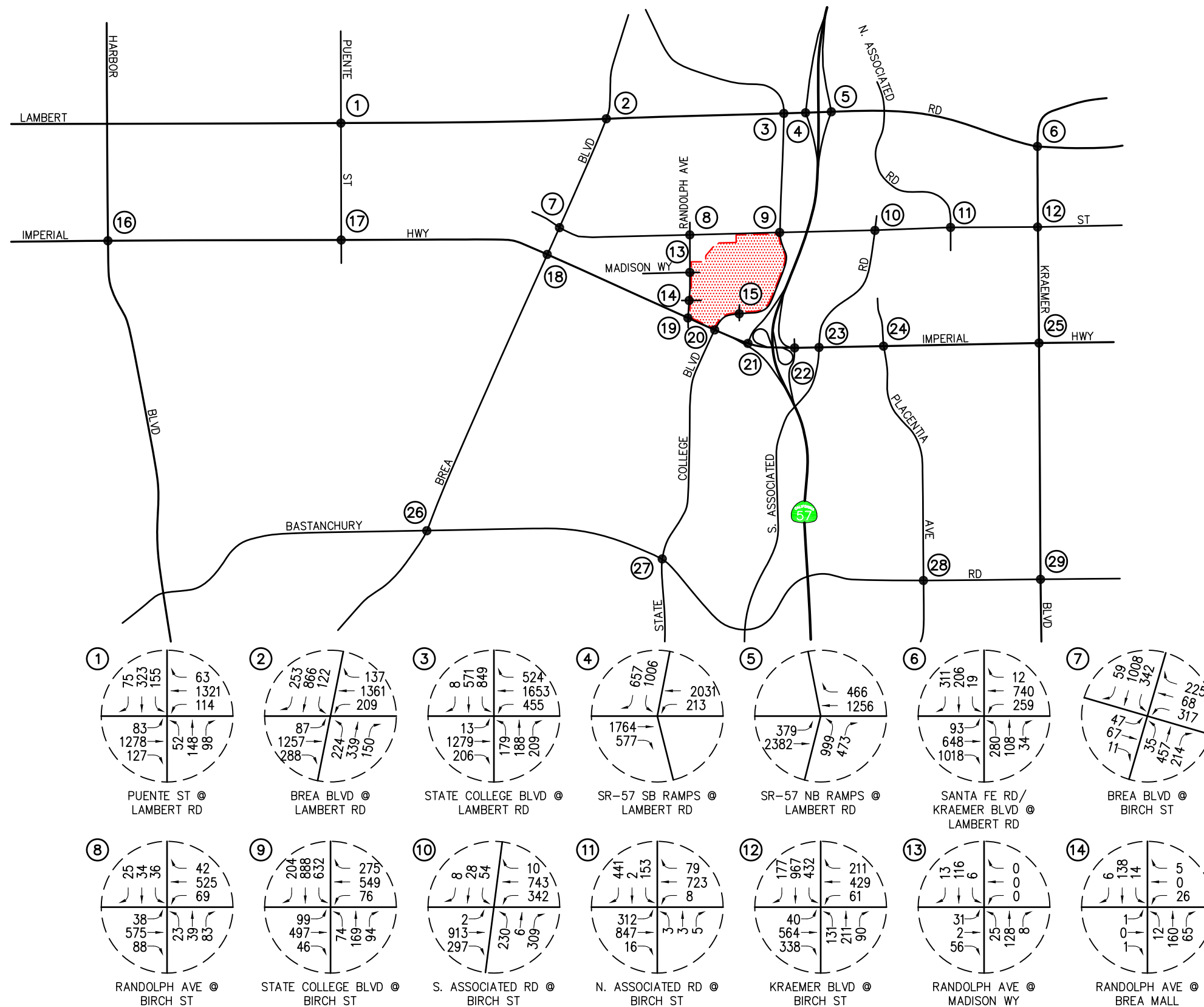
LINSCOTT
LAW &
GREENSPAN
engineers

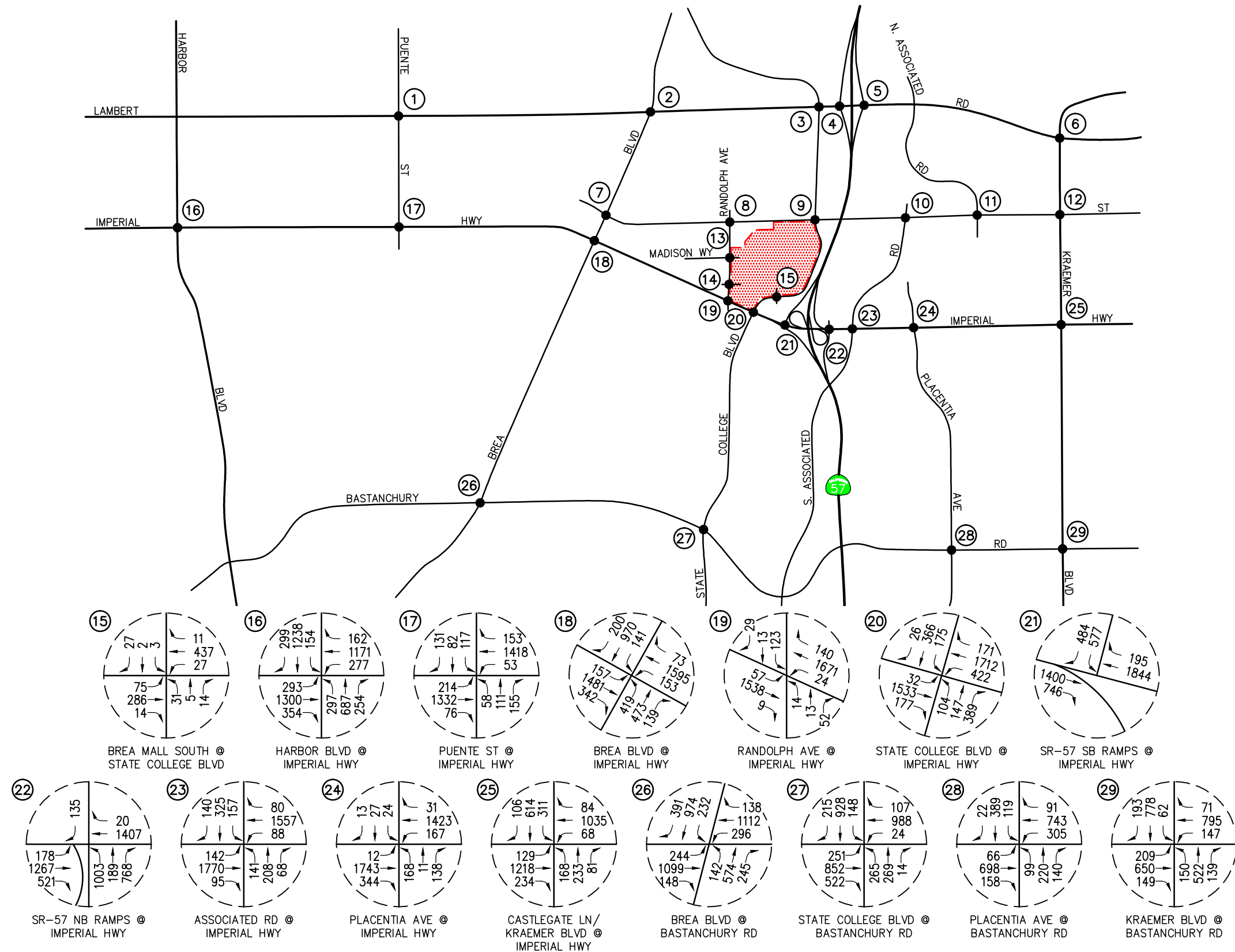
N

NO SCALE

LOCATION	VOLUME
A	3,185
B	2,401
C	725
D	1,955
E	7,871
F	61
G	2,117
H	1,736
I	586
J	709
K	709
L	0
M	3,068
N	0
O	1,802
P	2,355
Q	1,809
R	3,679
S	337
T	460
U	398
V	1,645
W	61







KEY

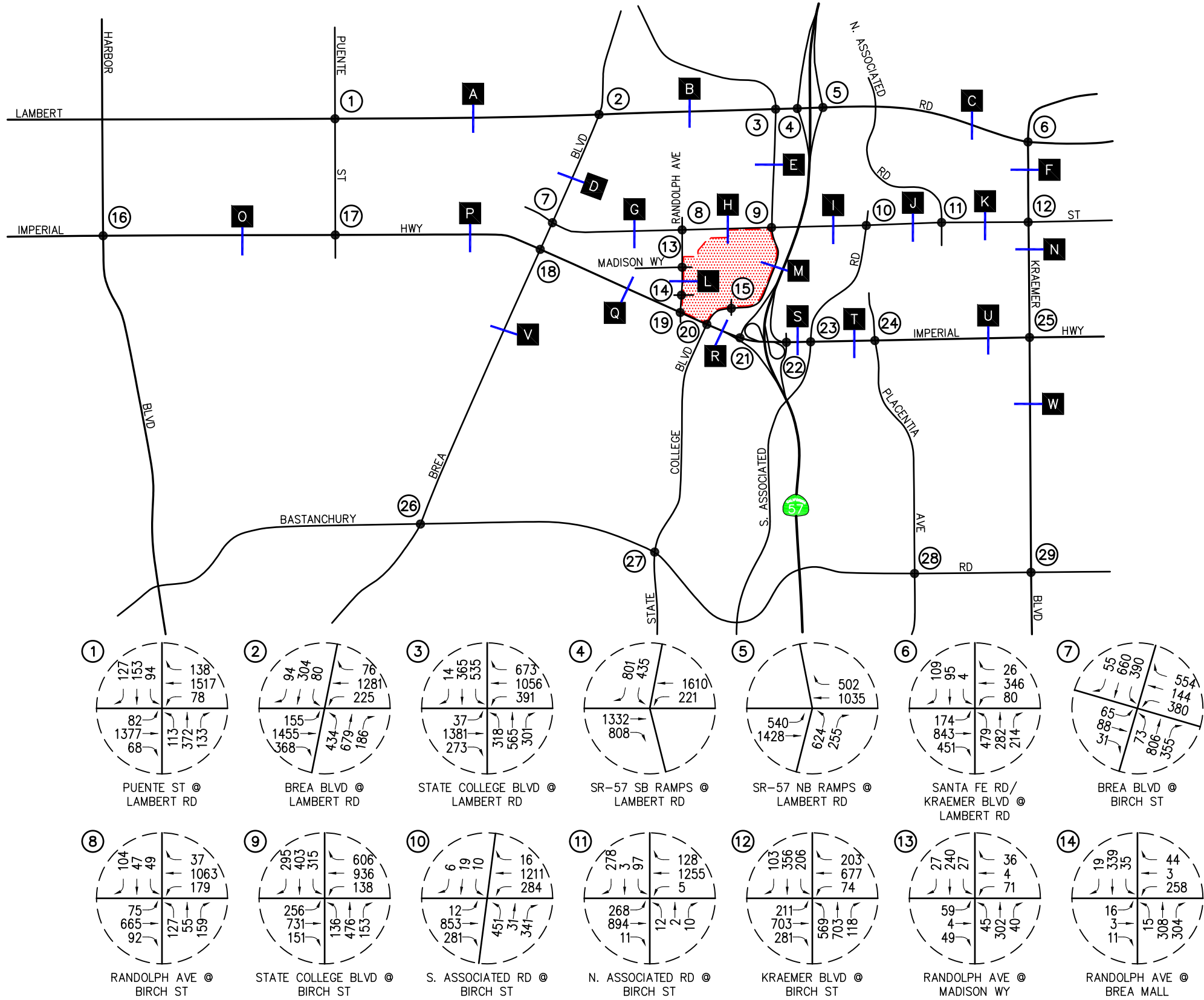
= STUDY INTERSECTION

[Red Hatched Box] = BREA MALL

FIGURE 6-5B

**YEAR 2022 WEEKDAY AM PEAK HOUR
CUMULATIVE TRAFFIC VOLUMES
BREA MALL MIXED-USE PROJECT, BREA**

LOCATION	VOLUME
A	39,239
B	41,475
C	35,284
D	29,466
E	29,495
F	17,351
G	20,347
H	21,487
I	25,987
J	25,644
K	22,052
L	7,838
M	16,818
N	20,482
O	45,830
P	60,714
Q	57,432
R	78,746
S	55,993
T	53,948
U	53,947
V	32,946
W	20,568



KEY

① = STUDY INTERSECTION (PEAK HOUR)

② = STUDY ROADWAY SEGMENT (DAILY)

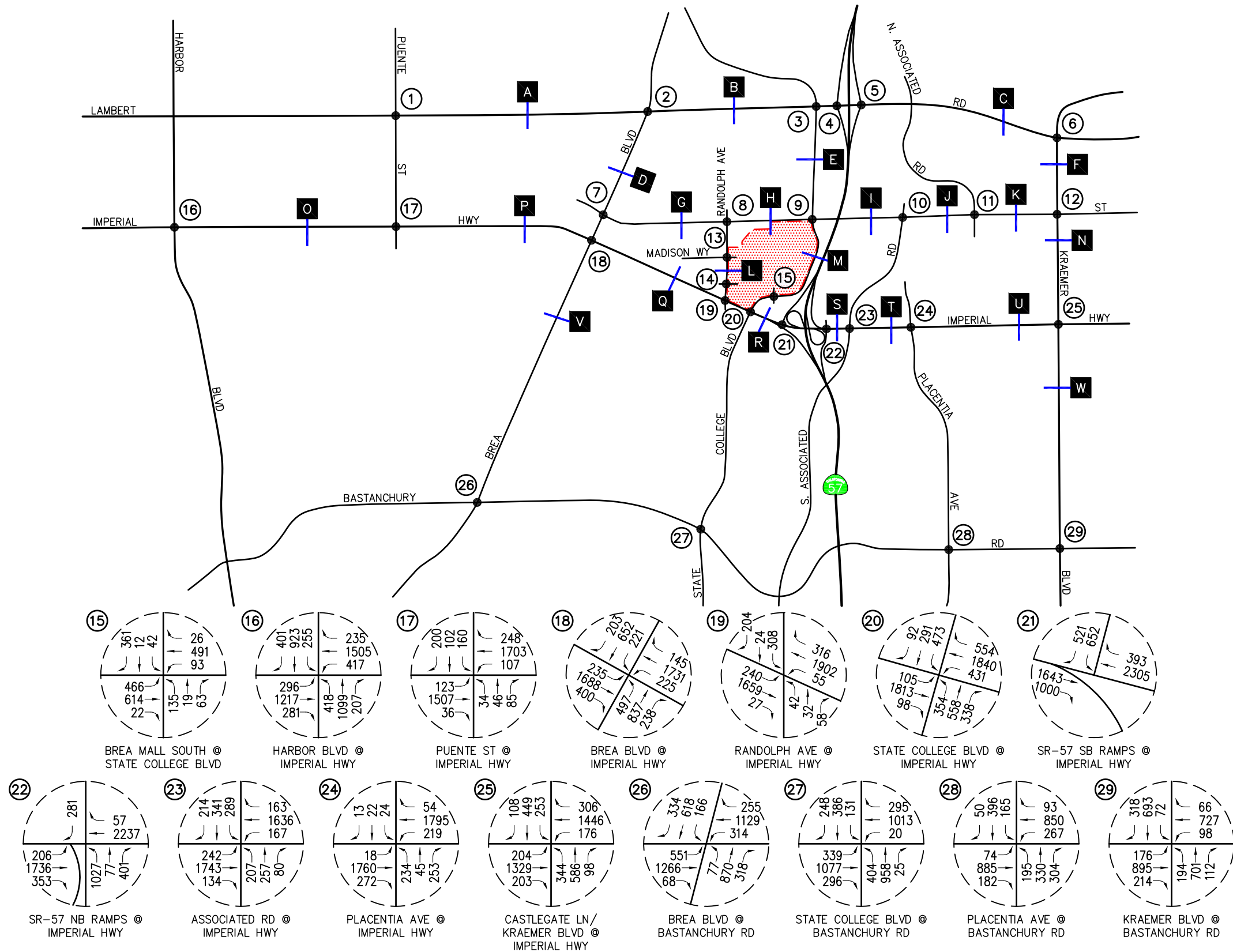
③ = BREYA MALL

FIGURE 6-6A

YEAR 2022 WEEKDAY PM PEAK HOUR AND DAILY CUMULATIVE TRAFFIC VOLUMES
BREYA MALL MIXED-USE PROJECT, BREYA



LOCATION	VOLUME
A	39,239
B	41,475
C	35,284
D	29,466
E	29,495
F	17,351
G	20,347
H	21,487
I	25,987
J	25,644
K	22,052
L	7,838
M	16,818
N	20,482
O	45,830
P	60,714
Q	57,432
R	78,746
S	55,993
T	53,948
U	53,947
V	32,946
W	20,568



KEY

① = STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

■ = BREA MALL

FIGURE 6-6B

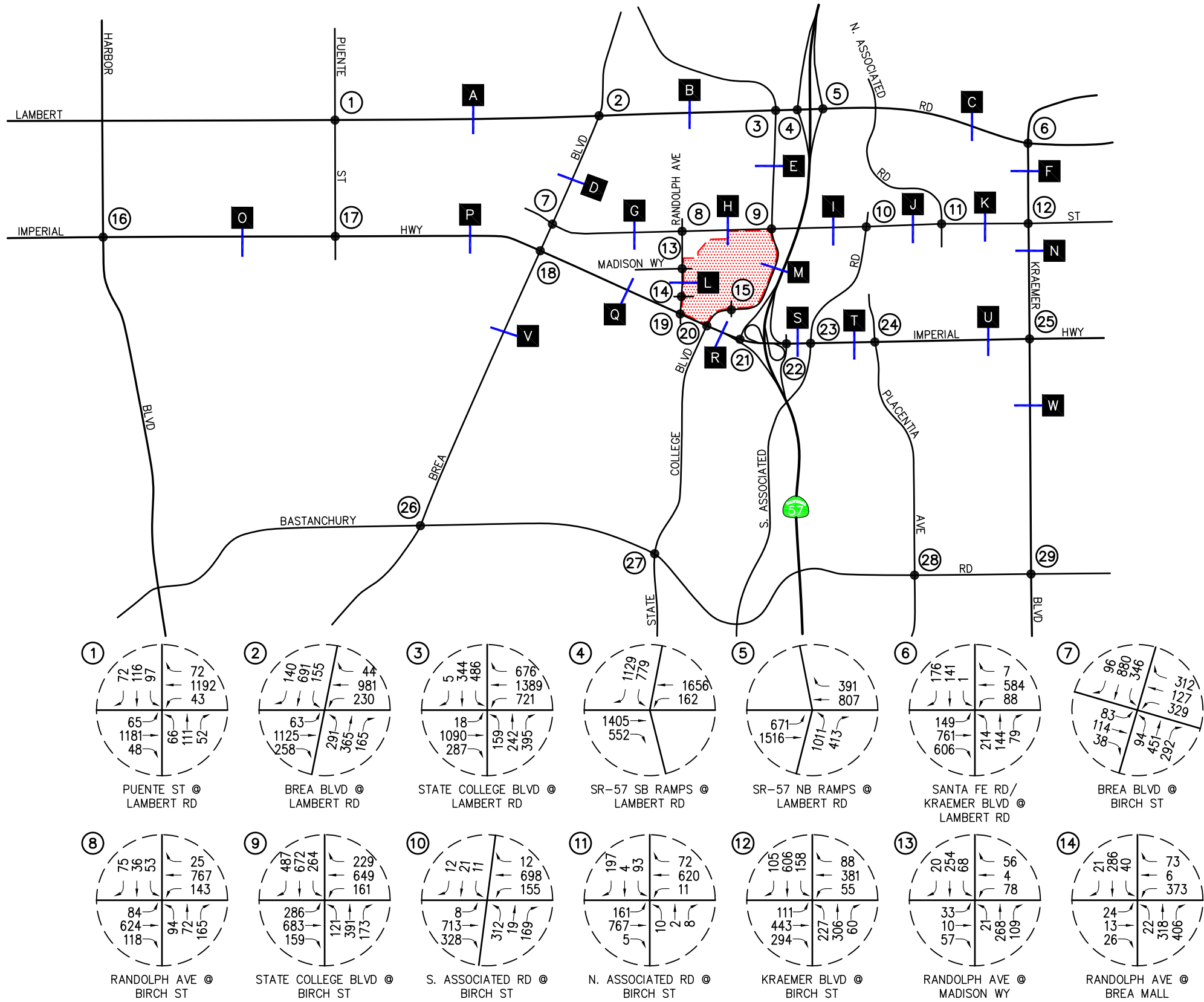
YEAR 2022 WEEKDAY PM PEAK HOUR AND DAILY CUMULATIVE PROJECTS TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREA



NO SCALE

LOCATION	VOLUME
A	40,180
B	42,182
C	36,523
D	31,038
E	30,976
F	18,011
G	21,256
H	19,609
I	27,079
J	26,670
K	22,935
L	8,063
M	17,619
N	21,290
O	47,110
P	62,664
Q	59,190
R	81,414
S	58,029
T	55,846
U	55,857
V	34,489
W	21,352



KEY

① = STUDY INTERSECTION (PEAK HOUR)

② = STUDY ROADWAY SEGMENT (DAILY)

③ = BREYA MALL

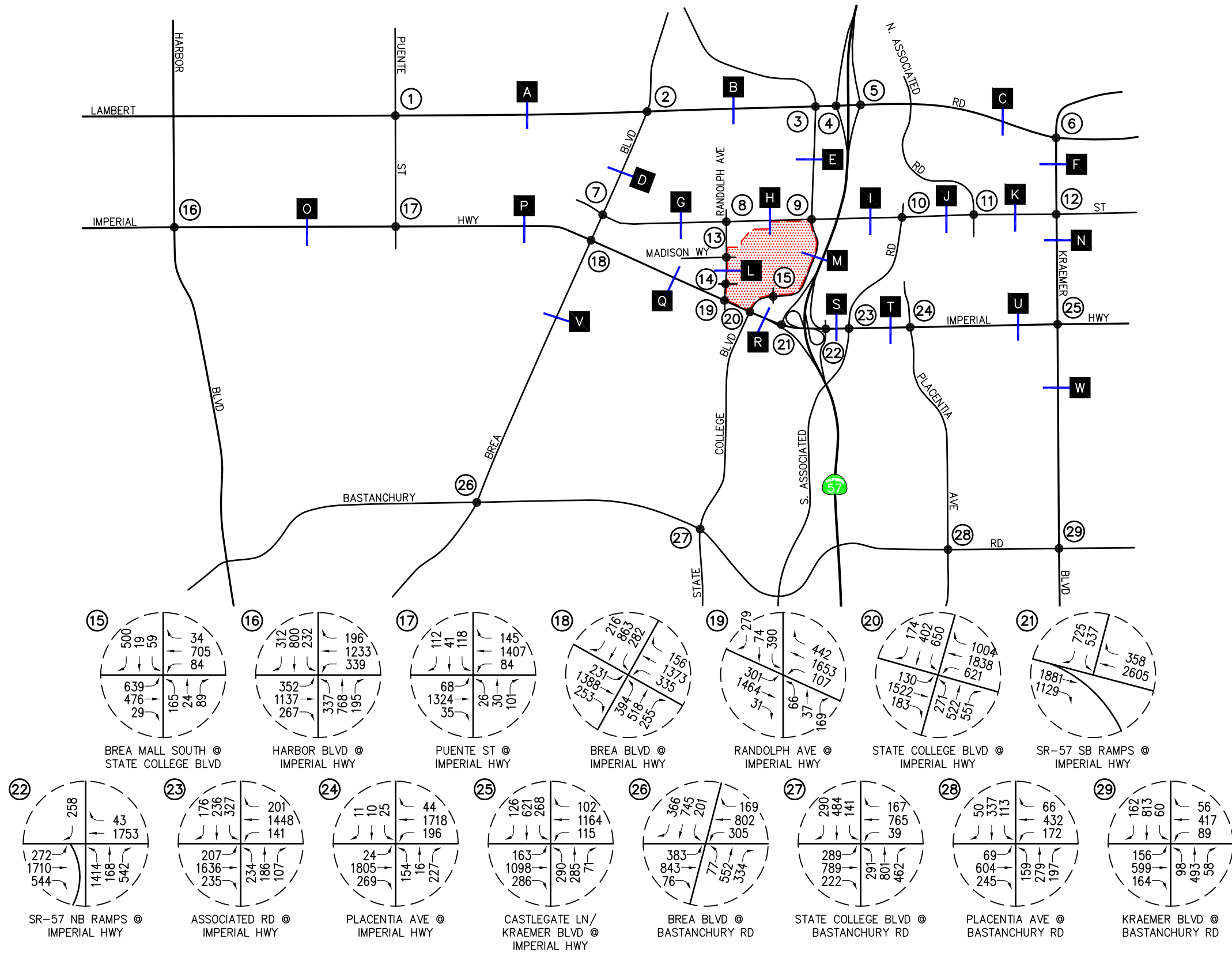
FIGURE 6-7A

**YEAR 2022 WEEKEND (SATURDAY) MIDDAY PEAK HOUR
AND DAILY CUMULATIVE TRAFFIC VOLUMES**
BREYA MALL MIXED-USE PROJECT, BREYA



NO SCALE

LOCATION	VOLUME
A	40,180
B	42,182
C	36,523
D	31,038
E	30,976
F	18,011
G	21,256
H	19,609
I	27,079
J	26,670
K	22,935
L	8,063
M	17,619
N	21,290
O	47,110
P	62,664
Q	59,190
R	81,414
S	58,029
T	55,846
U	55,857
V	34,489
W	21,352



KEY

= STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

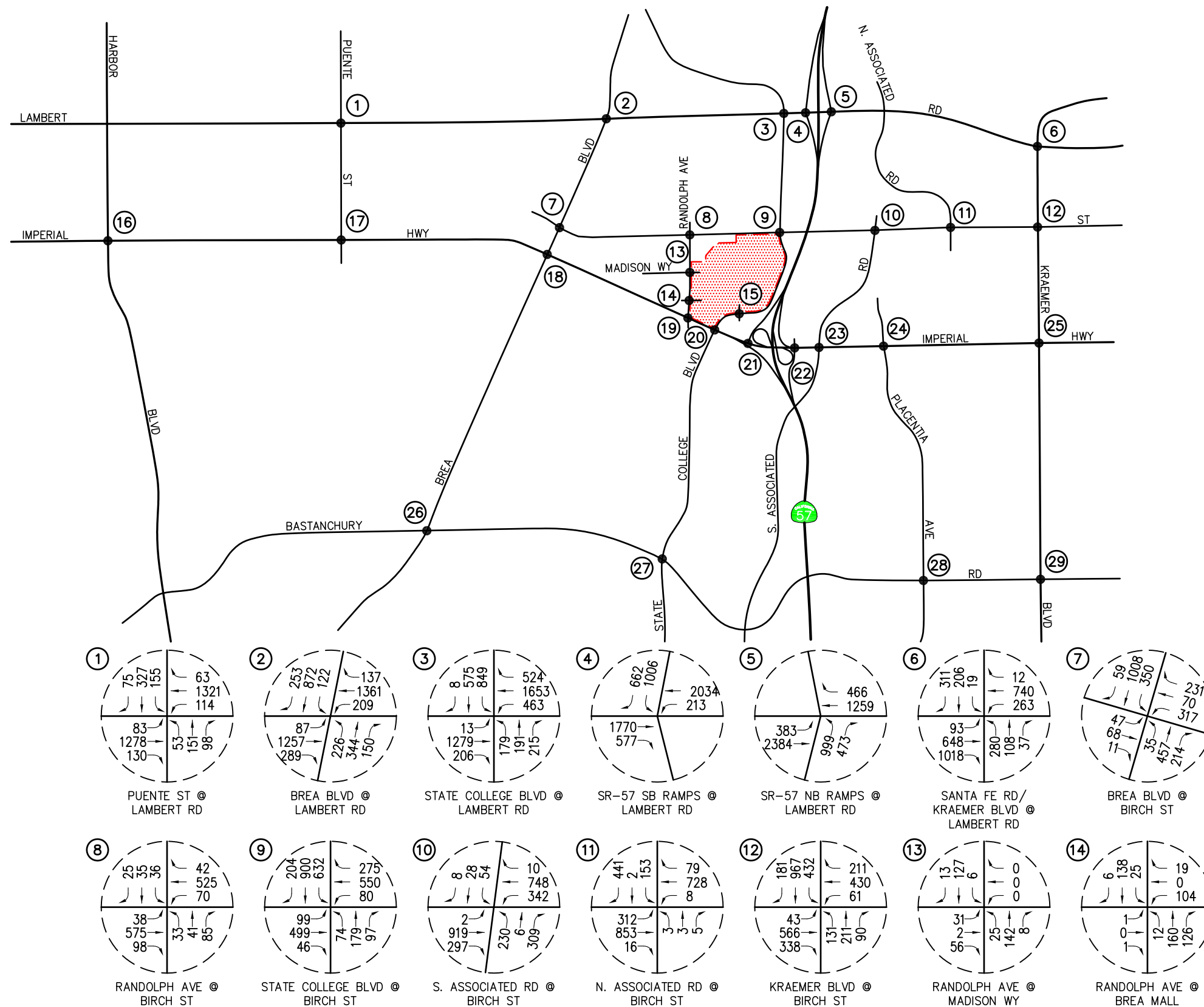
[Red Hatched Box] = BREA MALL

FIGURE 6-7B

**YEAR 2022 WEEKEND (SATURDAY) MIDDAY PEAK HOUR
AND DAILY CUMULATIVE TRAFFIC VOLUMES**

BREA MALL MIXED-USE PROJECT, BREA





KEY

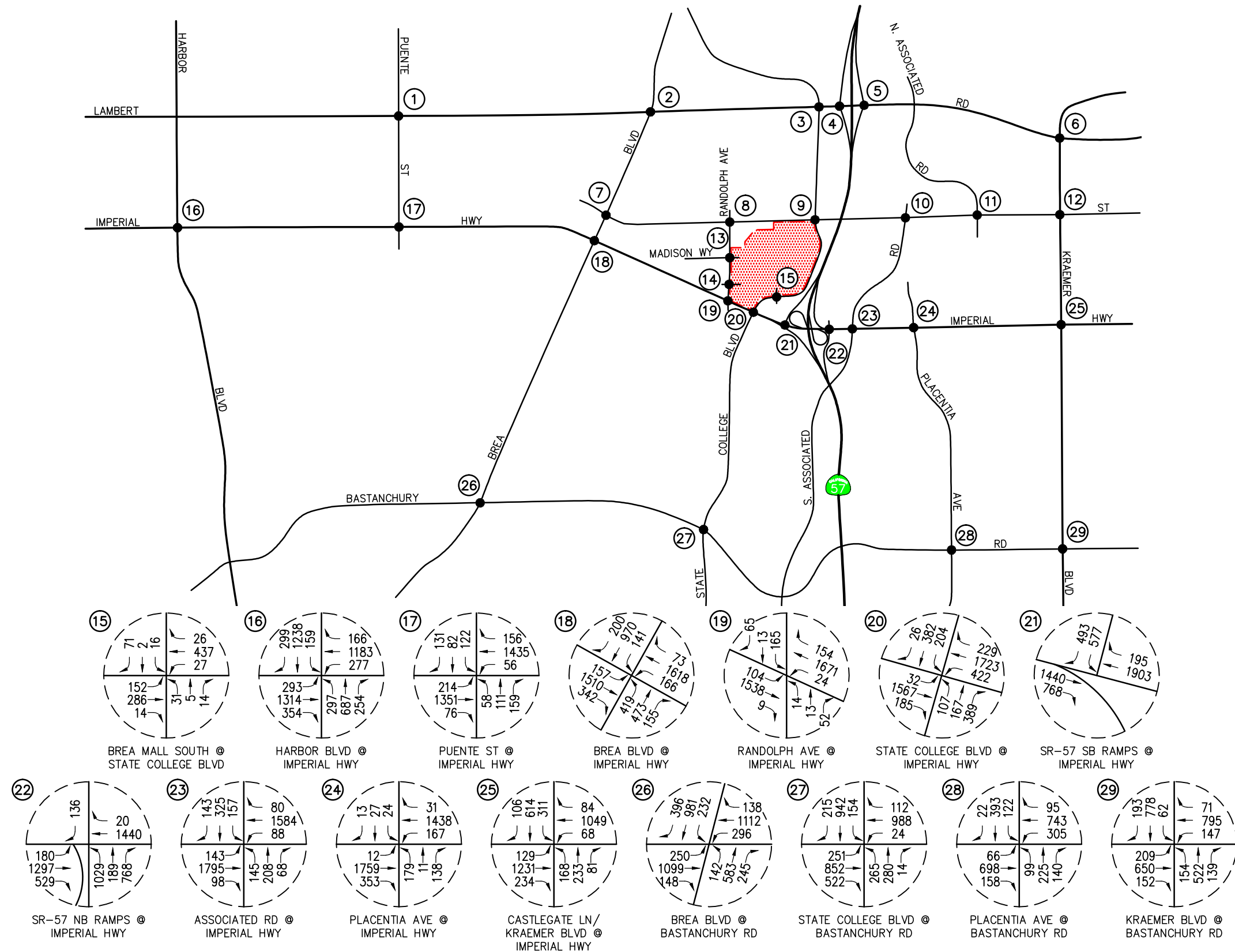
① = STUDY INTERSECTION

▨ = BREA MALL



FIGURE 6-8A

**YEAR 2022 WEEKDAY AM PEAK HOUR
CUMULATIVE TRAFFIC VOLUMES WITH PROJECT**
BREA MALL MIXED-USE PROJECT, BREA



KEY

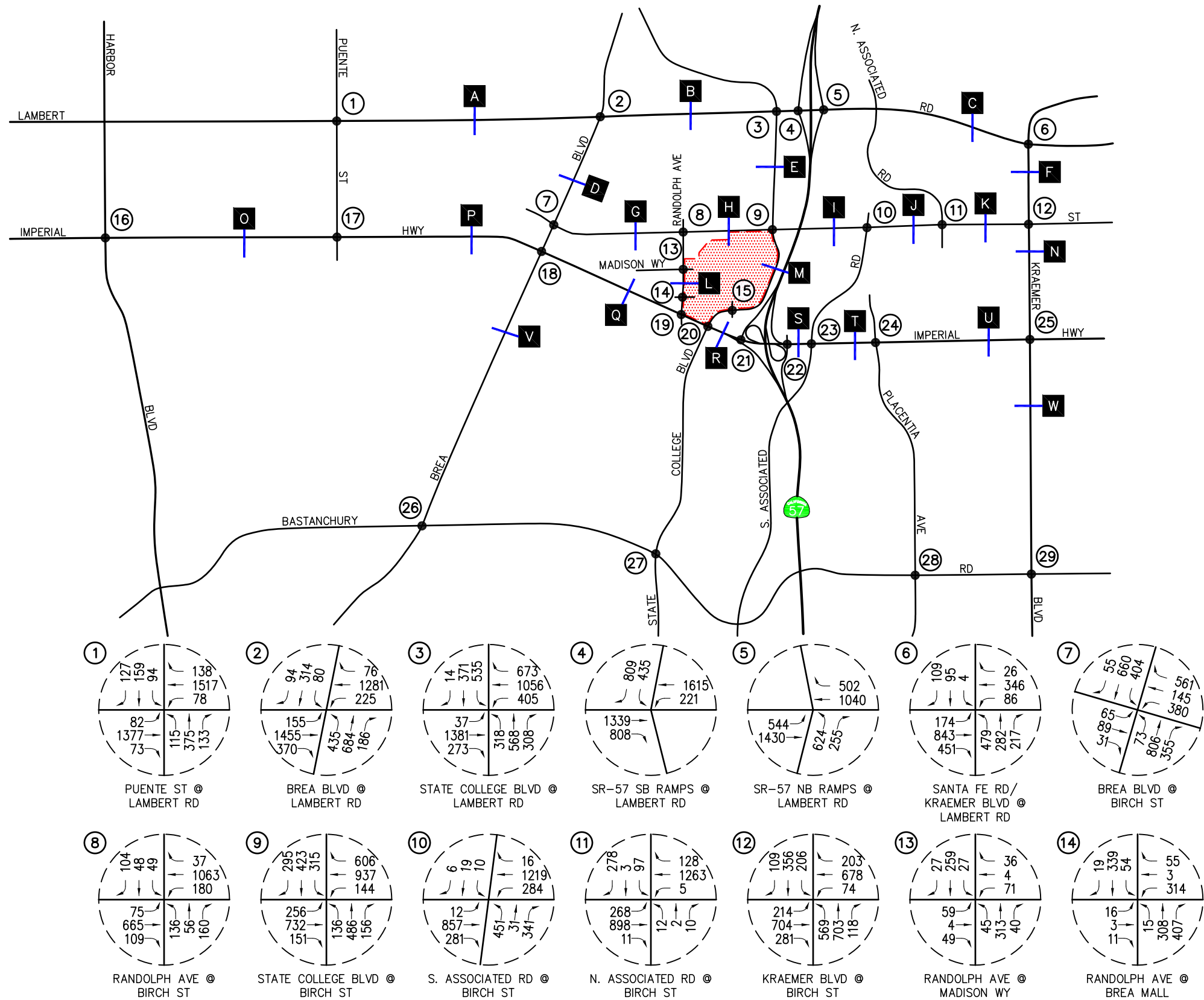
= STUDY INTERSECTION

[Red Hatched Box] = BREA MALL

FIGURE 6-8B

**YEAR 2022 WEEKDAY AM PEAK HOUR
CUMULATIVE TRAFFIC VOLUMES WITH PROJECT**
BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	39,281
B	41,475
C	35,358
D	29,864
E	29,775
F	17,444
G	20,605
H	21,516
I	26,108
J	25,765
K	22,173
L	9,100
M	17,191
N	20,482
O	46,318
P	61,412
Q	58,579
R	80,476
S	56,821
T	54,620
U	54,348
V	33,332
W	20,568



KEY

① = STUDY INTERSECTION (PEAK HOUR)

② = STUDY ROADWAY SEGMENT (DAILY)

■ = BREYA MALL

FIGURE 6-9A

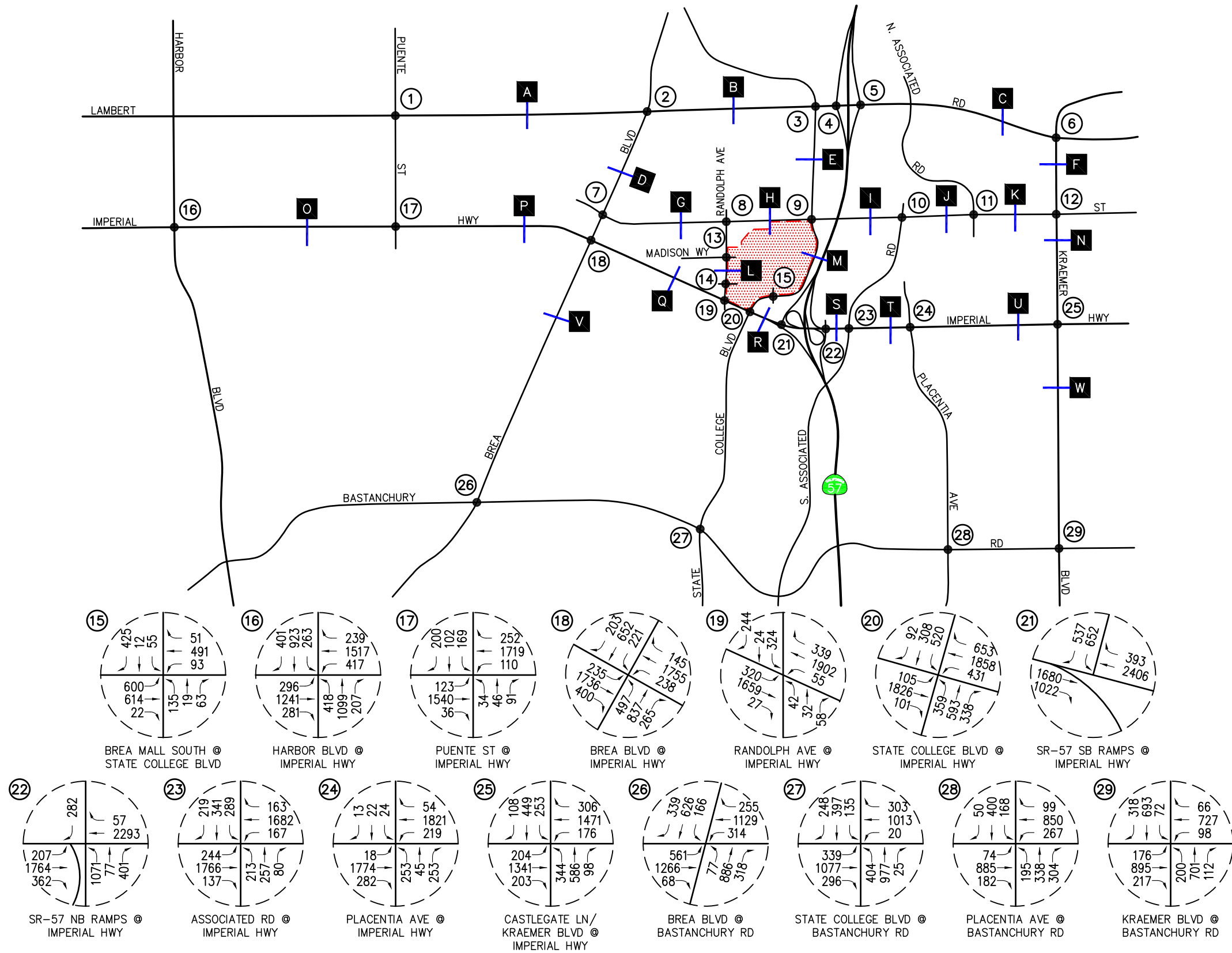
YEAR 2022 WEEKDAY PM PEAK HOUR AND DAILY CUMULATIVE TRAFFIC VOLUMES WITH PROJECT

BREYA MALL MIXED-USE PROJECT, BREYA



NO SCALE

LOCATION	VOLUME
A	39,281
B	41,475
C	35,358
D	29,864
E	29,775
F	17,444
G	20,605
H	21,516
I	26,108
J	25,765
K	22,173
L	9,100
M	17,191
N	20,482
O	46,318
P	61,412
Q	58,579
R	80,476
S	56,821
T	54,620
U	54,348
V	33,332
W	20,568



KEY

= STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

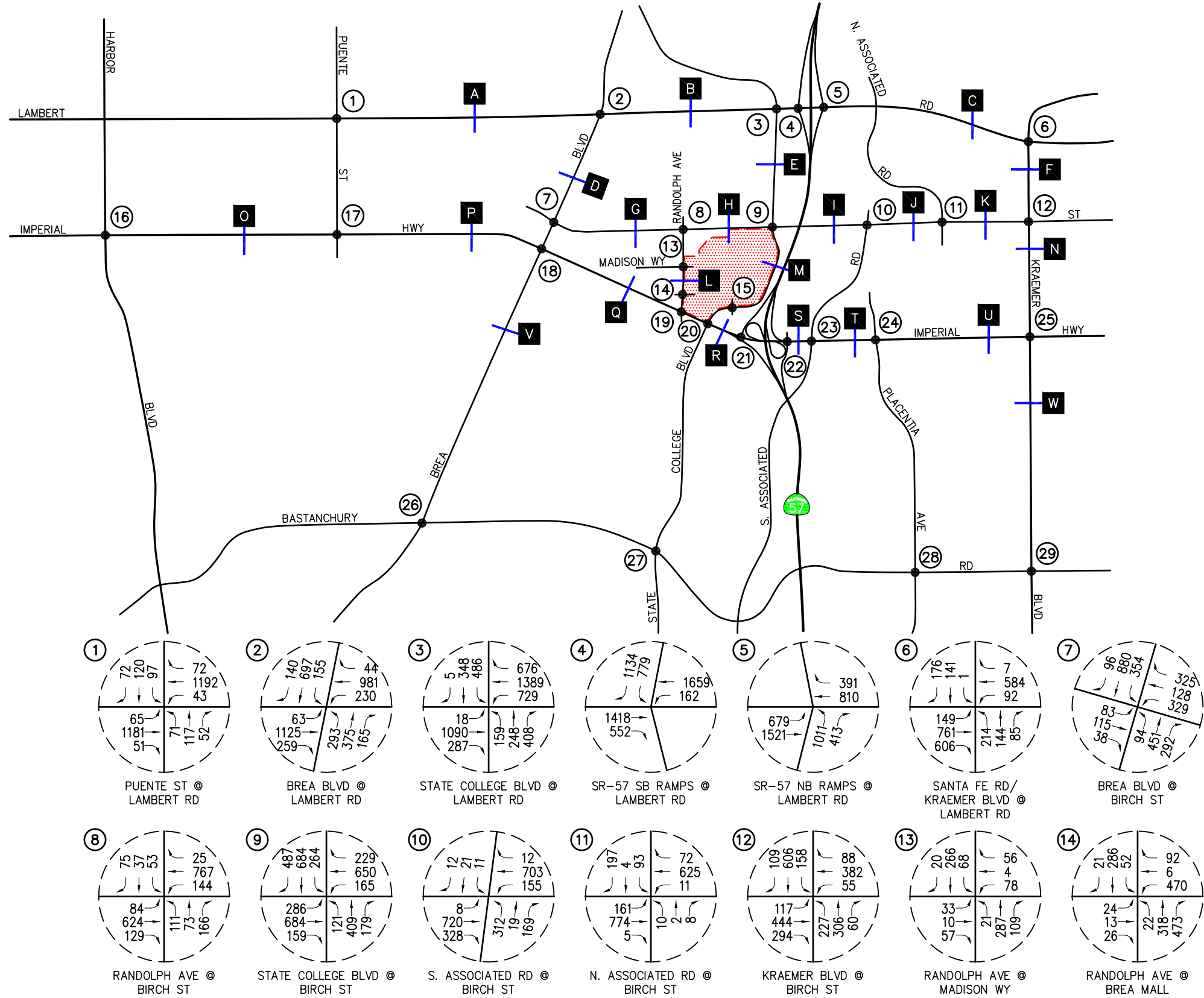
[Red Hatched Box] = BREA MALL

FIGURE 6-9B

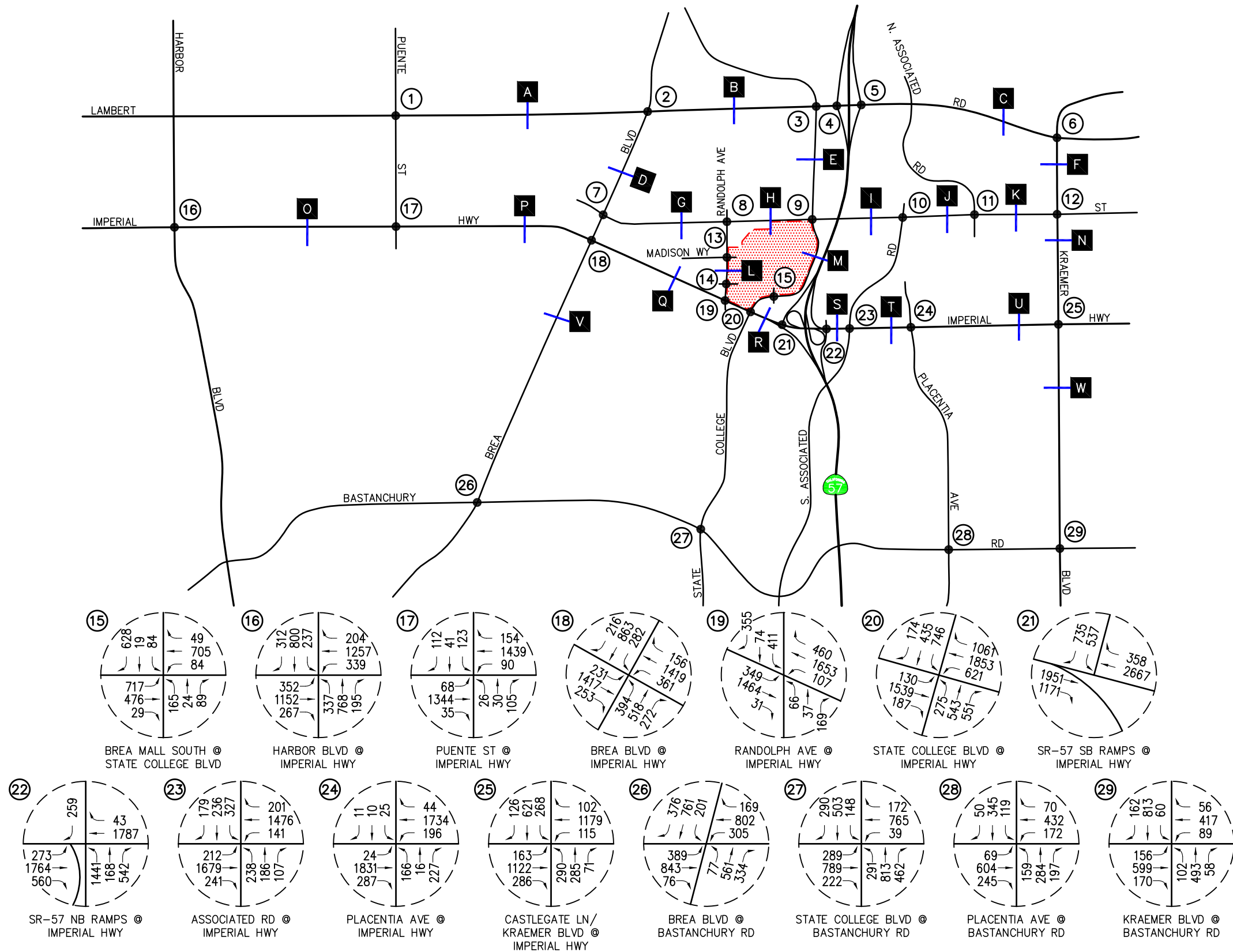
YEAR 2022 WEEKDAY PM PEAK HOUR AND DAILY CUMULATIVE TRAFFIC VOLUMES WITH PROJECT

BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	40,221
B	42,182
C	36,595
D	31,231
E	31,249
F	18,100
G	21,506
H	19,635
I	27,193
J	26,784
K	23,049
L	9,308
M	17,982
N	21,290
O	47,585
P	63,347
Q	60,314
R	83,099
S	58,836
T	56,500
U	56,246
V	34,866
W	21,352



LOCATION	VOLUME
A	40,221
B	42,182
C	36,595
D	31,231
E	31,249
F	18,100
G	21,506
H	19,635
I	27,193
J	26,784
K	23,049
L	9,308
M	17,982
N	21,290
O	47,585
P	63,347
Q	60,314
R	83,099
S	58,836
T	56,500
U	56,246
V	34,866
W	21,352



KEY

= STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

[Red Hatched Box] = BREA MALL

FIGURE 6-10B

**YEAR 2022 WEEKEND (SATURDAY) MIDDAY PEAK HOUR
AND DAILY CUMULATIVE TRAFFIC VOLUMES WITH PROJECT**

BREA MALL MIXED-USE PROJECT, BREA



NO SCALE

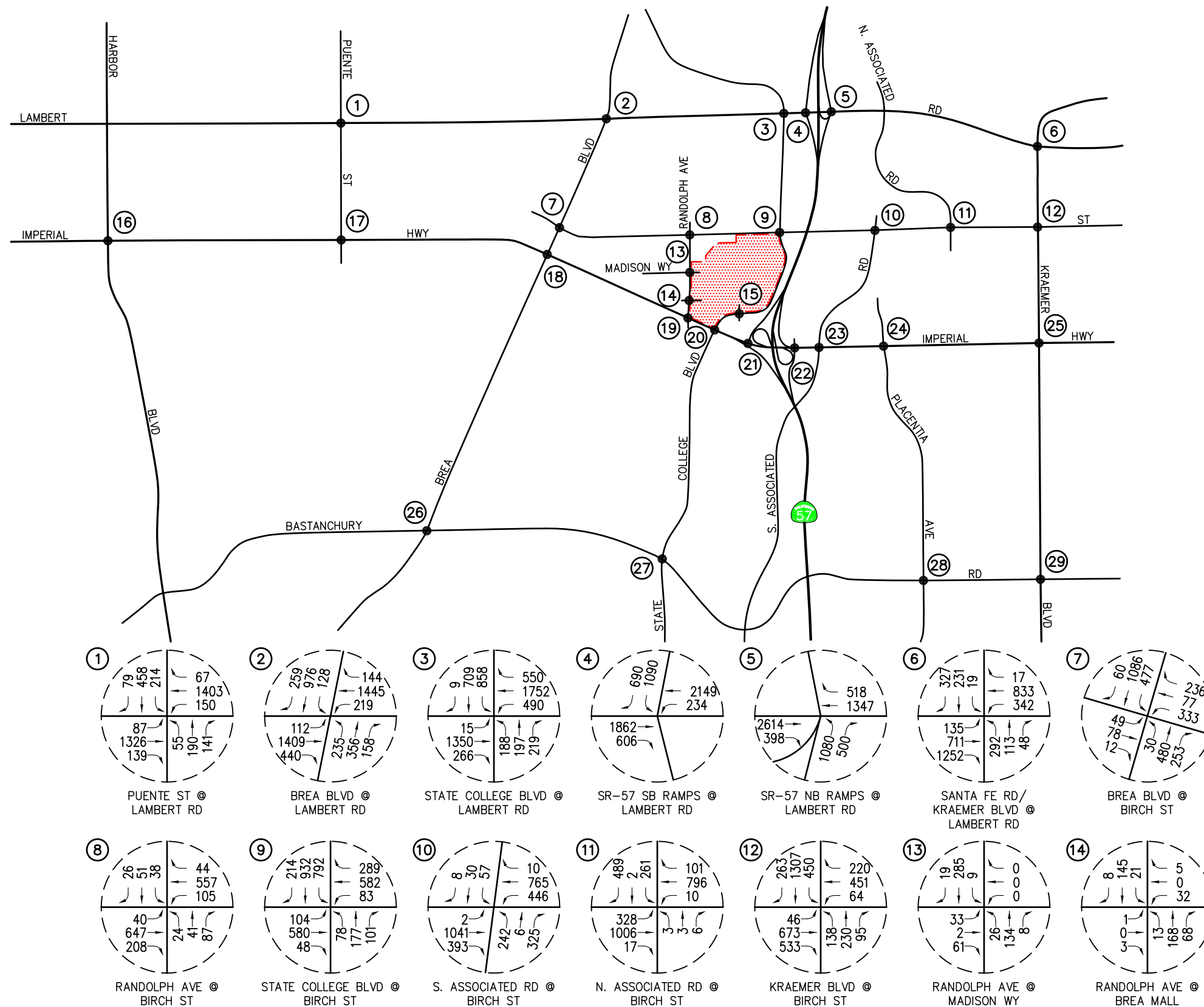
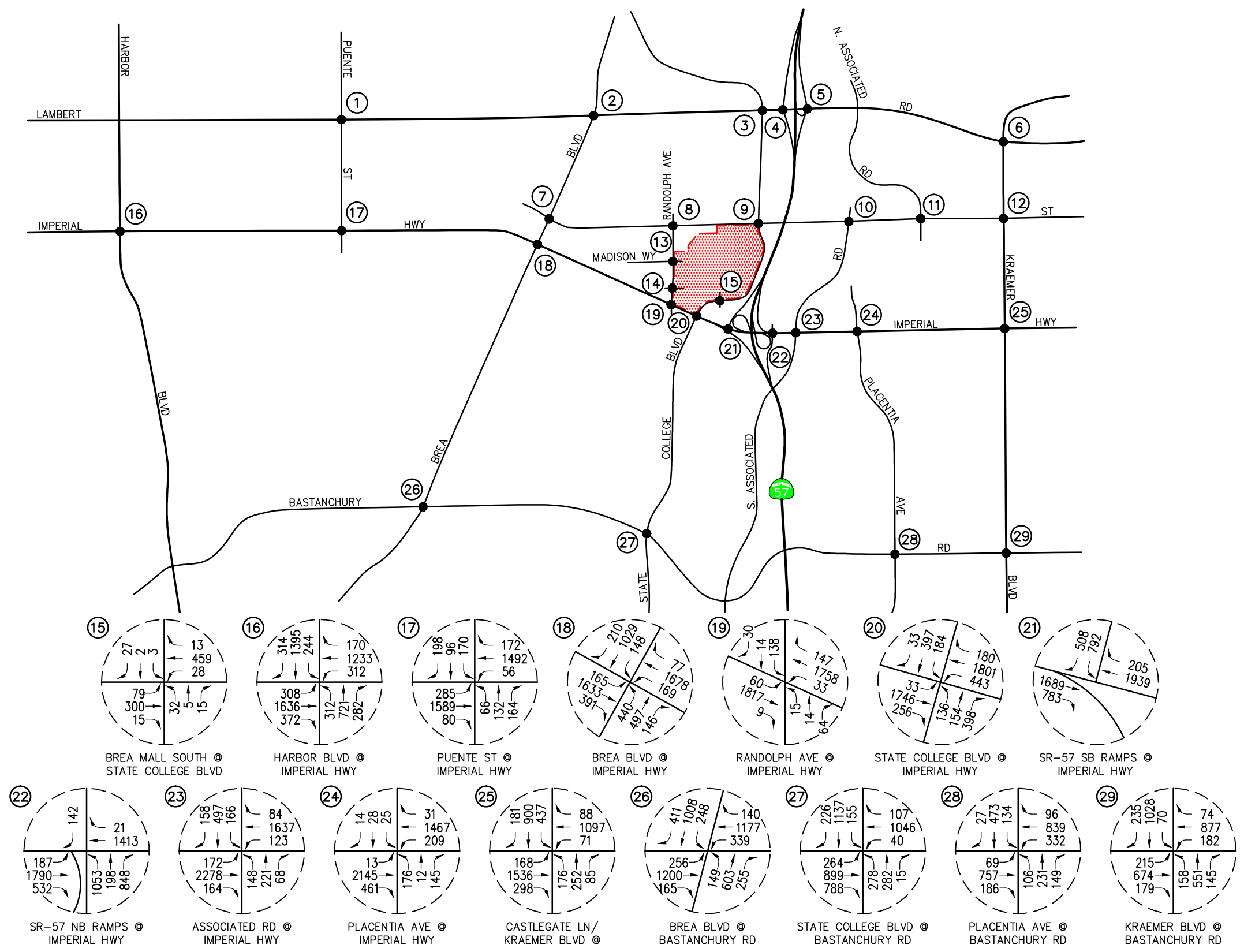


FIGURE 6-11A

YEAR 2040 WEEKDAY AM PEAK HOUR TRAFFIC VOLUMES

BREA MALL MIXED-USE PROJECT, BREA



KEY

= STUDY INTERSECTION

[Red Dotted Box] = BREA MALL

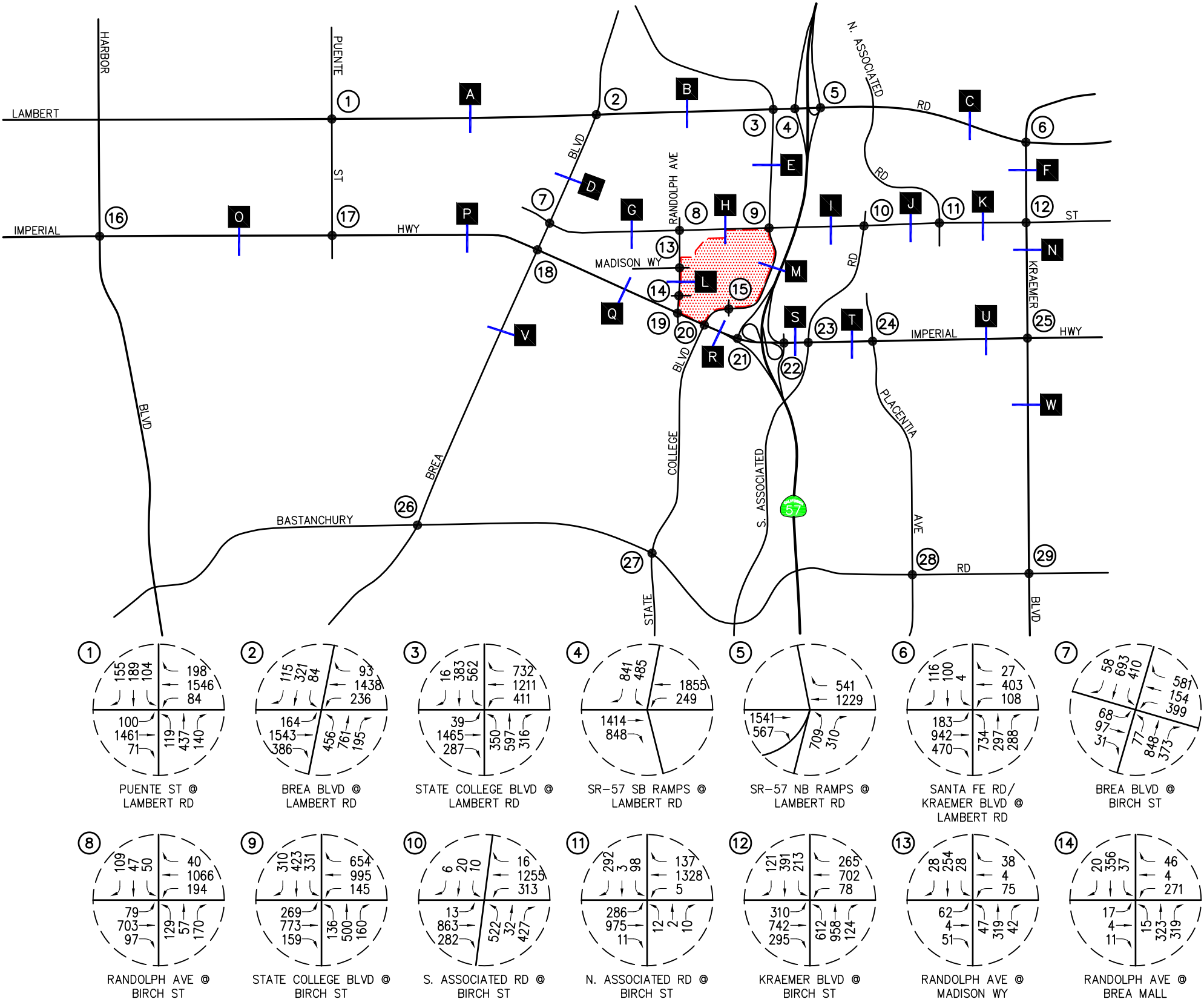
**LINSCOTT
LAW &
GREENSPAN**
engineers

NO SCALE

FIGURE 6-11B

YEAR 2040 WEEKDAY AM PEAK HOUR TRAFFIC VOLUMES
BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	41,517
B	43,865
C	39,005
D	30,156
E	30,970
F	20,553
G	21,469
H	22,446
I	26,455
J	26,850
K	22,612
L	8,230
M	17,764
N	21,185
O	50,621
P	65,374
Q	63,371
R	81,614
S	60,697
T	59,297
U	57,893
V	34,411
W	21,839



KEY

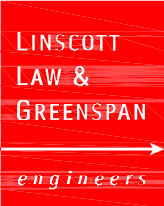
= STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

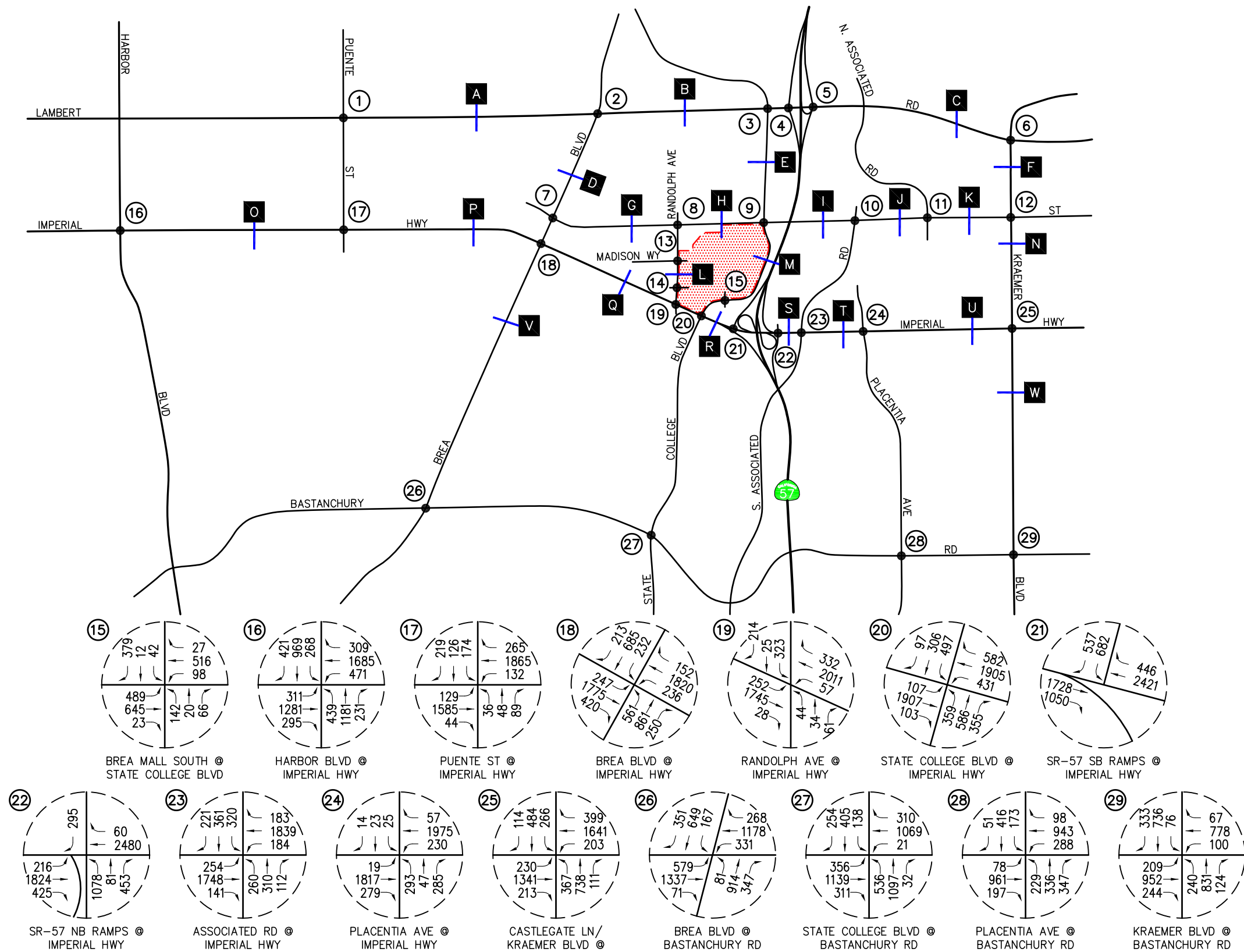
[Red Hatched Box] = BRE A MALL

FIGURE 6-12A

YEAR 2040 WEEKDAY PM PEAK HOUR
AND DAILY TRAFFIC VOLUMES
BRE A MALL MIXED-USE PROJECT, BRE A



LOCATION	VOLUME
A	41,517
B	43,865
C	39,005
D	30,156
E	30,970
F	20,553
G	21,469
H	22,446
I	26,455
J	26,850
K	22,612
L	8,230
M	17,764
N	21,185
O	50,621
P	65,374
Q	63,371
R	81,614
S	60,697
T	59,297
U	57,893
V	34,411
W	21,839



KEY

① = STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

■ = BREA MALL

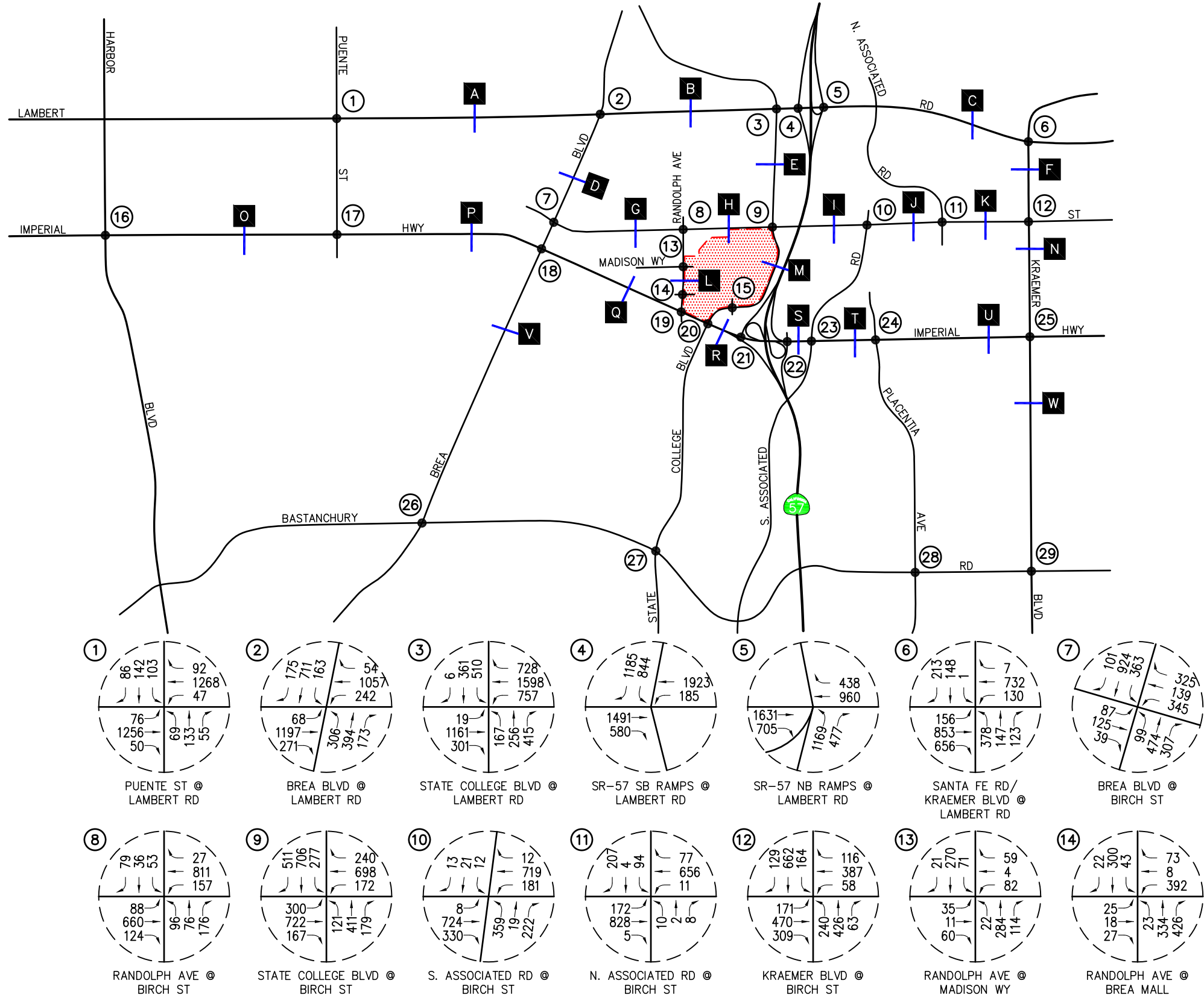


NO SCALE

FIGURE 6-12B

**YEAR 2040 WEEKDAY PM PEAK HOUR
AND DAILY TRAFFIC VOLUMES**
BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	41,555
B	43,903
C	39,290
D	30,275
E	30,970
F	20,762
G	21,484
H	22,152
I	26,537
J	26,974
K	22,706
L	8,230
M	17,779
N	21,267
O	50,957
P	65,740
Q	63,772
R	81,984
S	60,996
T	59,629
U	58,167
V	34,561
W	21,941



KEY

① = STUDY INTERSECTION (PEAK HOUR)

② = STUDY ROADWAY SEGMENT (DAILY)

■ = BREA MALL

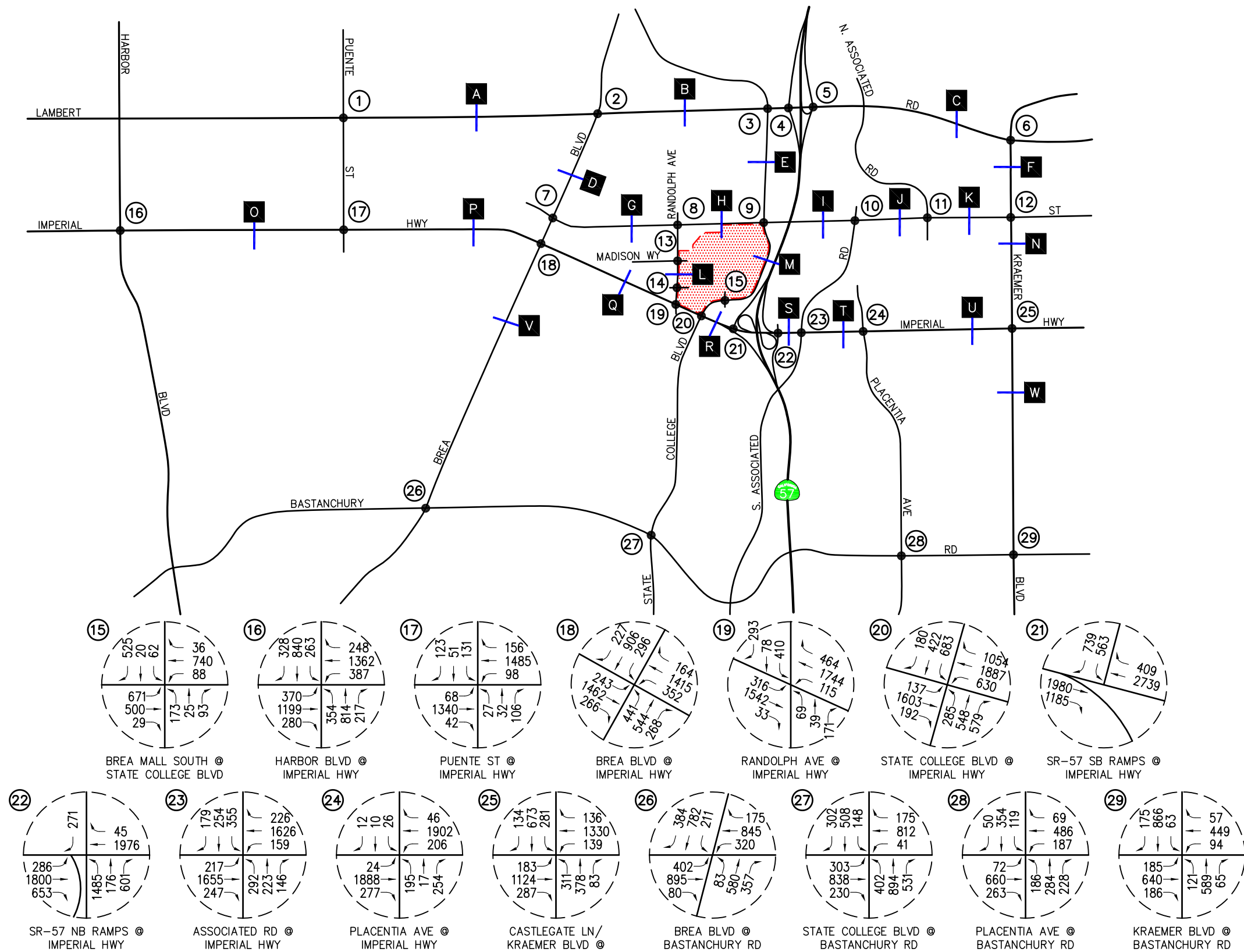
FIGURE 6-13A

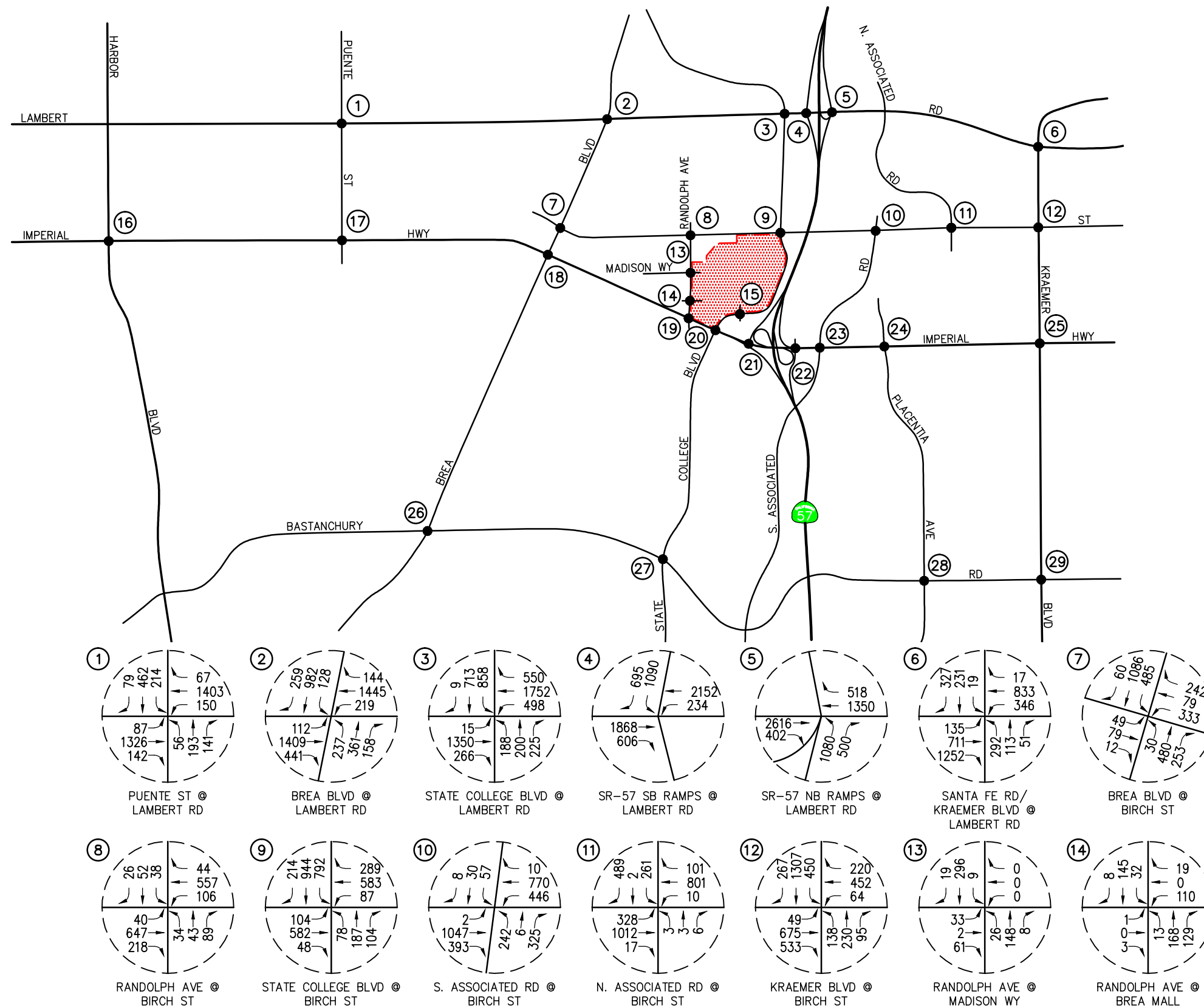
**YEAR 2040 WEEKEND (SATURDAY) MIDDAY
PEAK HOUR AND DAILY TRAFFIC VOLUMES**
BREA MALL MIXED-USE PROJECT, BREA



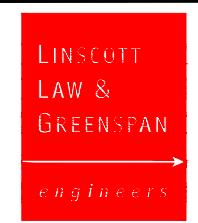
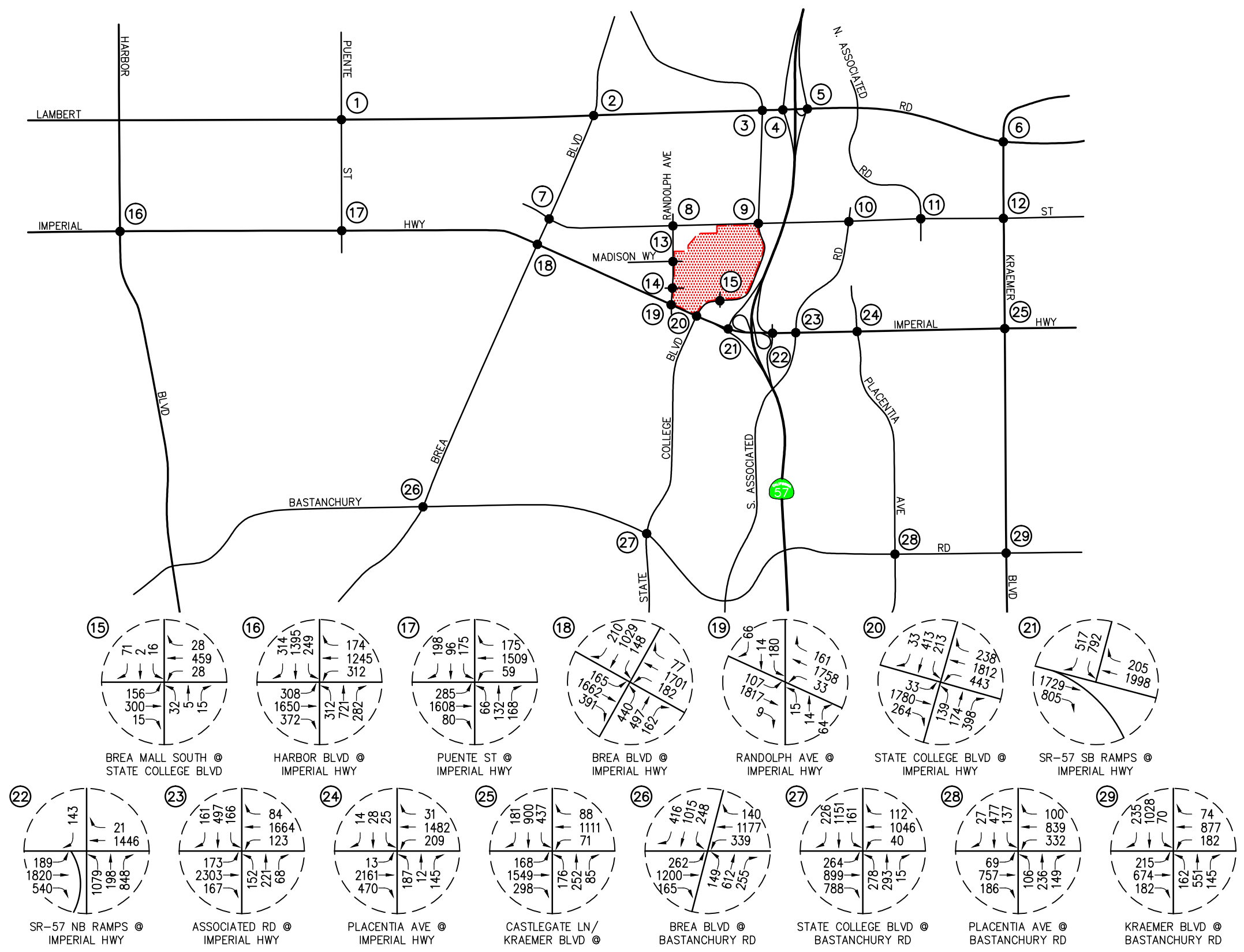
NO SCALE

LOCATION	VOLUME
A	41,555
B	43,903
C	39,290
D	30,275
E	30,970
F	20,762
G	21,484
H	22,152
I	26,537
J	26,974
K	22,706
L	8,230
M	17,779
N	21,267
O	50,957
P	65,740
Q	63,772
R	81,984
S	60,996
T	59,629
U	58,167
V	34,561
W	21,941





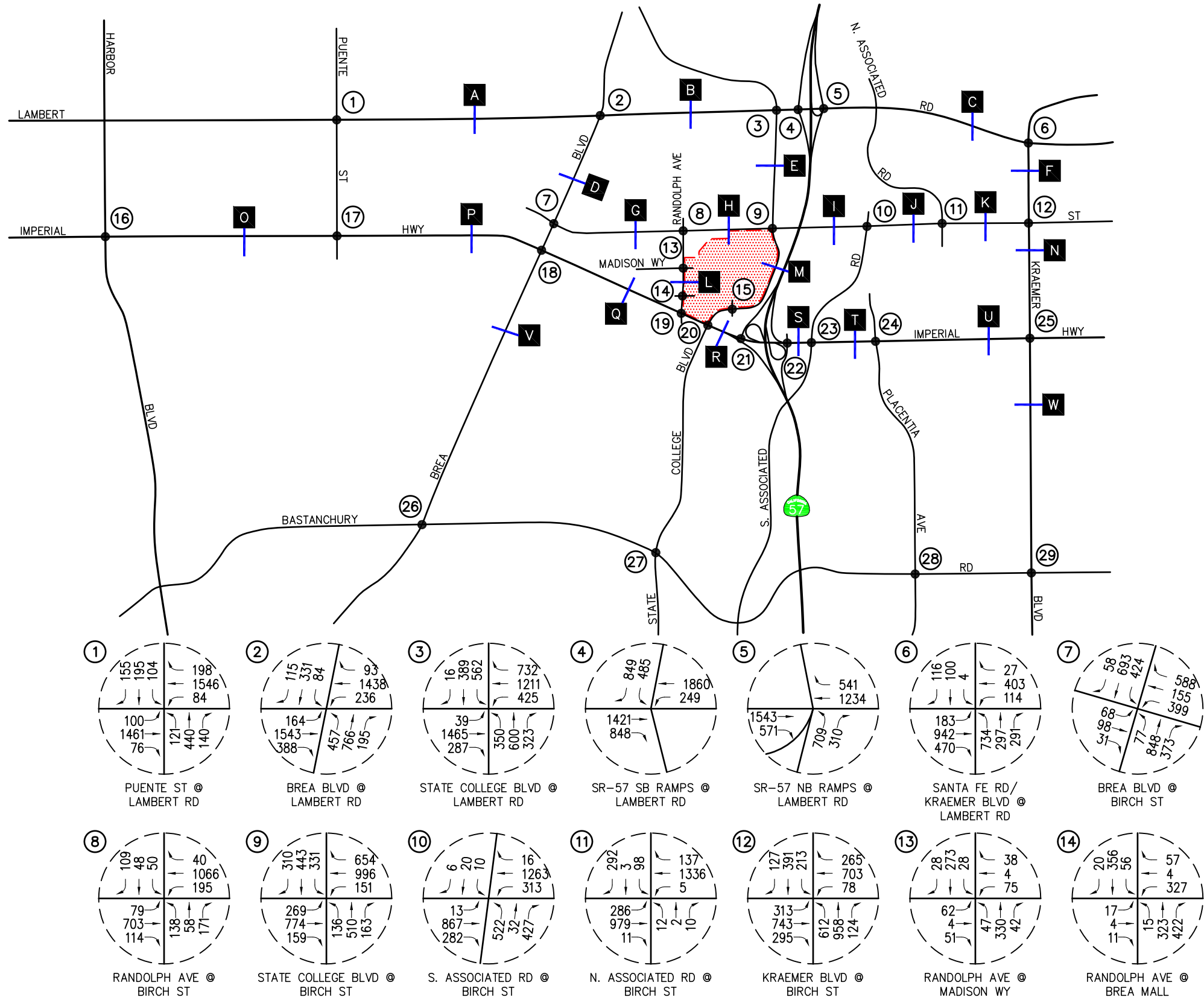
n:\4000\2194099 - brea mall expansion & improvement, brea\dwg\4099 f6-14a.dwg LDP 14:47:56 11-13-2019 besa



KEY
= STUDY INTERSECTION
[Red Hatched Box] = BREA MALL

FIGURE 6-14B
YEAR 2040 WEEKDAY AM PEAK HOUR
TRAFFIC VOLUMES WITH PROJECT
BREA MALL MIXED-USE PROJECT, BREA

LOCATION	VOLUME
A	41,559
B	43,865
C	39,079
D	30,354
E	31,250
F	20,646
G	21,727
H	22,475
I	26,576
J	26,971
K	22,733
L	9,492
M	18,137
N	21,185
O	51,109
P	66,072
Q	64,518
R	83,344
S	61,525
T	59,969
U	58,294
V	34,797
W	21,839



KEY

= STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

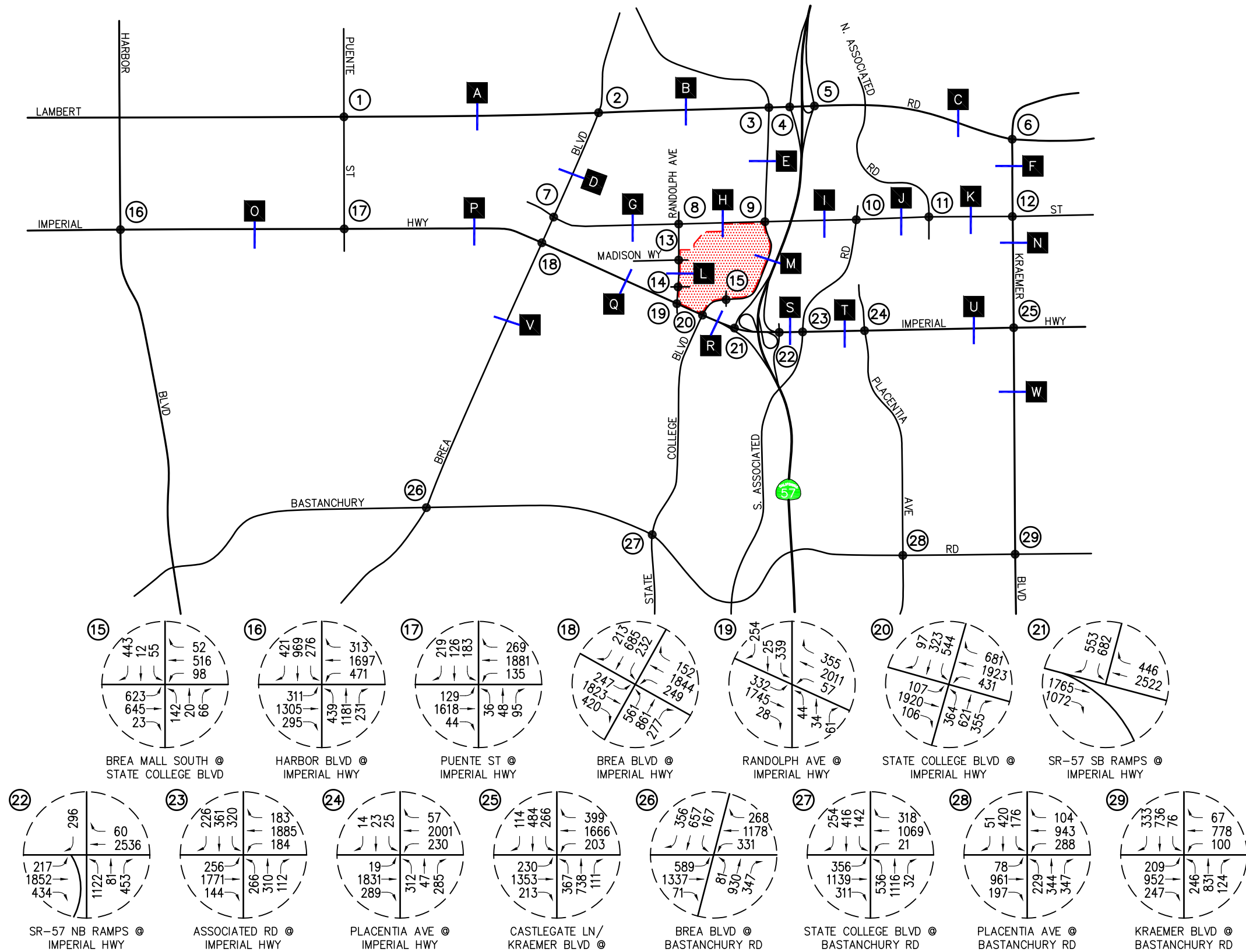
[Red Hatched Box] = BREAA MALL

FIGURE 6-15A

YEAR 2040 WEEKDAY PM PEAK HOUR AND DAILY TRAFFIC VOLUMES WITH PROJECT
BREAA MALL MIXED-USE PROJECT, BREAA



LOCATION	VOLUME
A	41,559
B	43,865
C	39,079
D	30,354
E	31,250
F	20,646
G	21,727
H	22,475
I	26,576
J	26,971
K	22,733
L	9,492
M	18,137
N	21,185
O	51,109
P	66,072
Q	64,518
R	83,344
S	61,525
T	59,969
U	58,294
V	34,797
W	21,839



KEY

① = STUDY INTERSECTION (PEAK HOUR)

= STUDY ROADWAY SEGMENT (DAILY)

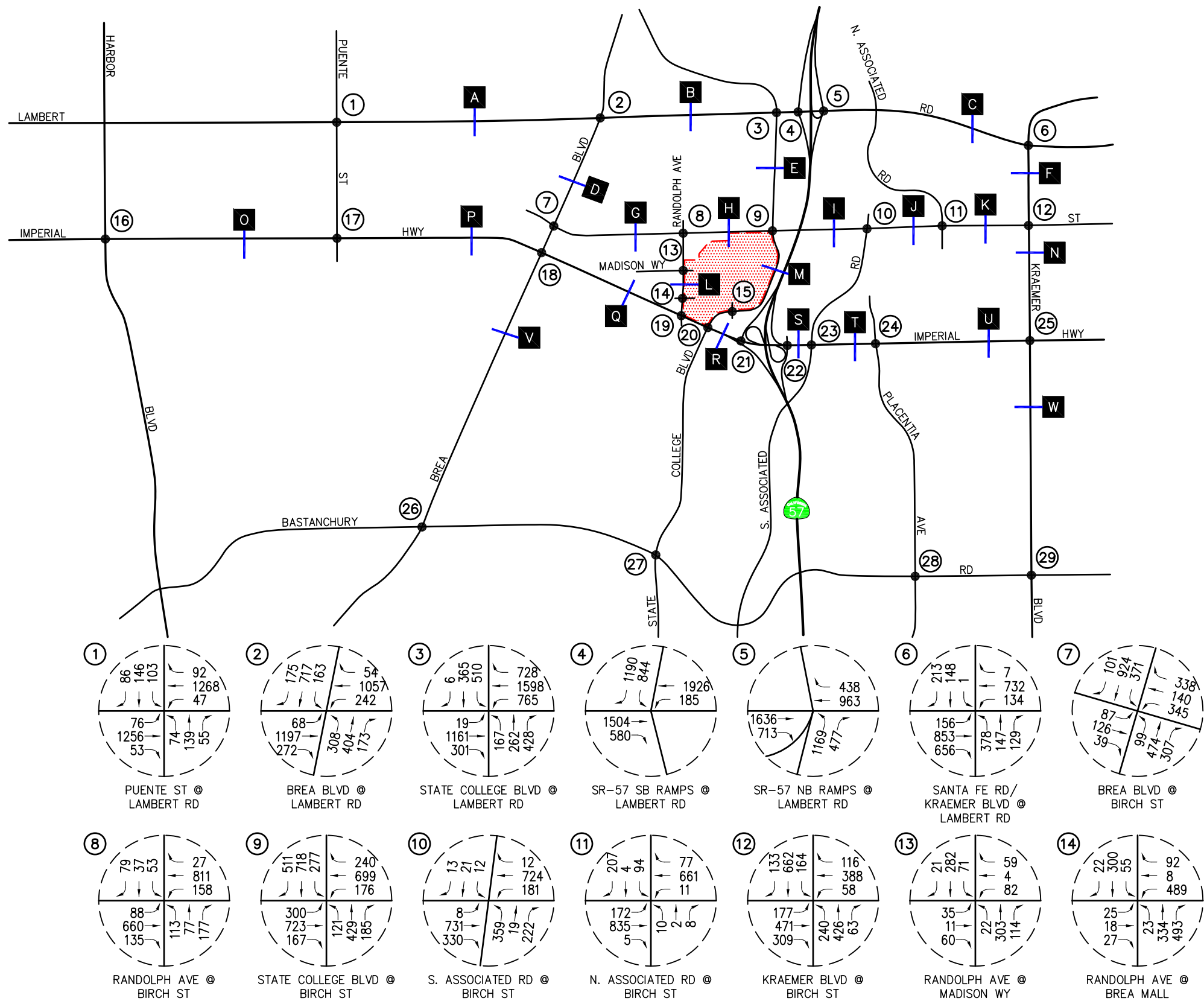
■ = BREA MALL

FIGURE 6-15B

YEAR 2040 WEEKDAY PM PEAK HOUR AND DAILY TRAFFIC VOLUMES WITH PROJECT
BREA MALL MIXED-USE PROJECT, BREA



LOCATION	VOLUME
A	41,596
B	43,903
C	39,362
D	30,468
E	31,243
F	20,851
G	21,734
H	22,178
I	26,651
J	27,088
K	22,820
L	9,475
M	18,142
N	21,267
O	51,432
P	66,423
Q	64,896
R	83,669
S	61,803
T	60,283
U	58,556
V	34,938
W	21,941



KEY

① = STUDY INTERSECTION (PEAK HOUR)

② = STUDY ROADWAY SEGMENT (DAILY)

■ = BREA MALL

FIGURE 6-16A

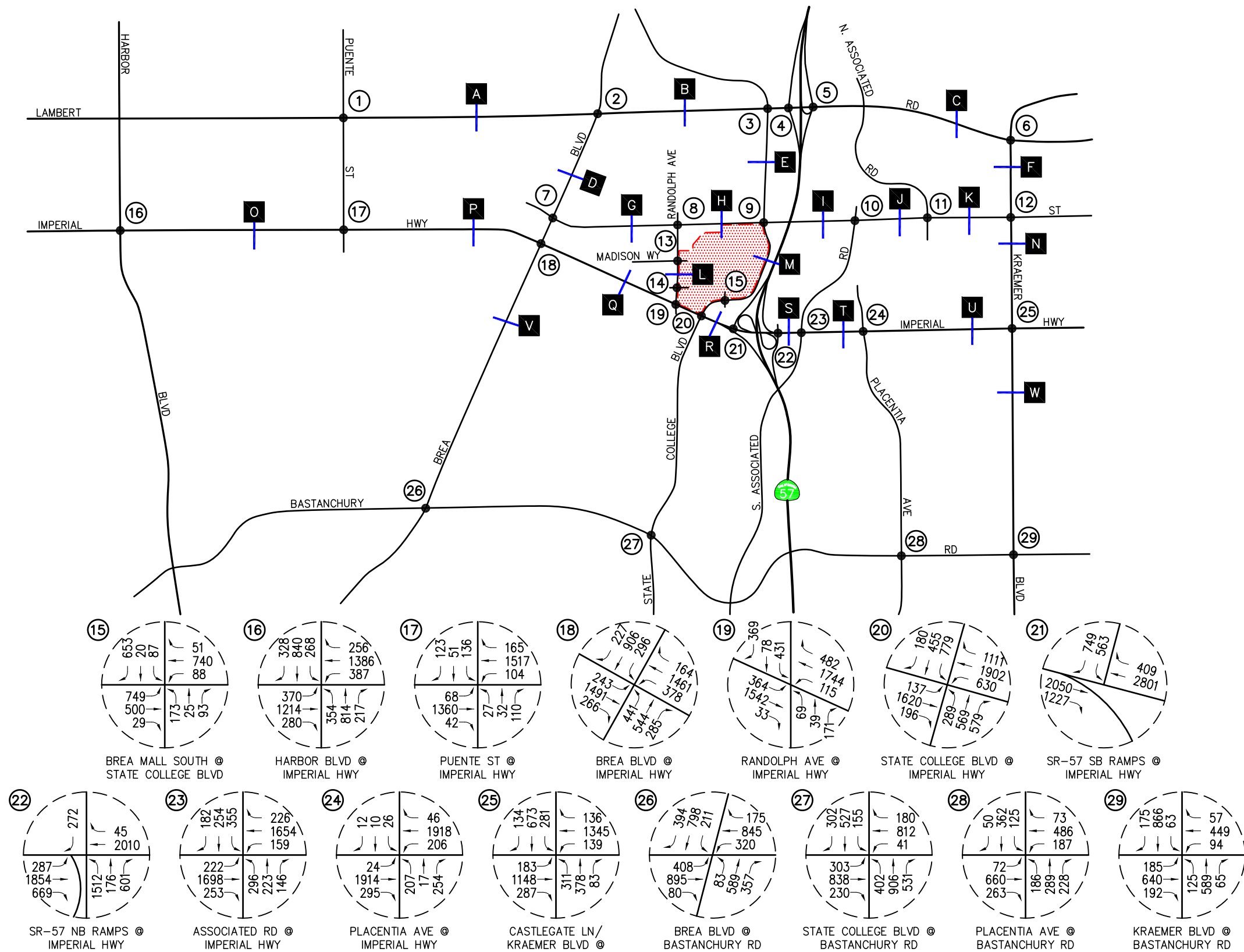
**YEAR 2040 WEEKEND (SATURDAY) MIDDAY PEAK HOUR
AND DAILY TRAFFIC VOLUMES WITH PROJECT**

BREA MALL MIXED-USE PROJECT, BREA



NO SCALE

LOCATION	VOLUME
A	41,596
B	43,903
C	39,362
D	30,468
E	31,243
F	20,851
G	21,734
H	22,178
I	26,651
J	27,088
K	22,820
L	9,475
M	18,142
N	21,267
O	51,432
P	66,423
Q	64,896
R	83,669
S	61,803
T	60,283
U	58,556
V	34,938
W	21,941



7.0 TRAFFIC IMPACT ANALYSIS METHODOLOGY

The relative impact of the proposed Project during the weekday AM peak hour and PM peak hour and weekend (Saturday) Midday peak hour was evaluated based on analysis of future operating conditions at the twenty-nine (29) key study intersections, without, then with, the proposed Project. The previously discussed capacity analysis procedures were utilized to investigate the future volume-to-capacity relationships and service level characteristics at each study intersection. The significance of the potential impacts of the Project at each key intersection was then evaluated using the following traffic impact criteria.

7.1 Impact Criteria and Thresholds

7.1.1 *City of Brea*

For the ICU analysis, an impact is considered to be significant if the Project causes an intersection at LOS D or better to degrade to LOS E or F, or if the Project increases traffic demand at a signalized study intersection by 0.020 or greater and the intersection is forecast to operate at LOS E or F.

For the HCM analysis, a significant LOS impact occurs when the proposed Project causes the level of service at an intersection to fall below LOS D with the addition of Project traffic to baseline conditions. For intersections that already operate at unacceptable LOS E or F under the baseline conditions, a significant impact is defined as the proposed Project causing an increase in average critical delay value by 2.0 seconds or more. This significant impact criteria would only apply to those intersections located within the City of Brea and under its sole jurisdiction. At locations within the City of Brea but under the jurisdiction of Caltrans (i.e. study locations located along Imperial (SR-90) Highway, Caltrans LOS standards and impact criteria noted in the following Section 7.1.5 would apply.

7.1.2 *City of La Habra*

For the ICU analysis, LOS D is the acceptable condition that should be maintained during the morning and evening peak commute hours on all intersections within the City of La Habra, except those on the CMPHS of Orange County, where LOS E is defined in the CMP for Orange County as the acceptable limit and is acceptable for State Highway intersections. However, LOS D is considered acceptable at the intersection of Harbor Boulevard at Imperial Highway in order to be conservative. An impact is considered to be significant if the Project causes an intersection to degrade to LOS E or F, or if the Project increases traffic demand at a signalized study intersection by 0.010 or greater and the intersection is forecast to operate at LOS E or F.

7.1.3 *City of Fullerton*

The City of Fullerton considers an impact to be significant if the project causes an intersection at LOS D or better to degrade to LOS E or F. Per the City of Fullerton traffic study guidelines, peak hour intersection operating conditions were evaluated using the *Highway Capacity Manual* (HCM) Operations methodology.

7.1.4 City of Placentia

For the ICU analysis, an impact is considered to be significant if the Project causes an intersection at LOS D or better to degrade to LOS E or F, or if the Project increases traffic demand at a signalized study intersection by 0.010 or greater and the intersection is forecast to operate at LOS E or F.

7.1.5 Caltrans

Consistent with the *Caltrans Guide for the Preparation of Traffic Impact Studies*, the following criteria has been utilized to determine project impacts at the state-controlled study intersections:

- Caltrans endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D” on State highway facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. Caltrans has established that LOS D is the operating standard for all Caltrans facilities. Caltrans has determined that all state-owned facilities that operate below LOS D should be identified and improved to an acceptable LOS. The *Caltrans Traffic Impact Study Guidelines dated December 2002* states that if an existing State-owned facility operates at less than the target LOS (i.e. LOS D); the existing service level should be maintained.

7.2 Traffic Impact Analysis Scenarios

The following scenarios are those for which volume/capacity calculations have been performed at the twenty-nine (29) key intersections for existing plus project, near-term (Year 2022) and long-term (Year 2040) traffic conditions:

1. Existing Baseline (Existing + Fully Occupied Mall) Traffic Conditions;
2. Existing Baseline (Existing + Fully Occupied Mall) Plus Project Traffic Conditions;
3. Scenario (2) with Mitigation, if necessary;
4. Near-Term (Year 2022) Background Traffic Conditions (Existing plus Ambient Growth plus Related Projects);
5. Near-Term (Year 2022) Background Plus Project Traffic Conditions;
6. Scenario (5) with Mitigation, if necessary;
7. Long-Term Buildout Traffic Conditions;
8. Long-Term Buildout Plus Project Traffic Conditions; and
9. Scenario (8) with Mitigation, if necessary.

7.3 City of Brea Nexus Program

To satisfy the AB 1600 legislative requirement, development impact fees have been established for future traffic impacts within the City of Brea. Ensuring that every development project contributes a fair share of transportation improvements in the community, the City has introduced the “Transportation Improvement Nexus Program”. In 2011, the Nexus Program was updated to reflect transportation needs and incorporate capacity improvements in an orderly fashion. The program ensures all future development with the City of Brea contributes on a fair share basis.

8.0 PEAK HOUR INTERSECTION CAPACITY ANALYSIS

8.1 Existing Plus Project Analysis - ICU

Table 8-1 summarizes the peak hour Level of Service results at the twenty-seven (27) key study intersections evaluated under ICU analysis for existing plus project traffic conditions. The first column (1) of ICU/LOS values in *Table 8-1* presents a summary of existing Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hour traffic conditions (which were also presented in *Table 3-6*). The second column (2) lists existing plus project traffic conditions. The third column (3) shows the increase in ICU value due to the added peak hour Project trips and indicates whether the traffic associated with the Project will have a significant impact based on the LOS standards and significant impact criteria defined in this report. The fourth column (4) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.1.1 Existing Plus Project Traffic Conditions

Review of columns (2) and (3) of *Table 8-1* indicates that traffic associated with the proposed Project will significantly impact one (1) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hour when compared to the LOS standards and significant impact criteria specified in this report. The one (1) location significantly impacted by the proposed Project is as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u> <u>Midday Peak Hour</u>	
	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>
20. State College Boulevard at Imperial Highway	--	--	--	--	1.021	F

However, as shown in column (4) of *Table 8-1*, the implementation of recommended mitigation measures at the impacted intersections offsets the Project's impact. After implementation of the recommended mitigation measures, the impacted intersections are forecast to operate at better service levels than pre-Project conditions. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

Appendix C presents the Existing Plus Project ICU/LOS calculations for the twenty-seven (27) key study intersections.

TABLE 8-1
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. Puente Street at Lambert Road	D	AM	0.522	A	0.524	A	0.002	No	--	--
		PM	0.591	A	0.592	A	0.001	No	--	--
		Sat MD	0.403	A	0.405	A	0.002	No	--	--
2. Brea Boulevard at Lambert Road	D	AM	0.685	B	0.687	B	0.002	No	--	--
		PM	0.618	B	0.620	B	0.002	No	--	--
		Sat MD	0.620	B	0.622	B	0.002	No	--	--
3. State College Boulevard at Lambert Road	D	AM	0.672	B	0.676	B	0.004	No	--	--
		PM	0.647	B	0.652	B	0.005	No	--	--
		Sat MD	0.649	B	0.655	B	0.006	No	--	--
4. SR-57 SB Ramps at Lambert Road	D	AM	0.716	C	0.717	C	0.001	No	--	--
		PM	0.587	A	0.589	A	0.002	No	--	--
		Sat MD	0.697	B	0.699	B	0.002	No	--	--
5. SR-57 NB Ramps at Lambert Road	D	AM	0.783	C	0.784	C	0.001	No	--	--
		PM	0.543	A	0.545	A	0.002	No	--	--
		Sat MD	0.656	B	0.659	B	0.003	No	--	--

Note:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	D	AM	0.591	A	0.593	A	0.002	No	--	--
		PM	0.498	A	0.500	A	0.002	No	--	--
		Sat MD	0.444	A	0.445	A	0.001	No	--	--
7. Brea Boulevard at Birch Street	D	AM	0.380	A	0.381	A	0.001	No	--	--
		PM	0.603	B	0.607	B	0.004	No	--	--
		Sat MD	0.435	A	0.435	A	0.000	No	--	--
8. Randolph Avenue at Birch Street	D	AM	0.338	A	0.343	A	0.005	No	--	--
		PM	0.541	A	0.547	A	0.006	No	--	--
		Sat MD	0.448	A	0.455	A	0.007	No	--	--
9. State College Boulevard at Birch Street	D	AM	0.506	A	0.510	A	0.004	No	--	--
		PM	0.643	B	0.649	B	0.006	No	--	--
		Sat MD	0.605	B	0.609	B	0.004	No	--	--
10. S Associated Road at Birch Street	D	AM	0.592	A	0.594	A	0.002	No	--	--
		PM	0.592	A	0.593	A	0.001	No	--	--
		Sat MD	0.491	A	0.494	A	0.003	No	--	--

Note:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
11. N Associated Road at Birch Street	D	AM	0.520	A	0.521	A	0.001	No	--	--
		PM	0.616	B	0.618	B	0.002	No	--	--
		Sat MD	0.370	A	0.371	A	0.001	No	--	--
12. Kraemer Boulevard at Birch Street	D	AM	0.532	A	0.533	A	0.001	No	--	--
		PM	0.605	B	0.608	B	0.003	No	--	--
		Sat MD	0.448	A	0.449	A	0.001	No	--	--
13. Randolph Avenue at Madison Way	D	AM	0.134	A	0.137	A	0.003	No	--	--
		PM	0.234	A	0.237	A	0.003	No	--	--
		Sat MD	0.279	A	0.285	A	0.006	No	--	--
14. Randolph Avenue at Brea Mall	D	AM	0.132	A	0.183	A	0.051	No	--	--
		PM	0.343	A	0.404	A	0.061	No	--	--
		Sat MD	0.430	A	0.536	A	0.106	No	--	--
15. Brea Mall South at State College Boulevard	D	AM	0.176	C	0.211	A	0.035	No	--	--
		PM	0.423	A	0.468	A	0.045	No	--	--
		Sat MD	0.562	A	0.642	B	0.080	No	--	--

Note:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
16. Harbor Boulevard at Imperial Highway	D ²⁶	AM	0.755	C	0.758	C	0.003	No	--	--
		PM	0.735	C	0.740	C	0.005	No	--	--
		Sat MD	0.651	B	0.654	B	0.003	No	--	--
17. Puente Street at Imperial Highway	D	AM	0.548	A	0.556	A	0.008	No	--	--
		PM	0.563	A	0.575	A	0.012	No	--	--
		Sat MD	0.457	A	0.469	A	0.012	No	--	--
18. Brea Boulevard at Imperial Highway	D	AM	0.752	C	0.761	C	0.009	No	--	--
		PM	0.738	C	0.751	C	0.013	No	--	--
		Sat MD	0.744	C	0.757	C	0.013	No	--	--
19. Randolph Avenue at Imperial Highway	D	AM	0.402	A	0.420	A	0.018	No	--	--
		PM	0.618	B	0.665	B	0.047	No	--	--
		Sat MD	0.688	B	0.747	C	0.059	No	--	--
20. State College Boulevard at Imperial Highway	D	AM	0.660	B	0.678	B	0.018	No	0.668	B
		PM	0.778	C	0.798	C	0.020	No	0.758	C
		Sat MD	0.981	E	1.021	F	0.040	Yes	0.964	E²⁷

Note:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

²⁶ According to City of La Habra guidelines, LOS E is acceptable at this location but is shown as LOS D to be conservative.

²⁷ It is noted that the mitigation improves to pre-Project conditions.

TABLE 8-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
21. SR-57 SB Ramps at Imperial Highway	D	AM	0.550	A	0.564	A	0.014	No	--	--
		PM	0.674	B	0.697	B	0.023	No	--	--
		Sat MD	0.744	C	0.758	C	0.014	No	--	--
22. SR-57 NB Ramps at Imperial Highway	D	AM	0.605	B	0.611	B	0.006	No	--	--
		PM	0.671	B	0.686	B	0.015	No	--	--
		Sat MD	0.724	C	0.733	C	0.009	No	--	--
23. Associated Road at Imperial Highway	D	AM	0.673	B	0.680	B	0.007	No	--	--
		PM	0.746	C	0.753	C	0.007	No	--	--
		Sat MD	0.681	B	0.692	B	0.011	No	--	--
24. Castlegate Lane/Placentia Avenue at Imperial Highway	D	AM	0.575	A	0.578	A	0.003	No	--	--
		PM	0.668	B	0.670	B	0.002	No	--	--
		Sat MD	0.645	B	0.650	B	0.005	No	--	--
25. Kraemer Boulevard at Imperial Highway	D	AM	0.564	A	0.566	A	0.002	No	--	--
		PM	0.706	C	0.711	C	0.005	No	--	--
		Sat MD	0.602	B	0.606	B	0.004	No	--	--

Note:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-1 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
28. Placentia Avenue at Bastanchury Road	D	AM	0.641	B	0.642	B	0.001	No	--	--
		PM	0.781	C	0.785	C	0.004	No	--	--
		Sat MD	0.591	A	0.595	A	0.004	No	--	--
29. Kraemer Boulevard at Bastanchury Road	D	AM	0.589	A	0.591	A	0.002	No	--	--
		PM	0.695	B	0.696	B	0.001	No	--	--
		Sat MD	0.532	A	0.535	A	0.003	No	--	--

Note:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

8.2 Existing Plus Project Analysis - HCM

Table 8-2 summarizes the peak hour level of service results at the twenty-seven (27) key study intersections evaluated under HCM analysis for Existing Plus Project traffic conditions. The first column (1) of HCM//LOS values in *Table 8-2* presents a summary of existing Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hour traffic conditions (which were also presented in *Table 3-7*). The second column (2) lists existing plus project traffic conditions. The third column (3) shows the increase in delay due to the added peak hour Project trips and indicates whether the traffic associated with the Project will have a significant impact based on City LOS standards and significant impact criteria defined in this report. The fourth column (4) indicates whether the traffic associated with the Project will have a significant impact based on Caltrans LOS standards and significant impact criteria defined in this report. The fifth column (5) indicates the anticipated LOS with recommended improvements, if any.

8.2.1 Existing Plus Project Traffic Conditions

Review of columns (2), (3), and (4) of *Table 8-2* indicates that traffic associated with the proposed Project will significantly impact one (1) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hour when compared to the LOS standards and significant impact criteria specified in this report. The one (1) location significantly impacted by the proposed Project is as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u>	
	<u>Delay</u>		<u>Delay</u>		<u>Midday Peak Hour</u>	
	<u>(sec/veh)</u>	<u>LOS</u>	<u>(sec/veh)</u>	<u>LOS</u>	<u>(sec/veh)</u>	<u>LOS</u>
19. Randolph Avenue at Imperial Highway	--	--	--	--	59.4	E

However, as shown in column (5) of *Table 8-2*, the implementation of recommended mitigation measures at the impacted intersections offsets the Project's impact. After implementation of the recommended mitigation measures, the impacted intersection is forecast to operate at acceptable service levels. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

Appendix D presents the Existing Plus Project HCM/LOS calculations for the twenty-seven (27) key study intersections.

TABLE 8-2
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact Per City Guidelines		(4) Significant Impact Per Caltrans Guidelines	(5) Existing Plus Project Plus Improvements Per City Guidelines	
				Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
1. Puente Street at Lambert Road	Brea	D	AM	25.9 s/v	C	26.0 s/v	C	0.1 s/v	No	--	--	--
			PM	27.0 s/v	C	27.1 s/v	C	0.1 s/v	No	--	--	--
			Sat MD	17.7 s/v	B	18.0 s/v	B	0.3 s/v	No	--	--	--
2. Brea Boulevard at Lambert Road	Brea	D	AM	38.6 s/v	D	38.9 s/v	D	0.3 s/v	No	--	--	--
			PM	38.4 s/v	D	38.5 s/v	D	0.1 s/v	No	--	--	--
			Sat MD	37.9 s/v	D	38.0 s/v	D	0.1 s/v	No	--	--	--
3. State College Boulevard at Lambert Road	Brea	D	AM	34.5 s/v	C	35.7 s/v	D	1.2 s/v	No	--	--	--
			PM	38.5 s/v	D	38.9 s/v	D	0.4 s/v	No	--	--	--
			Sat MD	38.3 s/v	D	38.7 s/v	D	0.4 s/v	No	--	--	--
4. SR-57 SB Ramps at Lambert Road	Brea/ Caltrans	D	AM	37.8 s/v	D	38.1 s/v	D	N/A	N/A	No	--	--
			PM	21.8 s/v	C	21.9 s/v	C	N/A	N/A	No	--	--
			Sat MD	30.5 s/v	C	30.9 s/v	C	N/A	N/A	No	--	--
5. SR-57 NB Ramps at Lambert Road	Brea/ Caltrans	D	AM	32.2 s/v	C	33.9 s/v	C	N/A	N/A	No	--	--
			PM	21.0 s/v	C	21.0 s/v	C	N/A	N/A	No	--	--
			Sat MD	25.5 s/v	C	26.6 s/v	C	N/A	N/A	No	--	--
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	Brea	D	AM	33.1 s/v	C	33.1 s/v	C	0.0 s/v	No	--	--	--
			PM	30.6 s/v	C	30.6 s/v	C	0.0 s/v	No	--	--	--
			Sat MD	24.9 s/v	C	24.9 s/v	C	0.0 s/v	No	--	--	--
7. Brea Boulevard at Birch Street	Brea	D	AM	26.0 s/v	C	26.2 s/v	C	0.2 s/v	No	--	--	--
			PM	34.4 s/v	C	34.7 s/v	C	0.2 s/v	No	--	--	--
			Sat MD	28.4 s/v	C	28.6 s/v	C	0.2 s/v	No	--	--	--
8. Randolph Avenue at Birch Street	Brea	D	AM	15.9 s/v	B	16.3 s/v	B	0.4 s/v	No	--	--	--
			PM	22.5 s/v	C	22.8 s/v	C	0.3 s/v	No	--	--	--
			Sat MD	21.2 s/v	C	21.6 s/v	C	0.4 s/v	No	--	--	--
9. State College Boulevard at Birch Street	Brea	D	AM	38.7 s/v	D	38.9 s/v	D	0.2 s/v	No	--	--	--
			PM	32.6 s/v	C	32.9 s/v	C	0.3 s/v	No	--	--	--
			Sat MD	38.6 s/v	D	39.7 s/v	D	1.1 s/v	No	--	--	--

- Note:
- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
 - N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

TABLE 8-2 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact Per City Guidelines		(4) Significant Impact Per Caltrans Guidelines	(5) Existing Plus Project Plus Improvements Per City Guidelines	
				Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
10. S Associated Road at Birch Street	Brea	D	AM	29.5 s/v	C	29.5 s/v	C	0.0 s/v	No	--	--	--
			PM	27.5 s/v	C	27.5 s/v	C	0.0 s/v	No	--	--	--
			Sat MD	21.1 s/v	C	21.6 s/v	C	0.5 s/v	No	--	--	--
11. N Associated Road at Birch Street	Brea	D	AM	27.4 s/v	C	27.4 s/v	C	0.0 s/v	No	--	--	--
			PM	27.4 s/v	C	27.6 s/v	C	0.2 s/v	No	--	--	--
			Sat MD	18.2 s/v	B	18.2 s/v	B	0.0 s/v	No	--	--	--
12. Kraemer Boulevard at Birch Street	Brea	D	AM	36.8 s/v	D	36.9 s/v	D	0.1 s/v	No	--	--	--
			PM	48.0 s/v	D	48.4 s/v	D	0.4 s/v	No	--	--	--
			Sat MD	33.7 s/v	C	33.8 s/v	C	0.1 s/v	No	--	--	--
13. Randolph Avenue at Madison Way	Brea	D	AM	17.9 s/v	B	17.9 s/v	B	0.0 s/v	No	--	--	--
			PM	18.2 s/v	B	18.6 s/v	B	0.4 s/v	No	--	--	--
			Sat MD	18.7 s/v	B	19.2 s/v	B	0.5 s/v	No	--	--	--
14. Randolph Avenue at Brea Mall	Brea	D	AM	8.4 s/v	A	17.9 s/v	B	9.5 s/v	No	--	--	--
			PM	18.9 s/v	B	20.7 s/v	C	16.4 s/v	No	--	--	--
			Sat MD	23.9 s/v	C	28.7 s/v	C	4.8 s/v	No	--	--	--
15. Brea Mall South at State College Boulevard	Brea	D	AM	15.7 s/v	B	22.8 s/v	C	7.1 s/v	No	--	--	--
			PM	27.7 s/v	C	31.9 s/v	C	4.2 s/v	No	--	--	--
			Sat MD	34.0 s/v	C	36.6 s/v	C	2.6 s/v	No	--	--	--
16. Harbor Boulevard at Imperial Highway	La Habra/ Fullerton/ Caltrans	D ²⁸	AM	45.8 s/v	D	46.2 s/v	D	N/A	N/A	No	--	--
			PM	45.1 s/v	D	45.3 s/v	D	N/A	N/A	No	--	--
			Sat MD	40.5 s/v	D	40.5 s/v	D	N/A	N/A	No	--	--
17. Puente Street at Imperial Highway	Brea/ Fullerton/ Caltrans	D	AM	20.6 s/v	C	20.8 s/v	C	N/A	N/A	No	--	--
			PM	20.9 s/v	C	21.4 s/v	C	N/A	N/A	No	--	--
			Sat MD	15.1 s/v	B	15.0 s/v	B	N/A	N/A	No	--	--
18. Brea Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	45.7 s/v	D	46.5 s/v	D	N/A	N/A	No	--	--
			PM	40.3 s/v	D	41.1 s/v	D	N/A	N/A	No	--	--
			Sat MD	43.5 s/v	D	44.4 s/v	D	N/A	N/A	No	--	--

Note:

- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
- N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

²⁸ According to City of La Habra guidelines, LOS E is acceptable at this location but is shown as LOS D to be conservative.

TABLE 8-2 (CONTINUED)
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact Per City Guidelines		(4) Significant Impact Per Caltrans Guidelines	(5) Existing Plus Project Plus Improvements Per City Guidelines	
				Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
19. Randolph Avenue at Imperial Highway	Brea/ Caltrans	D	AM	13.2 s/v	B	15.7 s/v	B	N/A	N/A	No	15.1 s/v	B
			PM	26.7 s/v	C	31.5 s/v	C	N/A	N/A	No	29.6 s/v	C
			Sat MD	49.1 s/v	D	59.4 s/v	E	N/A	N/A	Yes	42.7 s/v	D
20. State College Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	35.5 s/v	D	35.9 s/v	D	N/A	N/A	No	--	--
			PM	55.7 s/v	E	64.2 s/v	E	N/A	N/A	No	--	--
			Sat MD	123.5 s/v	F	149.3 s/v	F	N/A	N/A	No	--	--
21. SR-57 SB Ramps at Imperial Highway	Brea/ Caltrans	D	AM	16.2 s/v	B	16.3 s/v	B	N/A	N/A	No	--	--
			PM	17.6 s/v	B	18.1 s/v	B	N/A	N/A	No	--	--
			Sat MD	20.6 s/v	C	22.5 s/v	C	N/A	N/A	No	--	--
22. SR-57 NB Ramps at Imperial Highway	Brea/ Caltrans	D	AM	30.4 s/v	D	30.6 s/v	C	N/A	N/A	No	--	--
			PM	27.8 s/v	C	27.7 s/v	C	N/A	N/A	No	--	--
			Sat MD	34.3 s/v	C	36.3 s/v	D	N/A	N/A	No	--	--
23. Associated Road at Imperial Highway	Brea/ Caltrans	D	AM	29.8 s/v	C	30.0 s/v	C	N/A	N/A	No	--	--
			PM	44.3 s/v	D	44.8 s/v	D	N/A	N/A	No	--	--
			Sat MD	36.0 s/v	D	36.4 s/v	D	N/A	N/A	No	--	--
24. Castlegate Lane/Placentia Avenue at Imperial Highway	Brea/ Caltrans	D	AM	20.0 s/v	B	20.2 s/v	C	N/A	N/A	No	--	--
			PM	29.7 s/v	C	29.9 s/v	C	N/A	N/A	No	--	--
			Sat MD	24.7 s/v	C	25.0 s/v	C	N/A	N/A	No	--	--
25. Kraemer Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	28.8 s/v	C	28.8 s/v	C	N/A	N/A	No	--	--
			PM	37.6 s/v	D	38.1 s/v	D	N/A	N/A	No	--	--
			Sat MD	32.6 s/v	C	32.7 s/v	C	N/A	N/A	No	--	--
26. Brea Boulevard at Bastanchury Road	Fullerton	D	AM	44.1 s/v	D	44.9 s/v	D	0.8 s/v	No	--	--	--
			PM	42.5 s/v	D	43.3 s/v	D	0.8 s/v	No	--	--	--
			Sat MD	37.7 s/v	D	37.8 s/v	D	0.1 s/v	No	--	--	--
27. State College Boulevard at Bastanchury Road	Fullerton	D	AM	33.6 s/v	C	33.7 s/v	C	0.1 s/v	No	--	--	--
			PM	51.4 s/v	D	51.7 s/v	D	0.3 s/v	No	--	--	--
			Sat MD	37.0 s/v	D	37.2 s/v	D	0.2 s/v	No	--	--	--

Note:

- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
- N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

8.3 Year 2022 Traffic Conditions - ICU

Table 8-3 summarizes the peak hour Level of Service results at the twenty-seven (27) key study intersections evaluated under ICU analysis for the Year 2022 horizon year. The first column (1) of ICU/LOS values in *Table 8-3* presents a summary of existing Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hour traffic conditions. The second column (2) lists projected cumulative traffic conditions (existing plus ambient plus related projects traffic) based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2022 near-term traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in ICU value due to the added peak hour Project trips and indicates whether the traffic associated with the Project will have a significant impact based on the LOS standards and significant impact criteria defined in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.3.1 Year 2022 Cumulative Traffic Conditions - ICU

An analysis of future (Year 2022) background traffic conditions indicates that the addition of ambient traffic growth and related project traffic will adversely impact one (1) of the twenty-seven (27) key study intersections. The remaining twenty-six (26) key study intersections are forecast to continue to operate at an acceptable LOS D or better based on the LOS criteria identified in this report. The locations identified below are forecast to operate at unacceptable levels of service:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u> <u>Midday Peak Hour</u>	
	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>
20. State College Boulevard at Imperial Highway	--	--	--	--	1.058	F

8.3.2 Year 2022 Cumulative Plus Project Conditions - ICU

Review of columns (3) and (4) of *Table 8-3* indicates that traffic associated with the proposed Project will have a cumulative significant impact at one (1) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hour when compared to the LOS standards and significant impact criteria specified in this report. The one (1) location cumulatively impacted by the proposed Project is as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u>	
					<u>Midday Peak Hour</u>	
	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>
20. State College Boulevard at Imperial Highway	--	--	--	--	1.098	F

However, as shown in column (5) of *Table 8-3*, the implementation of recommended mitigation measures at the impacted intersections offsets the Project's impact. After implementation of the recommended mitigation measures, the impacted intersections are forecast to operate at better service levels than pre-Project conditions. It should be noted that column (5) of *Table 8-3* also shows the level of service after implementation of the planned SR-57 Lambert Road Interchange project. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

Appendix C also presents the near-term ICU/LOS calculations for the twenty-seven (27) key study intersections.

TABLE 8-3
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2022 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. Puente Street at Lambert Road	D	AM	0.522	A	0.556	A	0.558	A	0.002	No	--	--
		PM	0.591	A	0.627	B	0.627	B	0.000	No	--	--
		Sat MD	0.403	A	0.441	A	0.443	A	0.002	No	--	--
2. Brea Boulevard at Lambert Road	D	AM	0.685	B	0.740	C	0.742	C	0.002	No	--	--
		PM	0.618	B	0.714	C	0.716	C	0.002	No	--	--
		Sat MD	0.620	B	0.695	B	0.697	B	0.002	No	--	--
3. State College Boulevard at Lambert Road	D	AM	0.672	B	0.730	C	0.734	C	0.004	No	--	--
		PM	0.647	B	0.735	C	0.741	C	0.006	No	--	--
		Sat MD	0.649	B	0.732	C	0.738	C	0.006	No	--	--
4. SR-57 SB Ramps at Lambert Road	D	AM	0.716	C	0.785	C	0.787	C	0.002	No	0.756	C
		PM	0.587	A	0.672	B	0.675	B	0.003	No	0.615	B
		Sat MD	0.697	B	0.760	C	0.762	C	0.002	No	0.709	C
5. SR-57 NB Ramps at Lambert Road	D	AM	0.783	C	0.811	D	0.811	D	0.000	No	0.811	D
		PM	0.543	A	0.618	B	0.620	B	0.002	No	0.524	A
		Sat MD	0.656	B	0.721	C	0.724	C	0.003	No	0.671	B

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-3 (CONTINUED)
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2022 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
6. Santa Fe Rd/Kraemer Blvd at Lambert Road	D	AM	0.591	A	0.609	B	0.610	B	0.001	No	--	--
		PM	0.498	A	0.526	A	0.528	A	0.002	No	--	--
		Sat MD	0.444	A	0.466	A	0.467	A	0.001	No	--	--
7. Brea Boulevard at Birch Street	D	AM	0.380	A	0.421	A	0.424	A	0.003	No	--	--
		PM	0.603	B	0.642	B	0.646	B	0.004	No	--	--
		Sat MD	0.435	A	0.484	A	0.487	A	0.003	No	--	--
8. Randolph Avenue at Birch Street	D	AM	0.338	A	0.356	A	0.360	A	0.004	No	--	--
		PM	0.541	A	0.570	A	0.576	A	0.006	No	--	--
		Sat MD	0.448	A	0.481	A	0.487	A	0.006	No	--	--
9. State College Boulevard at Birch Street	D	AM	0.506	A	0.584	A	0.587	A	0.003	No	--	--
		PM	0.643	B	0.727	C	0.733	C	0.006	No	--	--
		Sat MD	0.605	B	0.701	C	0.705	C	0.004	No	--	--
10. S Associated Road at Birch Street	D	AM	0.592	A	0.619	B	0.621	B	0.002	No	--	--
		PM	0.592	A	0.614	B	0.616	B	0.002	No	--	--
		Sat MD	0.491	A	0.513	A	0.515	A	0.002	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-3 (CONTINUED)
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2022 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
11. N Associated Road at Birch Street	D	AM	0.520	A	0.539	A	0.541	A	0.002	No	--	--
		PM	0.616	B	0.641	B	0.643	B	0.002	No	--	--
		Sat MD	0.370	A	0.388	A	0.389	A	0.001	No	--	--
12. Kraemer Boulevard at Birch Street	D	AM	0.532	A	0.548	A	0.548	A	0.000	No	--	--
		PM	0.605	B	0.631	B	0.634	B	0.003	No	--	--
		Sat MD	0.448	A	0.461	A	0.462	A	0.001	No	--	--
13. Randolph Avenue at Madison Way	D	AM	0.134	A	0.137	A	0.140	A	0.003	No	--	--
		PM	0.234	A	0.239	A	0.243	A	0.004	No	--	--
		Sat MD	0.279	A	0.286	A	0.292	A	0.006	No	--	--
14. Randolph Avenue at Brea Mall	D	AM	0.132	A	0.134	A	0.186	A	0.052	No	--	--
		PM	0.343	A	0.351	A	0.442	A	0.091	No	--	--
		Sat MD	0.430	A	0.467	A	0.502	A	0.035	No	--	--
15. Brea Mall South at State College Boulevard	D	AM	0.176	C	0.216	A	0.251	A	0.035	No	--	--
		PM	0.423	A	0.460	A	0.505	A	0.045	No	--	--
		Sat MD	0.562	A	0.617	B	0.697	B	0.080	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-3 (CONTINUED)
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2022 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
16. Harbor Boulevard at Imperial Highway	D ²⁹	AM	0.755	C	0.786	C	0.789	C	0.003	No	--	--
		PM	0.735	C	0.825	D	0.830	D	0.005	No	--	--
		Sat MD	0.651	B	0.708	C	0.711	C	0.003	No	--	--
17. Puente Street at Imperial Highway	D	AM	0.548	A	0.614	B	0.623	B	0.009	No	--	--
		PM	0.563	A	0.600	B	0.612	B	0.012	No	--	--
		Sat MD	0.457	A	0.495	A	0.507	A	0.012	No	--	--
18. Brea Boulevard at Imperial Highway	D	AM	0.752	C	0.817	D	0.822	D	0.005	No	--	--
		PM	0.738	C	0.796	C	0.801	D	0.005	No	--	--
		Sat MD	0.744	C	0.790	C	0.804	D	0.014	No	--	--
19. Randolph Avenue at Imperial Highway	D	AM	0.402	A	0.450	A	0.476	A	0.026	No	--	--
		PM	0.618	B	0.654	B	0.701	C	0.047	No	--	--
		Sat MD	0.688	B	0.731	C	0.790	C	0.059	No	--	--
20. State College Boulevard at Imperial Highway	D	AM	0.660	B	0.722	C	0.739	C	0.017	No	0.721	C
		PM	0.778	C	0.839	D	0.859	D	0.020	No	0.812	D
		Sat MD	0.981	E	1.058	F	1.098	F	0.040	Yes	1.036	F³⁰

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

²⁹ According to City of La Habra guidelines, LOS E is acceptable at this location but is shown as LOS D to be conservative.

³⁰ It is noted that the mitigation improves to pre-Project conditions.

TABLE 8-3 (CONTINUED)
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2022 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
21. SR-57 SB Ramps at Imperial Highway	D	AM	0.550	A	0.620	B	0.633	B	0.013	No	--	--
		PM	0.674	B	0.732	C	0.755	C	0.023	No	--	--
		Sat MD	0.744	C	0.808	D	0.822	D	0.014	No	--	--
22. SR-57 NB Ramps at Imperial Highway	D	AM	0.605	B	0.653	B	0.663	B	0.010	No	--	--
		PM	0.671	B	0.730	C	0.745	C	0.015	No	--	--
		Sat MD	0.724	C	0.786	C	0.796	C	0.010	No	--	--
23. Associated Road at Imperial Highway	D	AM	0.673	B	0.700	C	0.707	C	0.007	No	--	--
		PM	0.746	C	0.778	C	0.785	C	0.007	No	--	--
		Sat MD	0.681	B	0.707	C	0.718	C	0.011	No	--	--
24. Castlegate Ln/Placentia Ave at Imperial Highway	D	AM	0.575	A	0.595	A	0.598	A	0.003	No	--	--
		PM	0.668	B	0.693	B	0.696	B	0.003	No	--	--
		Sat MD	0.645	B	0.667	B	0.673	B	0.006	No	--	--
25. Kraemer Boulevard at Imperial Highway	D	AM	0.564	A	0.585	A	0.587	A	0.002	No	--	--
		PM	0.706	C	0.729	C	0.734	C	0.005	No	--	--
		Sat MD	0.602	B	0.623	B	0.628	B	0.005	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-3 (CONTINUED)
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2022 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
28. Placentia Avenue at Bastanchury Road	D	AM	0.641	B	0.660	B	0.661	B	0.001	No	--	--
		PM	0.781	C	0.804	D	0.809	D	0.005	No	--	--
		Sat MD	0.591	A	0.608	B	0.612	B	0.004	No	--	--
29. Kraemer Boulevard at Bastanchury Road	D	AM	0.589	A	0.606	B	0.608	B	0.002	No	--	--
		PM	0.695	B	0.715	C	0.716	C	0.001	No	--	--
		Sat MD	0.532	A	0.547	A	0.550	A	0.003	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

8.4 Year 2022 Traffic Conditions - HCM

Table 8-4 summarizes the peak hour Level of Service results at the twenty-seven (27) key study intersections evaluated under HCM analysis for the Year 2022 horizon year. The first column (1) of HCM/LOS values in *Table 8-4* presents a summary of existing Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hour traffic conditions. The second column (2) lists projected cumulative traffic conditions (existing plus ambient plus related projects traffic) based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2022 near-term traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in delay due to the added peak hour Project trips and indicates whether the traffic associated with the Project will have a significant impact based on City LOS standards and significant impact criteria defined in this report. The fifth column (5) indicates whether the traffic associated with the Project will have a significant impact based on Caltrans LOS standards and significant impact criteria defined in this report. The sixth column (6) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

8.4.1 Year 2022 Cumulative Traffic Conditions - HCM

An analysis of future (Year 2022) background traffic conditions indicates that the addition of ambient traffic growth and related projects traffic will adversely impact three (3) of the twenty-seven (27) key study intersections during the Weekday AM, Weekday PM, and/or Weekend (Saturday) Midday peak hours under HCM analysis. The remaining twenty-four (24) key study intersections are forecast to continue to operate at acceptable LOS based on the LOS criteria defined in this report. The locations identified below are forecast to operate at unacceptable levels of service:

Key Intersection	AM Peak Hour		PM Peak Hour		Weekend Midday Peak Hour	
	<u>Delay</u>	<u>LOS</u>	<u>Delay</u>	<u>LOS</u>	<u>Delay</u>	<u>LOS</u>
	<u>(sec/veh)</u>		<u>(sec/veh)</u>		<u>(sec/veh)</u>	
18. Brea Boulevard at Imperial Highway	56.7	E	--	--	--	--
20. State College Boulevard at Imperial Highway	--	--	84.2	F	173.9	F
27. State College Boulevard at Bastanchury Road	--	--	55.7	E	--	--

8.4.2 Year 2022 Cumulative Plus Project Conditions - HCM

Review of columns (3), (4) and (5) of *Table 8-4* indicates that that traffic associated with the proposed Project will have a cumulative significant impact at three (3) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hours when compared to the LOS standards and significant impact criteria specified in this report. The three (3) location cumulatively impacted by the proposed Project is as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u>	
	<u>Delay</u>		<u>Delay</u>		<u>Midday Peak Hour</u>	
	<u>(sec/veh)</u>	<u>LOS</u>	<u>(sec/veh)</u>	<u>LOS</u>	<u>(sec/veh)</u>	<u>LOS</u>
18. Brea Boulevard at Imperial Highway	58.9	E	--	--	--	--
19. Randolph Avenue at Imperial Highway	--	--	--	--	73.8	E
20. State College Boulevard at Imperial Highway	--	--	93.8	F	198.4	F

However, as shown in column (5) of *Table 8-5*, the implementation of recommended mitigation measures at the impacted intersections offsets the Project's impact. After implementation of the recommended mitigation measures, the impacted intersections are forecast to operate at better service levels than pre-Project conditions. It should be noted that column (5) of *Table 8-4* also shows the level of service after implementation of the planned SR-57 Lambert Road Interchange project. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

Appendix D also presents the near-term HCM/LOS calculations for the twenty-seven (27) key study intersections.

TABLE 8-4
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact Per City Criteria		(5) Significant Impact Per Caltrans Guidelines	(6) Year 2022 Plus Project Plus Improvements Traffic Conditions	
				Delay	LOS	Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
1. Puente Street at Lambert Road	Brea	D	AM	25.9 s/v	C	26.8 s/v	C	26.9 s/v	C	0.1 s/v	No	--	--	--
			PM	27.0 s/v	C	28.9 s/v	C	29.1 s/v	C	0.2 s/v	No	--	--	--
			Sat MD	17.7 s/v	B	17.9 s/v	B	18.2 s/v	B	0.3 s/v	No	--	--	--
2. Brea Boulevard at Lambert Road	Brea	D	AM	38.6 s/v	D	42.0 s/v	D	42.2 s/v	D	0.2 s/v	No	--	--	--
			PM	38.4 s/v	D	42.1 s/v	D	42.3 s/v	D	0.2 s/v	No	--	--	--
			Sat MD	37.9 s/v	D	40.8 s/v	D	40.9 s/v	D	0.1 s/v	No	--	--	--
3. State College Boulevard at Lambert Road	Brea	D	AM	34.5 s/v	C	39.6 s/v	D	39.6 s/v	D	0.0 s/v	No	--	--	--
			PM	38.5 s/v	D	44.7 s/v	D	45.6 s/v	D	0.9 s/v	No	--	--	--
			Sat MD	38.3 s/v	D	50.5 s/v	D	51.7 s/v	D	1.2 s/v	No	--	--	--
4. SR-57 SB Ramps at Lambert Road	Brea/ Caltrans	D	AM	37.8 s/v	D	50.1 s/v	D	50.4 s/v	D	N/A	N/A	No	33.0 s/v	C
			PM	21.8 s/v	C	28.6 s/v	C	30.1 s/v	C	N/A	N/A	No	24.8 s/v	C
			Sat MD	30.5 s/v	C	43.4 s/v	D	43.9 s/v	D	N/A	N/A	No	35.2 s/v	D
5. SR-57 NB Ramps at Lambert Road	Brea/ Caltrans	D	AM	32.2 s/v	C	37.7 s/v	D	37.8 s/v	D	N/A	N/A	No	30.8 s/v	C
			PM	21.0 s/v	C	24.3 s/v	C	24.4 s/v	C	N/A	N/A	No	15.4 s/v	B
			Sat MD	25.5 s/v	C	29.5 s/v	C	29.7 s/v	C	N/A	N/A	No	20.3 s/v	C
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	Brea	D	AM	33.1 s/v	C	34.9 s/v	C	34.9 s/v	C	0.0 s/v	No	--	--	--
			PM	30.6 s/v	C	30.9 s/v	C	31.0 s/v	C	0.1 s/v	No	--	--	--
			Sat MD	24.9 s/v	C	25.1 s/v	C	25.1 s/v	C	0.0 s/v	No	--	--	--
7. Brea Boulevard at Birch Street	Brea	D	AM	26.0 s/v	C	29.4 s/v	C	29.6 s/v	C	0.2 s/v	No	--	--	--
			PM	34.4 s/v	C	36.9 s/v	D	37.1 s/v	D	0.2 s/v	No	--	--	--
			Sat MD	28.4 s/v	C	32.6 s/v	C	32.8 s/v	C	0.2 s/v	No	--	--	--
8. Randolph Avenue at Birch Street	Brea	D	AM	15.9 s/v	B	15.5 s/v	B	15.9 s/v	B	0.4 s/v	No	--	--	--
			PM	22.5 s/v	C	23.1 s/v	C	23.6 s/v	C	0.5 s/v	No	--	--	--
			Sat MD	21.2 s/v	C	21.0 s/v	C	21.7 s/v	C	0.7 s/v	No	--	--	--
9. State College Boulevard at Birch Street	Brea	D	AM	38.7 s/v	D	41.9 s/v	D	42.1 s/v	D	0.2 s/v	No	--	--	--
			PM	32.6 s/v	C	39.6 s/v	D	40.1 s/v	D	0.5 s/v	No	--	--	--
			Sat MD	38.6 s/v	D	45.2 s/v	D	45.3 s/v	D	0.1 s/v	No	--	--	--

Note:

- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
- N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

TABLE 8-4 (CONTINUED)
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact Per City Criteria		(5) Significant Impact Per Caltrans Guidelines	(6) Year 2022 Plus Project Plus Improvements Traffic Conditions	
				Delay	LOS	Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
10. S Associated Road at Birch Street	Brea	D	AM	29.5 s/v	C	30.9 s/v	C	30.9 s/v	C	0.0 s/v	No	--	--	--
			PM	27.5 s/v	C	28.1 s/v	C	28.1 s/v	C	0.0 s/v	No	--	--	--
			Sat MD	21.1 s/v	C	21.4 s/v	C	21.4 s/v	C	0.0 s/v	No	--	--	--
11. N Associated Road at Birch Street	Brea	D	AM	27.4 s/v	C	28.1 s/v	C	28.2 s/v	C	0.1 s/v	No	--	--	--
			PM	27.4 s/v	C	30.4 s/v	C	30.6 s/v	C	0.2 s/v	No	--	--	--
			Sat MD	18.2 s/v	B	18.9 s/v	B	19.3 s/v	B	0.4 s/v	No	--	--	--
12. Kraemer Boulevard at Birch Street	Brea	D	AM	36.8 s/v	D	38.5 s/v	D	38.6 s/v	D	0.1 s/v	No	--	--	--
			PM	48.0 s/v	D	50.8 s/v	D	51.2 s/v	D	0.4 s/v	No	--	--	--
			Sat MD	33.7 s/v	C	34.1 s/v	C	34.2 s/v	C	0.1 s/v	No	--	--	--
13. Randolph Avenue at Madison Way	Brea	D	AM	17.9 s/v	B	18.1 s/v	B	18.8 s/v	B	0.7 s/v	No	--	--	--
			PM	18.2 s/v	B	18.2 s/v	B	18.7 s/v	B	0.5 s/v	No	--	--	--
			Sat MD	18.7 s/v	B	18.8 s/v	B	19.3 s/v	B	0.5 s/v	No	--	--	--
14. Randolph Avenue at Brea Mall	Brea	D	AM	8.4 s/v	A	8.4 s/v	A	17.8 s/v	B	7.9 s/v	No	--	--	--
			PM	18.9 s/v	B	19.0 s/v	B	20.9 s/v	C	1.9 s/v	No	--	--	--
			Sat MD	23.9 s/v	C	24.1 s/v	C	29.2 s/v	C	5.1 s/v	No	--	--	--
15. Brea Mall South at State College Boulevard	Brea	D	AM	15.7 s/v	B	14.3 s/v	B	21.3 s/v	C	7.0 s/v	No	--	--	--
			PM	27.7 s/v	C	27.0 s/v	C	31.1 s/v	C	4.1 s/v	No	--	--	--
			Sat MD	34.0 s/v	C	33.5 s/v	C	36.6 s/v	D	3.1 s/v	No	--	--	--
16. Harbor Boulevard at Imperial Highway	La Habra/ Fullerton/ Caltrans	D ³¹	AM	45.8 s/v	D	50.6 s/v	D	51.2 s/v	D	N/A	N/A	No	--	--
			PM	45.1 s/v	D	57.6 s/v	E	57.6 s/v	E	N/A	N/A	No	--	--
			Sat MD	40.5 s/v	D	43.3 s/v	D	43.4 s/v	D	N/A	N/A	No	--	--
17. Puente Street at Imperial Highway	Brea/ Fullerton/ Caltrans	D	AM	20.6 s/v	C	21.4 s/v	C	21.7 s/v	C	N/A	N/A	No	--	--
			PM	20.9 s/v	C	23.2 s/v	C	23.9 s/v	C	N/A	N/A	No	--	--
			Sat MD	15.1 s/v	B	15.2 s/v	B	15.5 s/v	B	N/A	N/A	No	--	--
18. Brea Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	45.7 s/v	D	56.7 s/v	E	58.9 s/v	E	N/A	N/A	Yes	45.5 s/v	D
			PM	40.3 s/v	D	45.2 s/v	D	46.8 s/v	D	N/A	N/A	No	40.7 s/v	D
			Sat MD	43.5 s/v	D	49.3 s/v	D	52.5 s/v	D	N/A	N/A	No	43.8 s/v	D

Note:

- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
- N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

³¹ According to City of La Habra guidelines, LOS E is acceptable at this location but is shown as LOS D to be conservative.

TABLE 8-4 (CONTINUED)
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2022 Traffic Conditions		(3) Year 2022 Plus Project Traffic Conditions		(4) Significant Impact Per City Criteria		(5) Significant Impact Per Caltrans Guidelines	(6) Year 2022 Plus Project Plus Improvements Traffic Conditions	
				Delay	LOS	Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
19. Randolph Avenue at Imperial Highway	Brea/ Caltrans	D	AM	13.2 s/v	B	14.0 s/v	B	16.4 s/v	B	N/A	N/A	No	15.7 s/v	B
			PM	26.7 s/v	C	28.8 s/v	C	35.1 s/v	D	N/A	N/A	No	31.7 s/v	C
			Sat MD	49.1 s/v	D	54.7 s/v	D	73.8 s/v	E	N/A	N/A	Yes	47.3 s/v	D
20. State College Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	35.5 s/v	D	45.0 s/v	D	48.3 s/v	D	N/A	N/A	No	44.3 s/v	D
			PM	55.7 s/v	E	84.2 s/v	F	93.8 s/v	F	N/A	N/A	Yes	65.7 s/v	E³²
			Sat MD	123.5 s/v	F	173.9 s/v	F	198.4 s/v	F	N/A	N/A	No	160.7 s/v	F³⁶
21. SR-57 SB Ramps at Imperial Highway	Brea/ Caltrans	D	AM	16.2 s/v	B	17.4 s/v	B	17.7 s/v	B	N/A	N/A	No	--	--
			PM	17.6 s/v	B	19.3 s/v	B	20.9 s/v	C	N/A	N/A	No	--	--
			Sat MD	20.6 s/v	C	29.2 s/v	C	30.7 s/v	C	N/A	N/A	No	--	--
22. SR-57 NB Ramps at Imperial Highway	Brea/ Caltrans	D	AM	30.4 s/v	C	33.4 s/v	C	32.8 s/v	C	N/A	N/A	No	--	--
			PM	27.8 s/v	C	32.2 s/v	C	33.1 s/v	C	N/A	N/A	No	--	--
			Sat MD	34.3 s/v	C	41.9 s/v	D	43.3 s/v	D	N/A	N/A	No	--	--
23. Associated Road at Imperial Highway	Brea/ Caltrans	D	AM	29.8 s/v	C	31.4 s/v	C	32.2 s/v	C	N/A	N/A	No	--	--
			PM	44.3 s/v	D	47.8 s/v	D	48.2 s/v	D	N/A	N/A	No	--	--
			Sat MD	36.0 s/v	D	38.2 s/v	D	40.3 s/v	D	N/A	N/A	No	--	--
24. Castlegate Lane/Placentia Avenue at Imperial Highway	Brea/ Caltrans	D	AM	20.0 s/v	B	20.8 s/v	C	21.0 s/v	C	N/A	N/A	No	--	--
			PM	29.7 s/v	C	32.0 s/v	C	32.3 s/v	C	N/A	N/A	No	--	--
			Sat MD	24.7 s/v	C	26.4 s/v	C	26.6 s/v	C	N/A	N/A	No	--	--
25. Kraemer Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	28.8 s/v	C	29.4 s/v	C	29.5 s/v	C	N/A	N/A	No	--	--
			PM	37.6 s/v	D	40.3 s/v	D	40.9 s/v	D	N/A	N/A	No	--	--
			Sat MD	32.6 s/v	C	33.5 s/v	C	33.6 s/v	C	N/A	N/A	No	--	--
26. Brea Boulevard at Bastanchury Road	Fullerton	D	AM	44.1 s/v	D	47.4 s/v	D	47.7 s/v	D	0.3 s/v	No	--	--	--
			PM	42.5 s/v	D	46.3 s/v	D	47.4 s/v	D	1.1 s/v	No	--	--	--
			Sat MD	37.7 s/v	D	38.4 s/v	D	38.5 s/v	D	0.1 s/v	No	--	--	--
27. State College Boulevard at Bastanchury Road	Fullerton	D	AM	33.6 s/v	C	34.5 s/v	C	34.7 s/v	C	0.2 s/v	No	--	--	--
			PM	51.4 s/v	D	55.7 s/v	E	56.2 s/v	E	0.5 s/v	No	--	--	--
			Sat MD	37.0 s/v	D	38.0 s/v	D	38.3 s/v	D	0.3 s/v	No	--	--	--

Note: s/v

- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
- N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

³² It is noted that the mitigation improves to pre-Project conditions.

8.5 Year 2040 Traffic Conditions - ICU

Table 8-5 summarizes the peak hour Level of Service results at the twenty-seven (27) key study intersections evaluated under ICU analysis for the Year 2040. The first column (1) of ICU/LOS values in *Table 8-5* presents a summary of existing Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hour traffic conditions. The second column (2) lists projected Year 2040 long-term traffic conditions based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2040 long-term traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in ICU value due to the added peak hour Project trips and indicates whether the traffic associated with the Project will have a significant impact based on the LOS standards and significant impact criteria defined in this report. The fifth column (5) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve an acceptable level of service.

It should be noted that the intersections of SR-57 SB Ramps at Lambert Road and SR-57 NB Ramps at Lambert Road include planned SR-57 Lambert Road Interchange project improvements.

8.5.1 Year 2040 Traffic Conditions - ICU

Review of column (2) of *Table 8-5* shows that projected long-term (Year 2040) without project traffic will adversely impact three (3) of the twenty-seven (27) key study intersections during the Weekday AM and/or Weekend (Saturday) Midday peak hours when compared to the LOS standards specified in this report. The remaining twenty-four (24) key study intersections are forecast to operate at an acceptable LOS D or better for long-term (Year 2040) traffic conditions. The locations projected to operate at an adverse LOS are as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u> <u>Midday Peak Hour</u>	
	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>
16. Harbor Boulevard at Imperial Highway	0.901	E	--	--	--	--
20. State College Boulevard at Imperial Highway	--	--	--	--	1.103	F
23. Associated Road at Imperial Highway	0.937	E	--	--	--	--

8.5.2 Year 2040 Plus Project Traffic Conditions - ICU

Review of columns (3) and (4) of *Table 8-5* indicates that traffic associated with the proposed Project will have a cumulative significant impact at one (1) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hours when compared to the LOS standards and significant impact criteria specified in this report. The one (1) location cumulatively impacted by the proposed Project is as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u> <u>Midday Peak Hour</u>	
	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>	<u>ICU</u>	<u>LOS</u>
20. State College Boulevard at Imperial Highway	--	--	--	--	1.143	F

However, as shown in column (5) of *Table 8-5*, the implementation of recommended mitigation measures at the impacted intersections offsets the Project's impact. After implementation of the recommended mitigation measures, the impacted intersections are forecast to operate at better service levels than pre-Project conditions. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

Appendix C presents the long-term ICU/LOS calculations for the twenty-seven (27) key study intersections.

TABLE 8-5
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2040 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
1. Puente Street at Lambert Road	D	AM	0.522	A	0.649	B	0.650	B	0.001	No	--	--
		PM	0.591	A	0.682	B	0.683	B	0.001	No	--	--
		Sat MD	0.403	A	0.477	A	0.479	A	0.002	No	--	--
2. Brea Boulevard at Lambert Road	D	AM	0.685	B	0.811	D	0.814	D	0.003	No	--	--
		PM	0.618	B	0.765	C	0.766	C	0.001	No	--	--
		Sat MD	0.620	B	0.726	C	0.729	C	0.003	No	--	--
3. State College Boulevard at Lambert Road	D	AM	0.672	B	0.766	C	0.770	C	0.004	No	--	--
		PM	0.647	B	0.773	C	0.779	C	0.006	No	--	--
		Sat MD	0.649	B	0.769	C	0.775	C	0.006	No	--	--
4. SR-57 SB Ramps at Lambert Road	D	AM	0.716	C	0.805	D	0.806	D	0.001	No	--	--
		PM	0.587	A	0.661	B	0.664	B	0.003	No	--	--
		Sat MD	0.697	B	0.776	C	0.778	C	0.002	No	--	--
5. SR-57 NB Ramps at Lambert Road	D	AM	0.783	C	0.880	D	0.881	D	0.001	No	--	--
		PM	0.543	A	0.569	A	0.569	A	0.000	No	--	--
		Sat MD	0.656	B	0.737	C	0.739	C	0.002	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-5 (CONTINUED)
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2040 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
6. Santa Fe Rd/Kraemer Blvd at Lambert Road	D	AM	0.591	A	0.711	C	0.712	C	0.001	No	--	--
		PM	0.498	A	0.643	B	0.645	B	0.002	No	--	--
		Sat MD	0.444	A	0.576	A	0.577	A	0.001	No	--	--
7. Brea Boulevard at Birch Street	D	AM	0.380	A	0.485	A	0.488	A	0.003	No	--	--
		PM	0.603	B	0.671	B	0.675	B	0.004	No	--	--
		Sat MD	0.435	A	0.508	A	0.511	A	0.003	No	--	--
8. Randolph Avenue at Birch Street	D	AM	0.338	A	0.437	A	0.441	A	0.004	No	--	--
		PM	0.541	A	0.578	A	0.584	A	0.006	No	--	--
		Sat MD	0.448	A	0.508	A	0.512	A	0.004	No	--	--
9. State College Boulevard at Birch Street	D	AM	0.506	A	0.612	B	0.616	B	0.004	No	--	--
		PM	0.643	B	0.769	C	0.775	C	0.006	No	--	--
		Sat MD	0.605	B	0.737	C	0.741	C	0.004	No	--	--
10. S Associated Road at Birch Street	D	AM	0.592	A	0.696	B	0.698	B	0.002	No	--	--
		PM	0.592	A	0.648	B	0.649	B	0.001	No	--	--
		Sat MD	0.491	A	0.539	A	0.541	A	0.002	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-5 (CONTINUED)
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2040 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
11. N Associated Road at Birch Street	D	AM	0.520	A	0.575	A	0.577	A	0.002	No	--	--
		PM	0.616	B	0.674	B	0.676	B	0.002	No	--	--
		Sat MD	0.370	A	0.405	A	0.407	A	0.002	No	--	--
12. Kraemer Boulevard at Birch Street	D	AM	0.532	A	0.750	C	0.750	C	0.000	No	--	--
		PM	0.605	B	0.719	C	0.722	C	0.003	No	--	--
		Sat MD	0.448	A	0.492	A	0.495	A	0.003	No	--	--
13. Randolph Avenue at Madison Way	D	AM	0.134	A	0.192	A	0.195	A	0.003	No	--	--
		PM	0.234	A	0.249	A	0.252	A	0.003	No	--	--
		Sat MD	0.279	A	0.299	A	0.304	A	0.005	No	--	--
14. Randolph Avenue at Brea Mall	D	AM	0.132	A	0.144	A	0.196	A	0.052	No	--	--
		PM	0.343	A	0.367	A	0.429	A	0.062	No	--	--
		Sat MD	0.430	A	0.463	A	0.524	A	0.061	No	--	--
15. Brea Mall South at State College Boulevard	D	AM	0.176	C	0.225	A	0.259	A	0.034	No	--	--
		PM	0.423	A	0.480	A	0.525	A	0.045	No	--	--
		Sat MD	0.562	A	0.645	B	0.725	C	0.080	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-5 (CONTINUED)
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2040 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
16. Harbor Boulevard at Imperial Highway	D ³³	AM	0.755	C	0.901	E	0.904	E	0.003	No	--	--
		PM	0.735	C	0.874	D	0.879	D	0.005	No	--	--
		Sat MD	0.651	B	0.751	C	0.754	C	0.003	No	--	--
17. Puente Street at Imperial Highway	D	AM	0.548	A	0.707	C	0.715	C	0.008	No	--	--
		PM	0.563	A	0.646	B	0.658	B	0.012	No	--	--
		Sat MD	0.457	A	0.521	A	0.532	A	0.011	No	--	--
18. Brea Boulevard at Imperial Highway	D	AM	0.752	C	0.860	D	0.864	D	0.004	No	--	--
		PM	0.738	C	0.846	D	0.851	D	0.005	No	--	--
		Sat MD	0.744	C	0.836	D	0.850	D	0.014	No	--	--
19. Randolph Avenue at Imperial Highway	D	AM	0.402	A	0.491	A	0.503	A	0.012	No	--	--
		PM	0.618	B	0.695	B	0.742	C	0.047	No	--	--
		Sat MD	0.688	B	0.804	D	0.863	D	0.059	No	--	--
20. State College Boulevard at Imperial Highway	D	AM	0.660	B	0.780	C	0.797	C	0.017	No	0.778	C
		PM	0.778	C	0.872	D	0.893	D	0.021	No	0.884	D
		Sat MD	0.981	E	1.103	F	1.143	F	0.040	Yes	1.084	F³⁴

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

³³ According to City of La Habra guidelines, LOS E is acceptable at this location but is shown as LOS D to be conservative.

³⁴ It is noted that the mitigation improves to pre-Project conditions in the Saturday midday peak hour.

TABLE 8-5 (CONTINUED)
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2040 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
21. SR-57 SB Ramps at Imperial Highway	D	AM	0.550	A	0.685	B	0.698	B	0.013	No	--	--
		PM	0.674	B	0.764	C	0.787	C	0.023	No	--	--
		Sat MD	0.744	C	0.842	D	0.856	D	0.014	No	--	--
22. SR-57 NB Ramps at Imperial Highway	D	AM	0.605	B	0.710	C	0.719	C	0.009	No	--	--
		PM	0.671	B	0.788	C	0.803	D	0.015	No	--	--
		Sat MD	0.724	C	0.848	D	0.858	D	0.010	No	--	--
23. Associated Road at Imperial Highway	D	AM	0.673	B	0.937	E	0.944	E	0.007	No	--	--
		PM	0.746	C	0.817	D	0.824	D	0.007	No	--	--
		Sat MD	0.681	B	0.752	C	0.763	C	0.011	No	--	--
24. Castlegate Ln/Placentia Ave at Imperial Highway	D	AM	0.575	A	0.704	C	0.707	C	0.003	No	--	--
		PM	0.668	B	0.731	C	0.734	C	0.003	No	--	--
		Sat MD	0.645	B	0.706	C	0.711	C	0.005	No	--	--
25. Kraemer Boulevard at Imperial Highway	D	AM	0.564	A	0.747	C	0.750	C	0.003	No	--	--
		PM	0.706	C	0.846	D	0.850	D	0.004	No	--	--
		Sat MD	0.602	B	0.681	B	0.684	B	0.003	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

TABLE 8-5 (CONTINUED)
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - ICU

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact		(5) Year 2040 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
28. Placentia Avenue at Bastanchury Road	D	AM	0.641	B	0.732	C	0.733	C	0.001	No	--	--
		PM	0.781	C	0.863	D	0.867	D	0.004	No	--	--
		Sat MD	0.591	A	0.660	B	0.662	B	0.002	No	--	--
29. Kraemer Boulevard at Bastanchury Road	D	AM	0.589	A	0.702	C	0.704	C	0.002	No	--	--
		PM	0.695	B	0.786	C	0.787	C	0.001	No	--	--
		Sat MD	0.532	A	0.588	A	0.591	A	0.003	No	--	--

Notes:

- **Bold ICU/LOS** values indicate adverse service levels based on the City LOS standards.

8.6 Year 2040 Traffic Conditions - HCM

Table 8-6 summarizes the peak hour Level of Service results at the twenty-seven (27) key study intersections evaluated under HCM analysis for the Year 2040. The first column (1) of HCM/LOS values in *Table 8-6* presents a summary of existing Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hour traffic conditions. The second column (2) lists projected Year 2040 long-term traffic conditions based on existing intersection geometry, but without any traffic generated from the proposed Project. The third column (3) presents forecast Year 2040 long-term traffic conditions with the addition of Project traffic. The fourth column (4) shows the increase in delay due to the added peak hour Project trips and indicates whether the traffic associated with the Project will have a significant impact based on City LOS standards and significant impact criteria defined in this report. The fifth column (5) indicates whether the traffic associated with the Project will have a significant impact based on Caltrans LOS standards and significant impact criteria defined in this report. The sixth column (6) presents the resultant level of service with the inclusion of recommended traffic improvements, where needed, to achieve pre-Project conditions.

It should be noted that the intersections of SR-57 SB Ramps at Lambert Road and SR-57 NB Ramps at Lambert Road include planned SR-57 Lambert Road Interchange project improvements.

8.6.1 Year 2040 Traffic Conditions - HCM

Review of column (2) of *Table 8-6* shows that projected long-term (Year 2040) without Project traffic will adversely impact six (6) of the twenty-seven (27) key study intersections during the AM and/or PM peak hours when compared to the LOS standards specified in this report. The remaining twenty-one (21) key study intersections are forecast to operate at an acceptable LOS for long-term (Year 2040) traffic conditions. The locations identified below are forecast to operate at unacceptable levels of service:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u> <u>Midday Peak Hour</u>	
	<u>Delay</u>	<u>LOS</u>	<u>Delay</u>	<u>LOS</u>	<u>Delay</u>	<u>LOS</u>
	<u>(sec/veh)</u>		<u>(sec/veh)</u>		<u>(sec/veh)</u>	
12. Kraemer Boulevard at Birch Street	--	--	62.5	E	--	--
16. Harbor Boulevard at Imperial Highway	56.6	E	59.0	E	--	--
20. State College Boulevard at Imperial Highway	--	--	65.7	E	144.6	F
22. SR-57 NB Ramps at Imperial Highway	--	--	--	--	73.3	E
23. Associated Road at Imperial Highway	60.1	E	--	--	--	--
27. State College Boulevard at Bastanchury Road	--	--	61.0	E	--	--

8.6.2 Year 2040 Plus Project Traffic Conditions – HCM

Review of columns (3), (4), and (5) of *Table 8-6* indicates that traffic associated with the proposed Project will cumulatively impact six (6) of the twenty-seven (27) key study intersections, when compared to LOS standards and significant impact criteria specified in this report. The six (6) locations cumulatively impacted by the proposed Project under Year 2040 Plus Project traffic conditions are as follows:

<u>Key Intersection</u>	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>Weekend</u>	
	<u>Delay</u>		<u>Delay</u>		<u>Midday Peak Hour</u>	
	<u>(sec/veh)</u>	<u>LOS</u>	<u>(sec/veh)</u>	<u>LOS</u>	<u>(sec/veh)</u>	<u>LOS</u>
16. Harbor Boulevard at Imperial Highway	57.4	E	60.1	E	--	--
18. Brea Boulevard at Imperial Highway	56.6	E	--	--	--	--
19. Randolph Avenue at Imperial Highway	--	--	--	--	63.9	E
20. State College Boulevard at Imperial Highway	--	--	83.5	F	164.8	F
22. SR-57 NB Ramps at Imperial Highway	--	--	--	--	73.6	E
23. Associated Road at Imperial Highway	62.1	E	--	--	--	--

However, as shown in column (6) of *Table 8-6*, the implementation of recommended mitigation measures at the impacted intersections offsets the Project's impact. After implementation of the recommended mitigation measures, the impacted intersections are forecast to operate at better service levels than pre-Project conditions. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

Appendix D presents the long-term HCM/LOS calculations for the twenty-seven (27) key study intersections.

TABLE 8-6
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact Per City Criteria		(5) Significant Impact Per Caltrans Guidelines	(6) Year 2040 Plus Project Plus Improvements Traffic Conditions	
				Delay	LOS	Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
1. Puente Street at Lambert Road	Brea	D	AM	25.9 s/v	C	29.2 s/v	C	29.3 s/v	C	0.1 s/v	No	--	--	--
			PM	27.0 s/v	C	27.7 s/v	C	27.8 s/v	C	0.1 s/v	No	--	--	--
			Sat MD	17.7 s/v	B	18.0 s/v	B	18.3 s/v	B	0.3 s/v	No	--	--	--
2. Brea Boulevard at Lambert Road	Brea	D	AM	38.6 s/v	D	44.8 s/v	D	45.0 s/v	D	0.2 s/v	No	--	--	--
			PM	38.4 s/v	D	40.9 s/v	D	41.0 s/v	D	0.1 s/v	No	--	--	--
			Sat MD	37.9 s/v	D	39.3 s/v	D	39.4 s/v	D	0.1 s/v	No	--	--	--
3. State College Boulevard at Lambert Road	Brea	D	AM	34.5 s/v	C	39.7 s/v	D	40.0 s/v	D	0.3 s/v	No	--	--	--
			PM	38.5 s/v	D	42.7 s/v	D	43.2 s/v	D	0.5 s/v	No	--	--	--
			Sat MD	38.3 s/v	D	49.7 s/v	D	49.8 s/v	D	0.1 s/v	No	--	--	--
4. SR-57 SB Ramps at Lambert Road	Brea/ Caltrans	D	AM	37.8 s/v	D	31.1 s/v	C	31.2 s/v	C	N/A	N/A	No	--	--
			PM	21.8 s/v	C	23.6 s/v	C	23.8 s/v	C	N/A	N/A	No	--	--
			Sat MD	30.5 s/v	C	36.8 s/v	D	37.1 s/v	D	N/A	N/A	No	--	--
5. SR-57 NB Ramps at Lambert Road	Brea/ Caltrans	D	AM	32.2 s/v	C	31.0 s/v	C	31.0 s/v	C	N/A	N/A	No	--	--
			PM	21.0 s/v	C	14.7 s/v	B	14.7 s/v	B	N/A	N/A	No	--	--
			Sat MD	25.5 s/v	C	22.1 s/v	C	22.2 s/v	C	N/A	N/A	No	--	--
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	Brea	D	AM	33.1 s/v	C	36.2 s/v	D	36.3 s/v	D	0.1 s/v	No	--	--	--
			PM	30.6 s/v	C	40.8 s/v	D	40.8 s/v	D	0.0 s/v	No	--	--	--
			Sat MD	24.9 s/v	C	27.7 s/v	C	27.8 s/v	C	0.1 s/v	No	--	--	--
7. Brea Boulevard at Birch Street	Brea	D	AM	26.0 s/v	C	27.6 s/v	C	27.7 s/v	C	0.1 s/v	No	--	--	--
			PM	34.4 s/v	C	36.5 s/v	D	36.6 s/v	D	0.1 s/v	No	--	--	--
			Sat MD	28.4 s/v	C	30.0 s/v	C	30.9 s/v	C	0.9 s/v	No	--	--	--
8. Randolph Avenue at Birch Street	Brea	D	AM	15.9 s/v	B	14.3 s/v	B	14.7 s/v	B	0.4 s/v	No	--	--	--
			PM	22.5 s/v	C	22.0 s/v	C	22.3 s/v	C	0.3 s/v	No	--	--	--
			Sat MD	21.2 s/v	C	20.2 s/v	C	20.6 s/v	C	0.4 s/v	No	--	--	--
9. State College Boulevard at Birch Street	Brea	D	AM	38.7 s/v	D	44.9 s/v	D	45.0 s/v	D	0.1 s/v	No	--	--	--
			PM	32.6 s/v	C	39.7 s/v	D	40.3 s/v	D	0.6 s/v	No	--	--	--
			Sat MD	38.6 s/v	D	43.8 s/v	D	44.0 s/v	D	0.2 s/v	No	--	--	--

Notes:

- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
- N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

TABLE 8-6 (CONTINUED)
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact Per City Criteria		(5) Significant Impact Per Caltrans Guidelines	(6) Year 2040 Plus Project Plus Improvements Traffic Conditions	
				Delay	LOS	Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
10. S Associated Road at Birch Street	Brea	D	AM	29.5 s/v	C	30.7 s/v	C	30.8 s/v	C	0.1 s/v	No	--	--	--
			PM	27.5 s/v	C	30.1 s/v	C	30.2 s/v	C	0.1 s/v	No	--	--	--
			Sat MD	21.1 s/v	C	22.8 s/v	C	22.8 s/v	C	0.0 s/v	No	--	--	--
11. N Associated Road at Birch Street	Brea	D	AM	27.4 s/v	C	27.0 s/v	C	27.0 s/v	C	0.0 s/v	No	--	--	--
			PM	27.4 s/v	C	25.5 s/v	C	25.6 s/v	C	0.1 s/v	No	--	--	--
			Sat MD	18.2 s/v	B	17.7 s/v	B	17.7 s/v	B	0.0 s/v	No	--	--	--
12. Kraemer Boulevard at Birch Street	Brea	D	AM	36.8 s/v	D	41.2 s/v	D	41.2 s/v	D	0.0 s/v	No	--	--	--
			PM	48.0 s/v	D	62.5 s/v	E	62.8 s/v	E	0.3 s/v	No	--	--	--
			Sat MD	33.7 s/v	C	35.3 s/v	D	35.4 s/v	D	0.1 s/v	No	--	--	--
13. Randolph Avenue at Madison Way	Brea	D	AM	17.9 s/v	B	12.9 s/v	B	13.0 s/v	B	0.1 s/v	No	--	--	--
			PM	18.2 s/v	B	16.8 s/v	B	17.2 s/v	B	0.4 s/v	No	--	--	--
			Sat MD	18.7 s/v	B	17.7 s/v	B	18.2 s/v	B	0.5 s/v	No	--	--	--
14. Randolph Avenue at Brea Mall	Brea	D	AM	8.4 s/v	A	7.0 s/v	A	14.1 s/v	B	7.1 s/v	No	--	--	--
			PM	18.9 s/v	B	18.2 s/v	B	19.8 s/v	B	1.6 s/v	No	--	--	--
			Sat MD	23.9 s/v	C	23.4 s/v	C	27.3 s/v	C	3.9 s/v	No	--	--	--
15. Brea Mall South at State College Boulevard	Brea	D	AM	15.7 s/v	B	12.3 s/v	B	16.7 s/v	B	4.4 s/v	No	--	--	--
			PM	27.7 s/v	C	26.2 s/v	C	30.7 s/v	C	4.5 s/v	No	--	--	--
			Sat MD	34.0 s/v	C	32.7 s/v	C	35.3 s/v	D	2.6 s/v	No	--	--	--
16. Harbor Boulevard at Imperial Highway	La Habra/ Fullerton/ Caltrans	D ³⁵	AM	45.8 s/v	D	56.6 s/v	E	57.4 s/v	E	N/A	N/A	Yes	44.9 s/v	D
			PM	45.1 s/v	D	59.0 s/v	E	60.1 s/v	E	N/A	N/A	Yes	44.3 s/v	D
			Sat MD	40.5 s/v	D	44.1 s/v	D	44.3 s/v	D	N/A	N/A	No	40.8 s/v	D
17. Puente Street at Imperial Highway	Brea/ Fullerton/ Caltrans	D	AM	20.6 s/v	C	24.9 s/v	C	25.2 s/v	C	N/A	N/A	No	--	--
			PM	20.9 s/v	C	19.3 s/v	B	20.2 s/v	C	N/A	N/A	No	--	--
			Sat MD	15.1 s/v	B	14.6 s/v	B	14.9 s/v	B	N/A	N/A	No	--	--
18. Brea Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	45.7 s/v	D	49.2 s/v	D	56.6 s/v	E	N/A	N/A	Yes	40.6 s/v	D
			PM	40.3 s/v	D	48.3 s/v	D	50.3 s/v	D	N/A	N/A	No	44.3 s/v	D
			Sat MD	43.5 s/v	D	46.4 s/v	D	48.5 s/v	D	N/A	N/A	No	42.2 s/v	D

Notes:

- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
- N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

³⁵ According to City of La Habra guidelines, LOS E is acceptable at this location but is shown as LOS D to be conservative.

TABLE 8-6 (CONTINUED)
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS - HCM

Key Intersections	Jurisdiction	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Year 2040 Traffic Conditions		(3) Year 2040 Plus Project Traffic Conditions		(4) Significant Impact Per City Criteria		(5) Significant Impact Per Caltrans Guidelines	(6) Year 2040 Plus Project Plus Improvements Traffic Conditions	
				Delay	LOS	Delay	LOS	Delay	LOS	Increase	Yes/No	Yes/No	Delay	LOS
19. Randolph Avenue at Imperial Highway	Brea/ Caltrans	D	AM	13.2 s/v	B	13.1 s/v	B	15.2 s/v	B	N/A	N/A	No	14.5 s/v	B
			PM	26.7 s/v	C	27.0 s/v	C	36.5 s/v	D	N/A	N/A	No	29.5 s/v	C
			Sat MD	49.1 s/v	D	48.3 s/v	D	63.9 s/v	E	N/A	N/A	Yes	44.4 s/v	D
20. State College Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	35.5 s/v	D	42.1 s/v	D	45.5 s/v	D	N/A	N/A	No	39.9 s/v	D
			PM	55.7 s/v	E	65.7 s/v	E	83.5 s/v	F	N/A	N/A	Yes	57.0 s/v	E³⁶
			Sat MD	123.5 s/v	F	144.6 s/v	F	164.8 s/v	F	N/A	N/A	No	133.9 s/v	F³⁶
21. SR-57 SB Ramps at Imperial Highway	Brea/ Caltrans	D	AM	16.2 s/v	B	18.4 s/v	B	18.7 s/v	D	N/A	N/A	No	--	--
			PM	17.6 s/v	B	19.2 s/v	B	20.6 s/v	C	N/A	N/A	No	--	--
			Sat MD	20.6 s/v	C	28.2 s/v	C	29.6 s/v	C	N/A	N/A	No	--	--
22. SR-57 NB Ramps at Imperial Highway	Brea/ Caltrans	D	AM	30.4 s/v	C	31.9 s/v	C	32.3 s/v	C	N/A	N/A	No	24.9 s/v	C
			PM	27.8 s/v	C	33.3. s/v	C	33.9 s/v	C	N/A	N/A	No	36.1 s/v	D
			Sat MD	34.3 s/v	C	73.3 s/v	E	73.6 s/v	E	N/A	N/A	Yes	49.5 s/v	D
23. Associated Road at Imperial Highway	Brea/ Caltrans	D	AM	29.8 s/v	C	60.1 s/v	E	62.1 s/v	E	N/A	N/A	Yes	41.0 s/v	D
			PM	44.3 s/v	D	44.9 s/v	D	45.3 s/v	D	N/A	N/A	No	42.6 s/v	D
			Sat MD	36.0 s/v	D	36.9 s/v	D	38.2 s/v	D	N/A	N/A	No	37.3 s/v	D
24. Castlegate Lane/Placentia Avenue at Imperial Highway	Brea/ Caltrans	D	AM	20.0 s/v	B	22.3 s/v	C	22.5 s/v	C	N/A	N/A	No	--	--
			PM	29.7 s/v	C	30.4 s/v	C	30.7 s/v	C	N/A	N/A	No	--	--
			Sat MD	24.7 s/v	C	25.9 s/v	C	26.4 s/v	C	N/A	N/A	No	--	--
25. Kraemer Boulevard at Imperial Highway	Brea/ Caltrans	D	AM	28.8 s/v	C	35.1 s/v	D	35.3 s/v	D	N/A	N/A	No	--	--
			PM	37.6 s/v	D	48.3 s/v	D	48.9 s/v	D	N/A	N/A	No	--	--
			Sat MD	32.6 s/v	C	33.0 s/v	C	33.1 s/v	C	N/A	N/A	No	--	--
26. Brea Boulevard at Bastanchury Road	Fullerton	D	AM	44.1 s/v	D	44.2 s/v	D	44.3 s/v	D	0.1 s/v	No	--	--	--
			PM	42.5 s/v	D	43.6 s/v	D	44.2 s/v	D	0.6 s/v	No	--	--	--
			Sat MD	37.7 s/v	D	38.0 s/v	D	38.1 s/v	D	0.1 s/v	No	--	--	--
27. State College Boulevard at Bastanchury Road	Fullerton	D	AM	33.6 s/v	C	37.0 s/v	D	37.3 s/v	D	0.3 s/v	No	--	--	--
			PM	51.4 s/v	D	61.0 s/v	E	61.3 s/v	E	0.3 s/v	No	--	--	--
			Sat MD	37.0 s/v	D	40.5 s/v	D	40.6 s/v	D	0.1 s/v	No	--	--	--

Notes:

- **Bold HCM/LOS** values indicate adverse service levels based on the City and Caltrans LOS standards.
- N/A = City of Brea impact criteria is Not Applicable (N/A) for intersections within the City of Brea that are under Caltrans jurisdiction. See *Sections 7.1.1* and *7.1.2* for definition of significant impact criteria.

³⁶ It is noted that the mitigation improves to pre-Project conditions.

9.0 SITE ACCESS EVALUATION

9.1 Site Access

The Brea Mall can be accessed from three of the four surrounding streets bordering the subject property, State College Boulevard, Randolph Avenue, and Birch Street; no vehicular access is provided from Imperial Highway. Vehicular access from Randolph Avenue is currently provided by two (2) signalized intersections, whereas one (1) signalized access is provided along Birch Street. From State College Boulevard, three (3) signalized intersections provide access to the Brea Mall. No change in access to the Brea Mall is proposed as a part of the Project. Since the Project is focused to the southwest portion of the Brea Mall property the southernmost driveways along Randolph Avenue and State College Boulevard are anticipated to be the focus of Project related trips.

As shown in the *Tables 8-1 through 8-6*, the intersections of Randolph Avenue at Madison Way, Randolph Avenue at Brea Mall, and Brea Mall South at State College Boulevard are forecast to operate at LOS D or better during the Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hours in all traffic conditions.

9.2 Focused Project Driveway Synchro Queuing Assessment

Per the direction of City of Brea and Caltrans a focused Synchro assessment has been completed at the two Project Driveways located closest to Imperial Highway along State College Boulevard and Randolph Avenue to assess if the stacking requirements with the proposed Project are adequate. It is our understanding the City of Brea and Caltrans would like to ensure that Randolph Avenue does not queue back from the Project Driveway onto Imperial Highway. As it relates to State College it is our understanding the City of Brea and Caltrans are concerned with how the southbound dual lefts will interact with the freeway on-ramp.

The queuing evaluation was conducted for Existing Plus Project and Year 2022 Plus Project Traffic Conditions and the Average Queue methodology, which calculates the average queue value in terms of number of vehicles per lane. At signalized intersections, the storage length for left-turn and right-turn lanes can vary based on vehicle demand and the green-time provided by the traffic signal. For the purposes of this traffic analysis, the minimum storage requirement for left-turn lanes and right-turn lanes was calculated by multiplying the anticipated average queue length computed by the Synchro modeling program by 150 percent.

Table 9-1 identifies the minimum required stacking/storage lengths for the key study locations for Existing and Existing Plus Project Traffic conditions. Review of *Table 9-1* shows that the southbound left-turn movement at State College Boulevard at Imperial Highway has queues that exceed its capacity, resulting the blockage of through lane traffic. The southbound left-turn lanes are underutilized due to the presence of a single SR-57 southbound on-ramp from Imperial Highway to the east of the intersection. In addition to the recommended improvements as detailed in *Section 10.0*, the addition of a second SR-57 southbound on-ramp from Imperial Highway would help distribute southbound left-turn traffic more equally between the lanes. Although the southbound left-turn movement would still have queues that exceed its capacity, the queue would be improved by

these recommendations. It should be noted that the queue related to the inbound movement at the Project driveways along State College Boulevard and Randolph Avenue are not anticipated to queue back to Imperial Highway.

Table 9-2 identifies the minimum required stacking/storage lengths for the key study locations for Year 2022 and Year 2022 Plus Project Traffic conditions. Review of *Table 9-2* shows that the southbound left-turn movement at State College Boulevard at Imperial Highway has queues that exceed its capacity. The southbound left-turn lanes are underutilized due to the presence of a single SR-57 southbound on-ramp from Imperial Highway to the east of the intersection. In addition to the recommended improvements as detailed in *Section 10.0*, the addition of a second SR-57 southbound on-ramp from Imperial Highway would help distribute southbound left-turn traffic more equally between the lanes. Although the southbound left-turn movement would still have queues that exceed its capacity, the queue would be improved by these recommendations. It should be noted that the queue related to the inbound movement at the Project driveways along State College Boulevard and Randolph Avenue are not anticipated to queue back to Imperial Highway.

Appendix F presents the Synchro queuing worksheets for the Project driveways.

TABLE 9-1
EXISTING DRIVEWAY QUEUING ANALYSIS

Study Ramp Intersection	Estimated Storage Provided (feet)	(1) Existing Traffic Conditions						(2) Existing Plus Project Traffic Conditions						(3) Existing Plus Project Plus Improvements Traffic Conditions					
		AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour		AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour		AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour	
		Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ³⁸	Adequate Storage (Yes / No)
14. Randolph Avenue at Brea Mall																			
Northbound Through/Right-Turn	345’	60’	Yes	60’	Yes	62’	Yes	60’	Yes	60’	Yes	66’	Yes	--	--	--	--	--	--
Southbound Left-Turn	115’	60’	Yes	60’	Yes	60’	Yes	60’	Yes	60’	Yes	60’	Yes	--	--	--	--	--	--
15. Brea Mall South at State College Boulevard																			
Eastbound Left -Turn ³⁹	805’ ⁴⁰	97’	Yes	373’	Yes	449’	Yes	188’	Yes	462’	Yes	535’	Yes	--	--	--	--	--	--
Westbound Through/Right-Turn	1,115’	152’	Yes	366’	Yes	354’	Yes	83’	Yes	197’	Yes	347’	Yes	--	--	--	--	--	--
20. State College Boulevard at Imperial Highway																			
Southbound Left-Turn	580’ ⁴¹	60’	Yes	676’	No	1,246’	No	148’	Yes	786’	No	1,524’	No	144’	Yes	622’	No	1,372’	No

³⁸ Maximum queue in feet (ft) is calculated by multiplying the *Average Queue* by a factor of 1.5.

³⁹ The HCM methodology is reporting values that are inconsistent with existing observations. Therefore, at this location *SimTraffic 10.0* methodology has been utilized. The 95th percentile vehicle queue value corresponds to a condition that is generally taken as the maximum queue.

⁴⁰ The eastbound dual left-turn pocket consists of approximately one lane of 240 feet and the other of 265 feet; however, an additional 300 feet of storage from the eastbound through lane can accommodate the remaining vehicles before reaching Imperial Highway.

⁴¹ The southbound dual left-turn pocket consists of approximately one lane of 310 feet and the other of 270 feet.

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TABLE 9-2
YEAR 2022 DRIVEWAY QUEUING ANALYSIS

Study Ramp Intersection	Estimated Storage Provided (feet)	(1) Year 2022 Traffic Conditions						(2) Year 2022 Plus Project Traffic Conditions						(3) Year 2022 Plus Project Plus Improvements Traffic Conditions					
		AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour		AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour		AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour	
		Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)	Max. Queue/Min. Storage Req. ⁴²	Adequate Storage (Yes / No)
14. Randolph Avenue at Brea Mall																			
Northbound Through/Right-Turn	345'	60'	Yes	138'	Yes	126'	Yes	60'	Yes	60'	Yes	135'	Yes	--	--	--	--	--	--
Southbound Left-Turn	115'	60'	Yes	60'	Yes	60'	Yes	60'	Yes	60'	Yes	60'	Yes	--	--	--	--	--	--
15. Brea Mall South at State College Boulevard																			
Eastbound Left -Turn ⁴³	805' ⁴⁴	94'	Yes	353'	Yes	498'	Yes	163'	Yes	421'	Yes	557'	Yes	--	--	--	--	--	--
Westbound Through/Right-Turn	1,115'	164'	Yes	281'	Yes	555'	Yes	156'	Yes	306'	Yes	570'	Yes	--	--	--	--	--	--
20. State College Boulevard at Imperial Highway																			
Southbound Left-Turn	580' ⁴⁵	250'	Yes	918'	No	1,582'	No	328'	Yes	1,068'	No	1,876'	No	276'	Yes	960'	No	1,704'	No

⁴² Maximum queue in feet (ft) is calculated by multiplying the *Average Queue* by a factor of 1.5.

⁴³ The HCM methodology is reporting values that are inconsistent with existing observations. Therefore, at this location *SimTraffic 10.0* methodology has been utilized. The 95th percentile vehicle queue value corresponds to a condition that is generally taken as the maximum queue..

⁴⁴ The eastbound dual left-turn pocket consists of approximately one lane of 240 feet and the other of 265 feet; however, an additional 300 feet of storage from the eastbound through lane can accommodate the remaining vehicles before reaching Imperial Highway.

⁴⁵ The southbound dual left-turn pocket consists of approximately one lane of 310 feet and the other of 270 feet.

10.0 PLANNED AND RECOMMENDED INTERSECTION IMPROVEMENTS

For those intersections where projected traffic volumes are expected to result in unacceptable operating conditions, this report recommends (identifies) improvement measures that change the intersection geometry to increase capacity. These capacity improvements involve roadway widening and/or re-striping to reconfigure (add lanes) to specific approaches of a key intersection. The identified improvements are expected to:

- mitigate the impact of existing traffic, Project traffic and future non-project (ambient traffic growth and cumulative project) traffic and
- improve Levels of Service to an acceptable range and/or to pre-project conditions.

Figures 10-1 and **10-2** present the recommended improvements and intersection controls at the key study intersections for the Existing Plus Project, Year 2022, and Year 2040 traffic conditions per ICU analysis and HCM analysis, respectively. These are discussed in more detail in the sections below.

Table 10-1 identifies the incremental intersection improvements needed by the relevant study years to maintain, where possible, acceptable service levels based on the LOS standards defined in this report, as detailed in the sections below.

10.1 Planned Improvements

The following improvements listed below are part of the SR-57 Lambert Interchange improvement project, now under construction, since the final completion date is unknown at this time Year 2022 analysis includes the resulting service levels with the planned improvements in the mitigation column for informational purposes. However, it is anticipated that these improvements will be implement prior to Year 2040 traffic conditions and therefore, are included as part of the background traffic conditions.

- **No. 4 – SR-57 SB Ramps at Lambert Road:** Widen the off-ramp to provide a second exclusive southbound left-turn lane. Restripe the shared southbound left-turn/through/right-turn lane to a second exclusive right-turn lane. Widen to provide a second exclusive eastbound right-turn lane. Modify the existing traffic signal.
- **No. 5 – SR-57 NB Ramps at Lambert Road:** Construct a loop on-ramp on the south leg. Remove dual eastbound exclusive left-turn lanes. Widen and restripe to provide a shared eastbound through/right-turn lane and an exclusive eastbound right-turn lane. Reconstruct the existing on-ramp for a free westbound right-turn lane. Modify the existing traffic signal.

10.2 Existing Plus Project Traffic Conditions Recommended Improvements

10.2.1 Existing Plus Project – ICU

The results of the intersection capacity analyses presented previously in *Table 8-1* show that the proposed Project is expected to have a significant impact at one (1) of the twenty-seven (27) key study intersections under Existing Plus Project traffic conditions under ICU analysis. As such, the following intersection improvements are recommended to mitigate the significant impacts of the proposed Project under these conditions. However, these improvements are within Caltrans' right-of-way and are subject to Caltrans review and approval. In addition, Caltrans has no mechanism by which projects can contribute fair share fees to offset impacts.

- **No. 20 State College Boulevard at Imperial Highway:** Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

10.2.2 Existing Plus Project – HCM

The results of the intersection capacity analyses presented previously in *Table 8-2* show that the proposed Project is expected to have a significant impact at one (1) of the twenty-seven (27) key study intersections under Existing Plus Project traffic conditions under HCM analysis. As such, the following intersection improvements are recommended to mitigate the significant impacts of the proposed Project under these conditions. However, these improvements are within Caltrans' right-of-way and are subject to Caltrans review and approval. In addition, Caltrans has no mechanism by which projects can contribute fair share fees to offset impacts.

- **No. 19 – Randolph Avenue at Imperial Highway:** Restripe the northbound shared left-turn/through lane to a through lane. Modify the existing traffic signal to convert the split phasing on Randolph Avenue to protected left-turn phasing and eight-phase operation. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

10.3 Year 2022 Plus Project Traffic Conditions Recommended Improvements

10.3.1 Year 2022 Plus Project – ICU

The results of the intersection capacity analyses presented previously in *Table 8-3* show that the proposed Project is expected to have a significant impact at one (1) of the twenty-seven (27) key study intersections under Year 2022 Plus Project traffic conditions under ICU analysis. As such, the following intersection improvements are recommended to mitigate the cumulative impacts of the

proposed Project under these conditions. However, these improvements are within Caltrans' right-of-way and are subject to Caltrans review and approval. In addition, Caltrans has no mechanism by which projects can contribute fair share fees to offset impacts.

- **No. 20 – State College Boulevard at Imperial Highway:** *Same as those identified in Section 10.2.1.* Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

10.3.2 Year 2022 Plus Project – HCM

The results of the intersection capacity analyses presented previously in *Table 8-4* show that the proposed Project is expected to have a significant impact at three (3) of the twenty-six (27) key study intersections under Year 2022 Plus Project traffic conditions under HCM analysis. As such, the following intersection improvements are recommended to mitigate the significant impacts of the proposed Project under these conditions. However, these improvements are within Caltrans' right-of-way and are subject to Caltrans review and approval. In addition, Caltrans has no mechanism by which projects can contribute fair share fees to offset impacts.

- **No. 18 – Brea Boulevard at Imperial Highway:** Restripe the southbound approach to provide a third southbound through lane. Modify the existing traffic signal. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- **No. 19 – Randolph Avenue at Imperial Highway:** *Same as those identified in Section 10.2.2.* Restripe the northbound shared left-turn/through lane to a through lane. Modify the existing traffic signal to convert the split phasing on Randolph Avenue to protected left-turn phasing and eight-phase operation. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- **No. 20 – State College Boulevard at Imperial Highway:** Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of

Caltrans will be implemented, a statement of overriding considerations may be required for this location.

10.4 Year 2040 Plus Project Traffic Conditions Recommended Improvements

10.4.1 Year 2040 Plus Project – ICU

The results of the intersection capacity analyses presented previously in *Table 8-5* show that the proposed Project is expected to have a significant impact at one (1) of the twenty-seven (27) key study intersections under Year 2040 Plus Project traffic conditions under ICU analysis. As such, the following intersection improvements are recommended to mitigate the cumulative impacts of the proposed Project under these conditions. However, these improvements are within Caltrans' right-of-way and are subject to Caltrans review and approval. In addition, Caltrans has no mechanism by which projects can contribute fair share fees to offset impacts.

- **No. 20 – State College Boulevard at Imperial Highway:** *Same as those identified in Sections 10.2.1 and 10.3.1.* Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

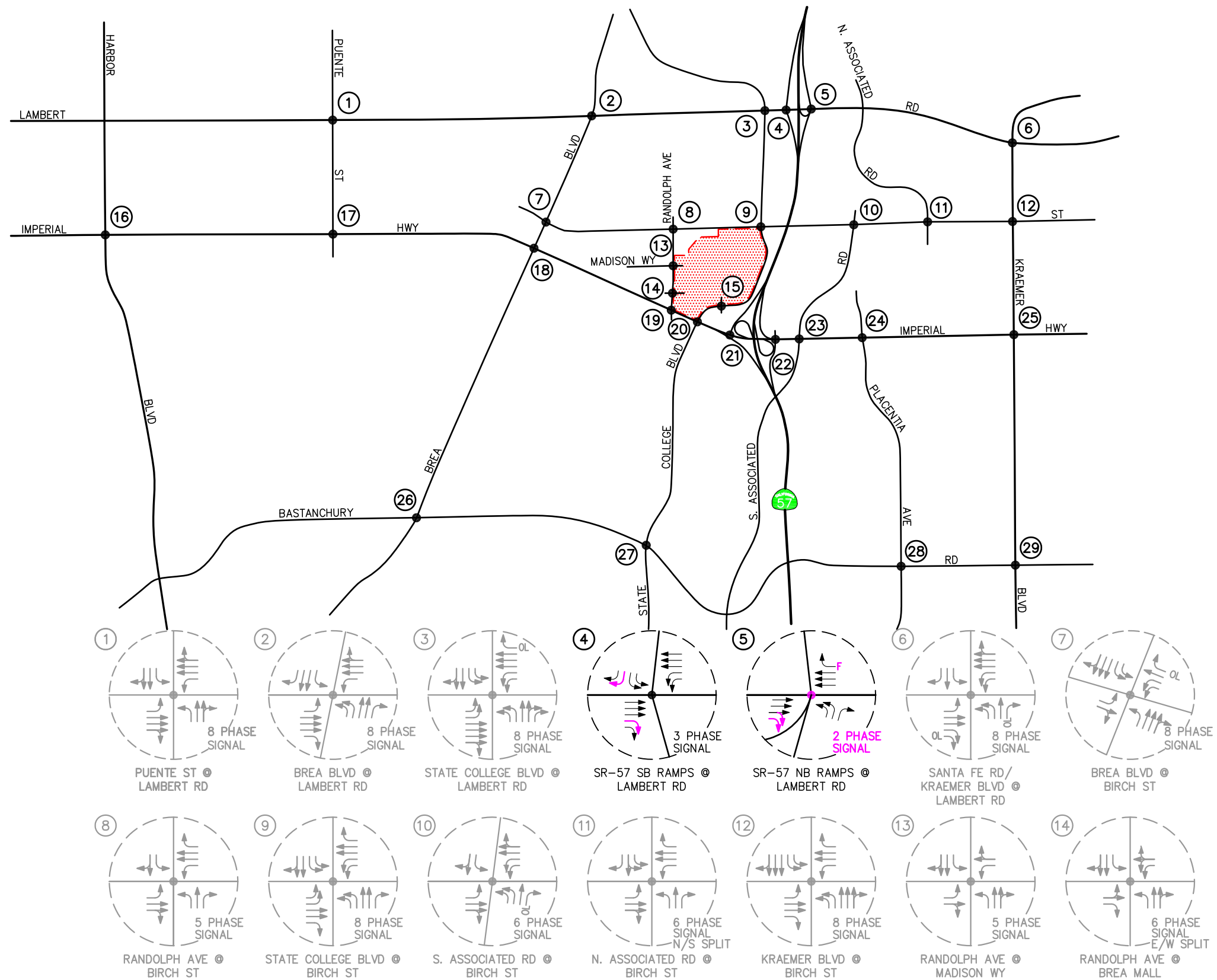
10.4.2 Year 2040 Plus Project – HCM

The results of the intersection capacity analyses presented previously in *Table 8-6* show that the proposed Project is expected to have a significant impact at six (6) of the twenty-seven (27) key study intersections under Year 2040 Plus Project traffic conditions under HCM analysis. As such, the following intersection improvements are recommended to mitigate the significant impacts of the proposed Project under these conditions. However, these improvements are within Caltrans' right-of-way and are subject to Caltrans review and approval. In addition, Caltrans has no mechanism by which projects can contribute fair share fees to offset impacts.

- **No. 16 – Harbor Boulevard at Imperial Highway:** Widen the west leg to provide an exclusive eastbound right-turn lane. Modify the existing traffic signal to provide southbound right-turn overlap phasing. Right-of-way acquisition will be required. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- **No. 18 – Brea Boulevard at Imperial Highway:** *Same as those identified in Section 10.3.2.* Restripe the southbound approach to provide a third southbound through lane. Modify the existing traffic signal. Since the proposed Project cannot guarantee that these improvements

which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- **No. 19 – Randolph Avenue at Imperial Highway:** *Same as those identified in Sections 10.2.2 and 10.3.2.* Restripe the northbound shared left-turn/through lane to a through lane. Modify the existing traffic signal to convert the split phasing on Randolph Avenue to protected left-turn phasing and eight-phase operation. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- **No. 20 – State College Boulevard at Imperial Highway:** *Same as those identified in Section 10.3.2.* Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- **No. 22 – SR-57 Ramps at Imperial Highway** Widen and/or restripe the off-ramp to provide a second exclusive northbound right-turn lane. Modify the existing traffic signal. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- **No. 23 – Associated Road at Imperial Highway:** Restripe the exclusive southbound right-turn lane to a shared through/right-turn lane. Modify the existing traffic signal. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.



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NO SCALE

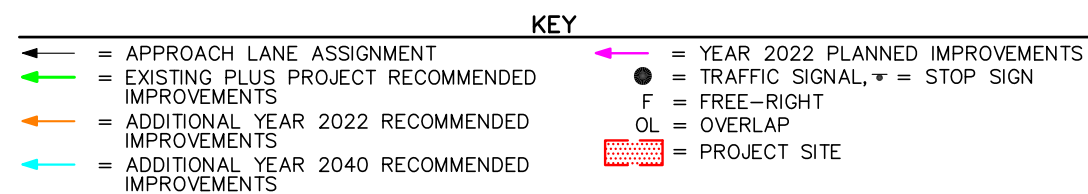
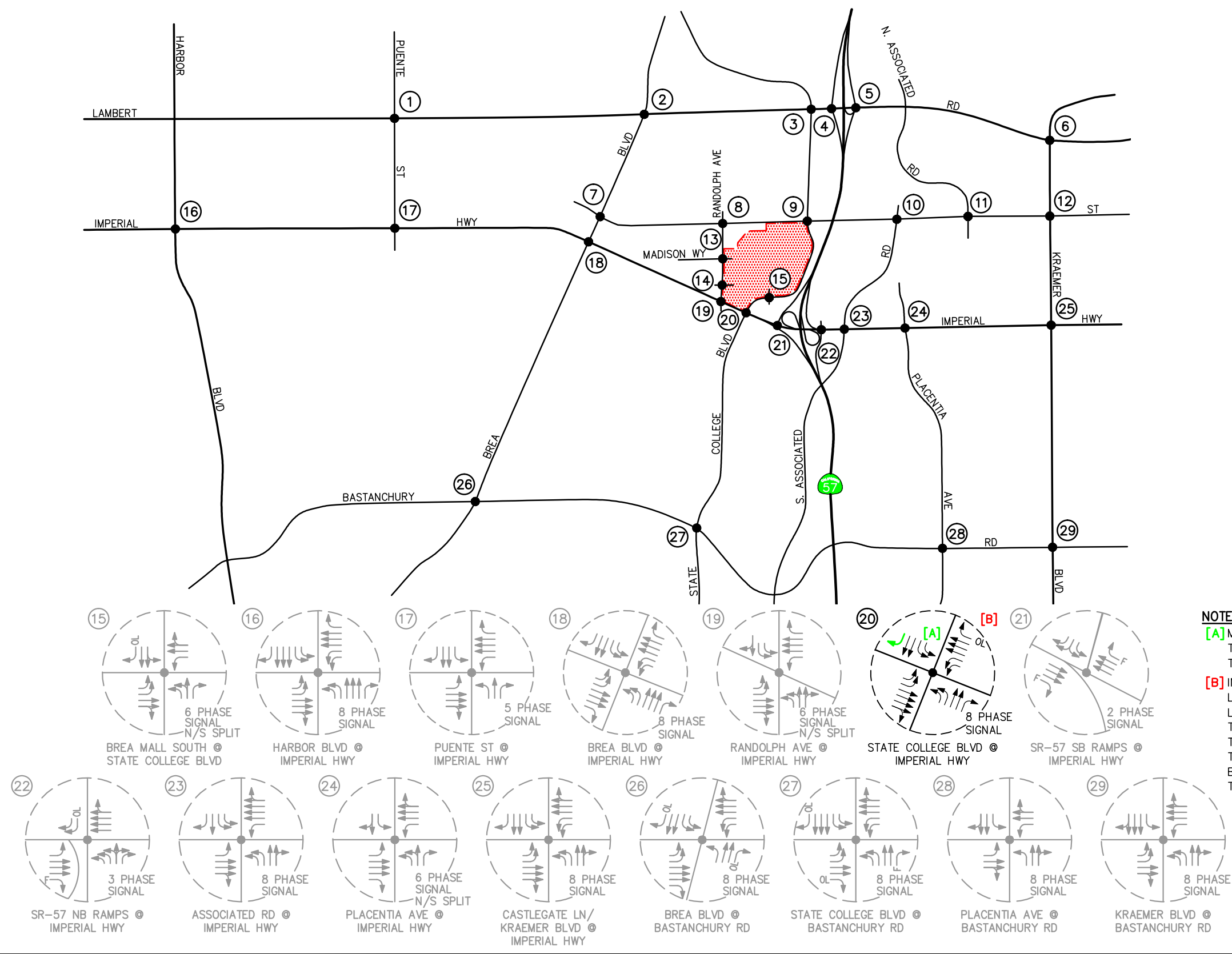


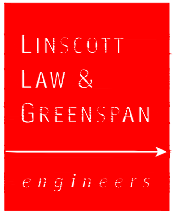
FIGURE 10-1A

PLANNED AND RECOMMENDED IMPROVEMENTS - ICU
BREA MALL MIXED-USE PROJECT, BREA

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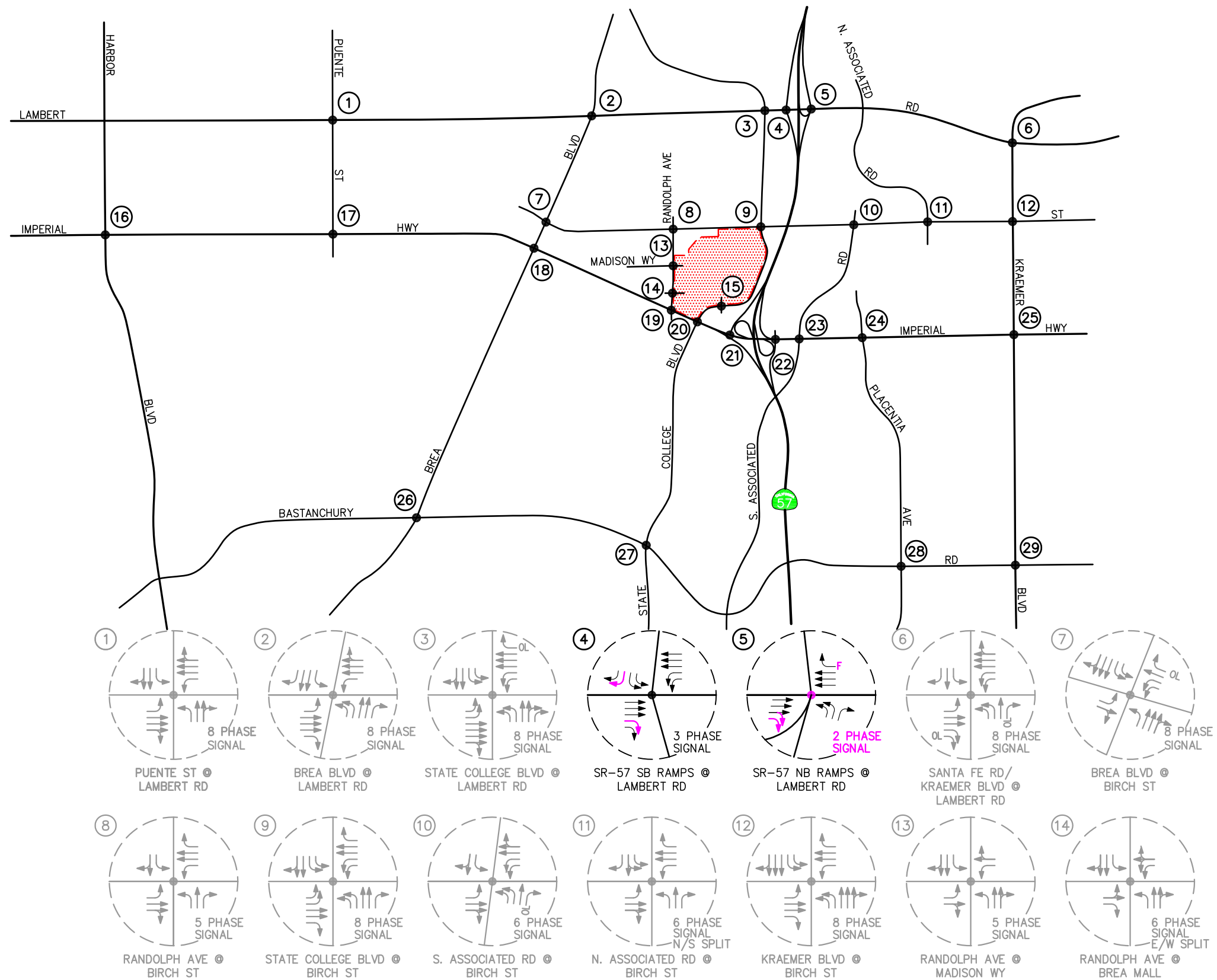


NOTES:
[A] MODIFY THE MEDIUM AND RESTRIPE THE NO. 2 SB LEFT TURN INTO A TRAP LEFT TURN LANE.
[B] IN CONJUNCTION WITH THE LENGTHENING OF THE SOUTHBOUND LEFT-TURN IT IS RECOMMENDED THAT THE NO. 2 EASTBOUND THROUGH LANE ALONG IMPERIAL AT THE SR-57 SOUTHBOUND ON-RAMP BE CONVERTED TO A SHARED THROUGH/RIGHT-TURN LANE.

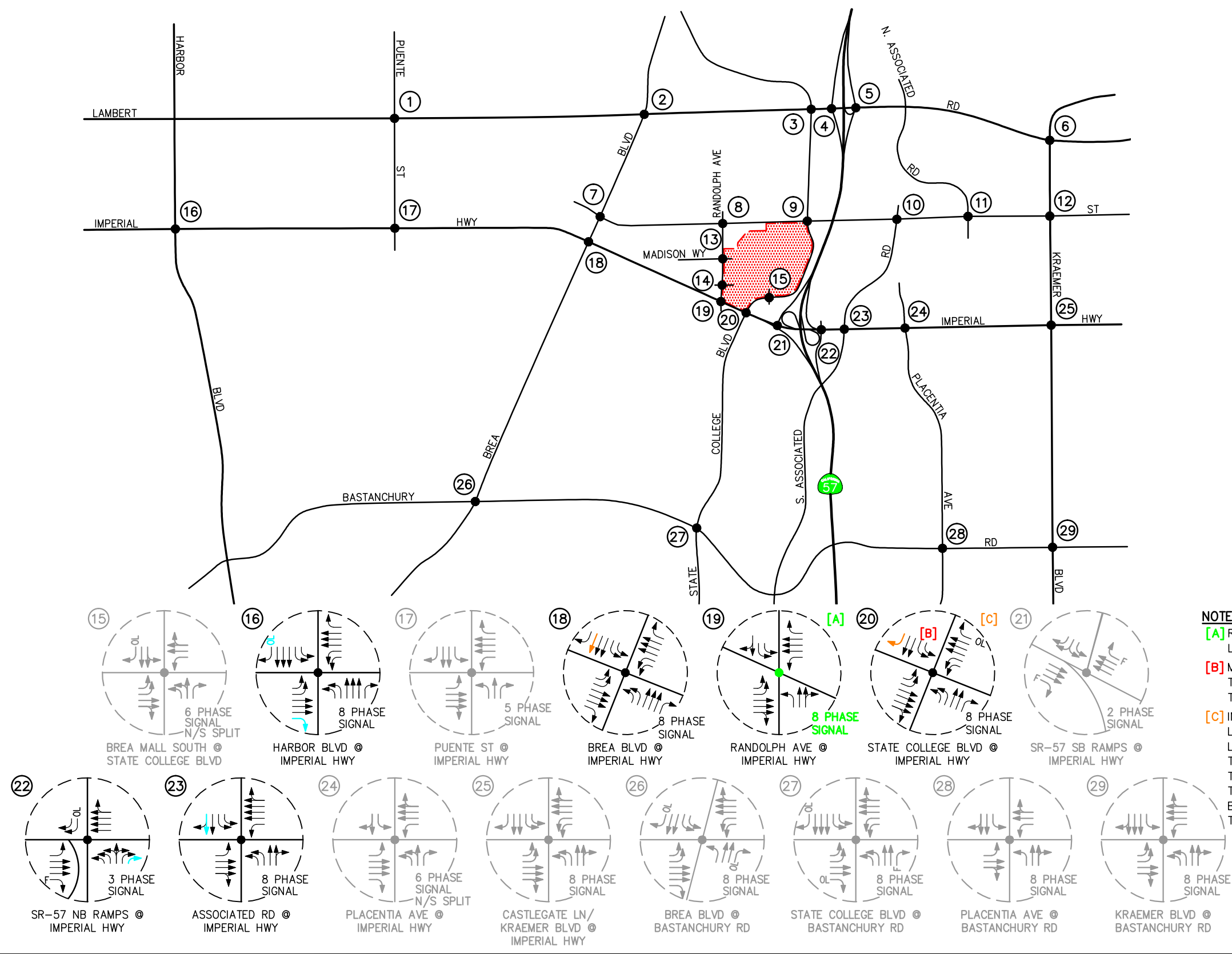


- KEY**
- = APPROACH LANE ASSIGNMENT
 - = EXISTING PLUS PROJECT RECOMMENDED IMPROVEMENTS
 - = ADDITIONAL YEAR 2022 RECOMMENDED IMPROVEMENTS
 - = ADDITIONAL YEAR 2040 RECOMMENDED IMPROVEMENTS
 - = TRAFFIC SIGNAL, ▼ = STOP SIGN
 - F = FREE-RIGHT
 - OL = OVERLAP
 - = PROJECT SITE
 - = YEAR 2022 PLANNED IMPROVEMENTS

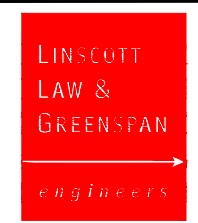
FIGURE 10-1B
PLANNED AND RECOMMENDED IMPROVEMENTS – ICU
BREMA MALL EXPANSION, BREMA



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- NOTES:**
- [A] RESTRIPE NB LEFT-TURN/THROUGH LANE AS NB THROUGH LANE.
 - [B] MODIFY THE MEDIUM AND RESTRIPE THE NO. 2 SB LEFT TURN INTO A TRAP LEFT TURN LANE.
 - [C] IN CONJUNCTION WITH THE LENGTHENING OF THE SOUTHBOUND LEFT-TURN IT IS RECOMMENDED THAT THE NO. 2 EASTBOUND THROUGH LANE ALONG IMPERIAL AT THE SR-57 SOUTHBOUND ON-RAMP BE CONVERTED TO A SHARED THROUGH/RIGHT-TURN LANE.



- KEY**
- = APPROACH LANE ASSIGNMENT
 - = EXISTING PLUS PROJECT RECOMMENDED IMPROVEMENTS
 - = ADDITIONAL YEAR 2022 RECOMMENDED IMPROVEMENTS
 - = ADDITIONAL YEAR 2040 RECOMMENDED IMPROVEMENTS
 - = YEAR 2022 PLANNED IMPROVEMENTS
 - = TRAFFIC SIGNAL, ▼ = STOP SIGN
 - F = FREE-RIGHT
 - OL = OVERLAP
 - = PROJECT SITE

FIGURE 10-2B

PLANNED AND RECOMMENDED IMPROVEMENTS - HCM

BREA MALL EXPANSION, BREA

TABLE 10-1

SUMMARY OF PROJECT IMPACTS AND RECOMMENDED IMPROVEMENTS BY SCENARIO

Key Intersections	Jurisdiction (City Location)	Improvement Description	Improvements by Scenario					
			Existing Plus Project		Year 2022 Plus Project		Year 2040 Plus Project	
			ICU Impact	HCM Impact	ICU Impact	HCM Impact	ICU Impact	HCM Impact
16. Harbor Boulevard at Imperial Highway	La Habra/ Fullerton (Caltrans)	- Widen to provide an exclusive EB right-turn lane. - Modify existing traffic signal to provide SB right-turn overlap phasing.	-- --	-- --	-- --	-- --	-- --	✓ ✓
18. Brea Boulevard at Imperial Highway	Caltrans (Brea)	- Restripe to provide a third SB through lane. - Modify existing traffic signal.	-- --	-- --	-- --	✓ ✓	-- --	X X
19. Randolph Avenue at Imperial Highway	Caltrans (Brea)	- Restripe the NB shared left-turn/through lane to a NB through lane. - Modify existing traffic signal to convert from split phase to eight-phase operation	-- --	✓ ✓	-- --	X X	-- --	X X
20. State College Boulevard at Imperial Highway	Caltrans (Brea)	- Conduct minor widening and restripe to provide exclusive SB right-turn lane. - Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. ⁴⁶ - Modify existing traffic signal.	✓ ✓ ✓	-- --	X X X	✓ ✓ ✓	X X X	X X X
22. SR-57 NB Ramps at Imperial Highway ⁴⁶	Caltrans (Brea)	- Widen and/or restripe to provide a second NB right-turn lane. - Modify existing traffic signal.	-- --	-- --	-- --	-- --	-- --	✓ ✓
23. Associated Road at Imperial Highway	Caltrans (Brea)	- Restripe the exclusive SB right-turn lane as a shared SB through/right-turn lane. - Modify existing traffic signal.	-- --	-- --	-- --	-- --	-- --	✓ ✓

Notes:

- ✓ = Denotes that the improvement is implemented in the scenario.
- X = Denotes that the improvement carries over from the previous scenario and is assumed to be already implemented.

⁴⁶ In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial Highway at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane.

10.5 Project-Related Fair-Share Contribution

The transportation impacts associated with the development of the Project were determined based on the future conditions analysis with and without the proposed Project. The key study locations forecast to operate at adverse levels of service are discussed below. As such, the proposed Project's "fair share" of the recommended improvements has been calculated for the key study intersections that are forecast to operate at adverse levels of service in the Existing Plus Project, Year 2022 Plus Project, and Year 2040 Plus Project traffic conditions. It should be noted that while fair share costs have been calculated Caltrans has no mechanism by which the Project can contribute fair share fees to offset the Project's impacts.

As such the Project may be expected to construct improvements and/or can be expected to pay a proportional "fair-share" of the improvement costs of the impacted intersection to mitigate the Project's traffic impact.

10.5.1 Existing Plus Project Traffic Conditions

Table 10-2 presents Project's fair-share contribution to construct the recommended improvements at two (2) of the study intersections projected to operate at an unacceptable LOS and/or inadequate queuing in the Existing Plus Project traffic conditions.

As presented in this *Table 10-2*, the first column (1) presents a total of all intersection peak hour movements for existing conditions. The second column (2) presents project only traffic. The third column (3) presents Existing traffic conditions with Project traffic. The fourth column (4) represents what percentage of total intersection peak hour traffic is Project-related traffic.

10.5.2 Year 2022 Plus Project Traffic Conditions

Table 10-3 is similar to *Table 10-2* and presents Project's fair-share contribution to construct the recommended improvements at three (3) of the study intersections projected to operate at an unacceptable LOS and/or inadequate queuing in the Year 2022 Plus Project traffic conditions.

It should be noted that the intersections of Randolph Avenue at Imperial Highway and State College Boulevard at Imperial Highway are shown to have 0.00% fair share since the recommended improvements are assumed to be implemented in Existing Plus Project traffic conditions.

10.5.3 Year 2040 Plus Project Traffic Conditions

Table 10-4 is similar to *Tables 10-2* and *10-3* and presents Project's fair-share contribution to construct the recommended improvements at six (6) of the study intersections projected to operate at an unacceptable LOS and/or inadequate queuing in the Year 2040 Plus Project traffic conditions.

It should be noted that the intersections of Brea Boulevard at Imperial Highway, Randolph Avenue at Imperial Highway, and State College Boulevard at Imperial Highway are shown to have 0.00% fair share since the recommended improvements are assumed to be implemented in Existing Plus Project and/or Year 2022 Plus Project traffic conditions.

TABLE 10-2
EXISTING PLUS PROJECT FAIR-SHARE CONTRIBUTION

Key Intersection		City/ Jurisdiction	Time Period	(1) Existing Traffic	(2) Project Traffic	(3) Existing Plus Project Traffic	(4) Project Fair-Share Percent⁴⁷
19.	Randolph Avenue at Imperial Highway	Brea/ Caltrans	AM	--	--	--	--
			PM	--	--	--	--
			Sat MD	4,682	163	4,845	100.00%
20.	State College Boulevard at Imperial Highway	Brea/ Caltrans	AM	--	--	--	--
			PM	6,347	237	6,584	100.00%
			Sat MD	7,197	247	7,444	100.00%

⁴⁷ Project fair-share percentage Column (4) = [Column (2)] / [Column (3) – Column (1)].

TABLE 10-3
YEAR 2022 PROJECT FAIR-SHARE CONTRIBUTION

Key Intersection	City/ Jurisdiction	Time Period	(1) Existing Traffic	(2) Project Traffic	(3) Year 2022 Plus Project Traffic	(4) Project Fair-Share Percent ⁴⁸
18. Brea Boulevard at Imperial Highway	Brea/ Caltrans	AM	5,551	81	6,224	12.04%
		PM	--	--	--	--
		Sat MD	--	--	--	--
19. Randolph Avenue at Imperial Highway	Brea/ Caltrans	AM	--	--	--	--
		PM	--	--	--	--
		Sat MD	4,682	163	5,176	0.00% ⁴⁹
20. State College Boulevard at Imperial Highway	Brea/ Caltrans	AM	--	--	--	--
		PM	6,347	237	7,184	0.00% ⁴⁹
		Sat MD	7,197	247	8,115	0.00% ⁴⁹

⁴⁸ Project fair-share percentage Column (4) = [Column (2)] / [Column (3) – Column (1)].

⁴⁹ The Projects fair share has already been accounted for in Table 10-2.

TABLE 10-4
YEAR 2040 PROJECT FAIR-SHARE CONTRIBUTION

Key Intersection	City/ Jurisdiction	Time Period	(1) Existing Traffic	(2) Project Traffic	(3) Year 2040 Plus Project Traffic	(4) Project Fair-Share Percent ⁵⁰
16. Harbor Boulevard at Imperial Highway	La Habra/ Fullerton/ Caltrans	AM	5,895	35	7,334	2.43%
		PM	6,636	48	7,909	3.77%
		Sat MD	--	--	--	--
18. Brea Boulevard at Imperial Highway	Brea/ Caltrans	AM	5,551	81	6,664	0.00% ⁵¹
		PM	--	--	--	--
		Sat MD	--	--	--	--
19. Randolph Avenue at Imperial Highway	Brea/ Caltrans	AM	--	--	--	--
		PM	--	--	--	--
		Sat MD	4,682	163	5,437	0.00% ⁵²
20. State College Boulevard at Imperial Highway	Brea/ Caltrans	AM	--	--	--	--
		PM	6,347	237	7,472	0.00% ⁵²
		Sat MD	7,197	247	8,115	0.00% ⁵²
22. SR-57 NB Ramps at Imperial Highway	Brea/ Caltrans	AM	--	--	--	--
		PM	--	--	--	--
		Sat MD	6,238	133	7,426	11.20%
23. Associated Road at Imperial Highway	Brea/ Caltrans	AM	4,541	63	5,779	5.09%
		PM	--	--	--	--
		Sat MD	--	--	--	--

⁵⁰ Project fair-share percentage Column (4) = [Column (2)] / [Column (3) – Column (1)].

⁵¹ The Projects fair share has already been accounted for in Table 10-3.

⁵² The Projects fair share has already been accounted for in Table 10-2.

10.6 City of Brea Traffic Impact Fees

Based on information published on the City of Brea website, the Brea City Council adopted Ordinance 966 in July 1995, establishing Traffic Impact Fees for all new development in Brea and annexed portions of its sphere-of-influence. Based on a Transportation Improvement Nexus Program study conducted in 2011, the City Council adopted Resolution 2011-096, which updated the impact fees, which became effective February 4, 2012. These fees are required, in part, by Orange County's Measure M, a transportation initiative passed by voters in 1990. More importantly, these are fair-share based fees that will serve to offset, or mitigate, the traffic impacts caused by new development.

Review of **Table 10-3** indicates that the City's Traffic Impact Fee rate for residential land uses range from \$1,203 per dwelling unit to \$1,974 per dwelling unit. For Commercial uses the City's rate ranges between \$2.24 per gross square foot and \$2.53 per gross square foot.

Subject to confirmation by City staff, the proposed Project's Traffic Impact Fee totals \$788,496.00 based on a net increase of 149,625 SF of regional commercial uses along with 312 medium density residential units (i.e. $149,625 \text{ SF} \times \$2.24 \text{ per SF} = \$335,160$ and $312 \text{ DU} \times \$1,453 \text{ per DU} = \$453,336$). The precise fee will be determined upon issuance of Project building permits by the City of Brea Community Development Department.

In some cases, a developer may be required to make certain traffic improvements in addition to, or in-lieu of paying traffic impact fees. In this case, however, the total cost of traffic improvements and/or fees will not exceed the development's fair-share toward mitigating its own impacts.

With respect to project impacts at intersections under the jurisdiction of the City of Brea and Caltrans, it should also be noted that under CEQA, a fair share monetary contribution to a mitigation fund is adequate mitigation if the fund is tied to a reasonable plan that the relevant agency is committed to implementing. However, the City and Caltrans do not have mitigation fund programs in place for these improvements to which a development project in the City of Brea can contribute.

TABLE 10-3
CITY OF BREA TRAFFIC IMPACT FEE RATES⁵³

Land Use Category	Unit of Development	Fee
▪ Low density residential	Per dwelling unit	\$1,974
▪ Medium density residential	Per dwelling unit	\$1,453
▪ High density residential	Per dwelling unit	\$1,203
▪ Commercial, general, mixed use	Per gross square foot	\$2.53
▪ Regional commercial	Per gross square foot	\$2.24
▪ Office / industrial	Per gross square foot	\$1.25
▪ School	Student	\$0
▪ All other uses	Per trip end	\$89

⁵³ Source: City of Brea website - <http://www.ci.brea.ca.us/162/Traffic-Impact-Fees>

11.0 SR-57 OFF-RAMP QUEUING ANALYSIS

A “turn pocket” queuing evaluation has been conducted for the SR-57 Freeway Off-Ramps at Lambert Road and Imperial Highway to determine the minimum required stacking/storage lengths for all off-ramp lanes.

The off-ramp queuing evaluation was conducted for Year 2022 Plus Project Traffic Conditions as well as Year 2040 Plus Project Traffic Conditions and the Average Queue methodology, which calculates the average queue value in terms of number of vehicles per lane. At signalized intersections, the storage length for left-turn and right-turn lanes may be based on one and one-half (1½) to two (2) times the average number of vehicles that would store per signal cycle⁵⁴. For the purposes of this traffic analysis, the minimum storage requirement for left-turn lanes and right-turn lanes was calculated by taking 1½ times the average queue length. (Minimum required storage = Q_{av} (feet) x 1.5).

Table 11-1 identifies the minimum required stacking/storage lengths for the off-ramp lanes at the four (4) ramp intersections of SR-57 Freeway at Lambert Road and Imperial Highway for Year 2022 Plus Project Traffic conditions. It should be noted that the reported storage provided for the SR-57 Freeway ramps is estimated and is subject to confirmation upon final design and completion of the SR-57 Lambert Road Interchange project.

Table 11-2 presents similar information summarized in *Table 11-1* but for Year 2040 Plus Project Traffic conditions.

The stacking/storage requirements shown in *Tables 11-1* and *11-2* are required at a minimum to ensure that vehicles do not queue beyond the off-ramp causing interruptions to through traffic on the mainline of the SR-57 Freeway.

Based on the estimated storage now provided on the off-ramp intersections at the SR-57 Freeway at Lambert Road and Imperial Highway, adequate storage is provided. Therefore, no modifications to the freeway off-ramps are required.

Appendix G presents the Synchro queuing worksheets for the Caltrans freeway off-ramps.

⁵⁴ Source: Highway Design Manual, Intersections at Grade, page 400-9, CALTRANS

TABLE 11-1
YEAR 2022 PEAK HOUR FREEWAY OFF-RAMP QUEUING ANALYSIS

Study Ramp Intersection	(1) Year 2022 Plus Project Traffic Conditions						
	Estimated Storage Provided (feet)	AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour	
		Max. Queue/ Min. Storage Required ⁵⁵	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required ⁵⁵	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required ⁵⁵	Adequate Storage (Yes / No)
4. SR-57 Southbound Ramps at Lambert Road							
<i>Southbound Left -Turn</i>	1,120'	672'	Yes	198'	Yes	344'	Yes
<i>Southbound Right-Turn</i>	1,120'	407'	Yes	483'	Yes	716'	Yes
5. SR-57 Northbound Ramps at Lambert Road							
<i>Northbound Left -Turn</i>	1,595' ⁵⁶	483'	Yes	179'	Yes	252'	Yes
<i>Northbound Right-Turn</i>	525' ⁵⁷	432'	Yes	123'	Yes	176'	Yes
21. SR-57 Southbound Ramps at Imperial Highway							
<i>Southbound Left -Turn</i>	1,300'	206'	Yes	474'	Yes	542'	Yes
<i>Southbound Left/Right-Turn</i>	1,300'	206'	Yes	474'	Yes	542'	Yes
<i>Southbound Right-Turn</i>	1,300' ⁵⁸	203'	Yes	465'	Yes	554'	Yes

⁵⁵ Maximum queue in feet (ft) is calculated by multiplying the *Average Queue* by a factor of 1.5.

⁵⁶ Subject to final design of the SR-57 Lambert Road Interchange project.

⁵⁷ It has been assumed that the storage provided is 525 feet but is subject to final design of the SR-57 Lambert Road Interchange project.

⁵⁸ The southbound right-turn pocket consists of approximately 265 feet of storage; however, an additional 1,035 feet of storage from the shared left/right-turn lane can accommodate the remaining vehicles.

TABLE 11-1 (CONTINUED)
YEAR 2022 PEAK HOUR FREEWAY OFF-RAMP QUEUING ANALYSIS

Study Ramp Intersection	(1) Year 2022 Plus Project Traffic Conditions						
	Estimated Storage Provided (feet)	AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour	
		Max. Queue/ Min. Storage Required ⁵⁹	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required ⁵⁹	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required ⁵⁹	Adequate Storage (Yes / No)
22. SR-57 Northbound Ramps at Imperial Highway							
<i>Northbound Left-Turn</i>	1,270 ⁶⁰	515'	Yes	492'	Yes	752'	Yes
<i>Northbound Left/Thru/Right Lane</i>	1,300'	752'	Yes	531'	Yes	864'	Yes
<i>Northbound Right-Turn</i>	1,300 ⁶¹	527'	Yes	342'	Yes	528'	Yes

⁵⁹ Maximum queue in feet (ft) is calculated by multiplying the *Average Queue* by a factor of 1.5.

⁶⁰ The northbound right-turn pocket consists of approximately 470 feet of storage; however, an additional 800 feet of storage from the second northbound left can accommodate the remaining vehicles.

⁶¹ The northbound right-turn pocket consists of approximately 500 feet of storage; however, an additional 800 feet of storage from the shared left/thru/right-turn lane can accommodate the remaining vehicles.

TABLE 11-2
YEAR 2040 PEAK HOUR FREEWAY OFF-RAMP QUEUING ANALYSIS

Study Ramp Intersection	(1) Year 2040 Plus Project Traffic Conditions						
	Estimated Storage Provided (feet)	AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour	
		Max. Queue/ Min. Storage Required ⁶²	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required ⁶²	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required ⁶²	Adequate Storage (Yes / No)
4. SR-57 Southbound Ramps at Lambert Road							
<i>Southbound Left -Turn</i>	1,120'	611'	Yes	213'	Yes	357'	Yes
<i>Southbound Right-Turn</i>	1,120'	354'	Yes	482'	Yes	713'	Yes
5. SR-57 Northbound Ramps at Lambert Road							
<i>Northbound Left -Turn</i>	1,595' ⁶³	629'	Yes	167'	Yes	614'	Yes
<i>Northbound Right-Turn</i>	525' ⁶⁴	549'	Yes	126'	Yes	443'	Yes
21. SR-57 Southbound Ramps at Imperial Highway							
<i>Southbound Left -Turn</i>	1,300'	213'	Yes	206'	Yes	507'	Yes
<i>Southbound Left/Right-Turn</i>	1,300'	213'	Yes	206'	Yes	507'	Yes
<i>Southbound Right-Turn</i>	1,300' ⁶⁵	210'	Yes	206'	Yes	524'	Yes

⁶² Maximum queue in feet (ft) is calculated by multiplying the *Average Queue* by a factor of 1.5.

⁶³ Subject to final design of the SR-57 Lambert Road Interchange project.

⁶⁴ It has been assumed that the storage provided is 525 feet but is subject to final design of the SR-57 Lambert Road Interchange project.

⁶⁵ The southbound right-turn pocket consists of approximately 265 feet of storage; however, an additional 1,035 feet of storage from the shared left/right-turn lane can accommodate the remaining vehicles.

TABLE 11-2 (CONTINUED)
YEAR 2040 PEAK HOUR FREEWAY OFF-RAMP QUEUING ANALYSIS

Study Ramp Intersection	(1) Year 2040 Plus Project Traffic Conditions						
	Estimated Storage Provided (feet)	AM Peak Hour		PM Peak Hour		Saturday MD Peak Hour	
		Max. Queue/ Min. Storage Required ⁶⁶	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required ⁶⁶	Adequate Storage (Yes / No)	Max. Queue/ Min. Storage Required ⁶⁶	Adequate Storage (Yes / No)
22. SR-57 Northbound Ramps at Imperial Highway							
<i>Northbound Left-Turn</i>	1,270 ⁶⁷	464'	Yes	336'	Yes	758'	Yes
<i>Northbound Left/Thru/Right Lane</i>	1,300'	711'	Yes	369'	Yes	860'	Yes
<i>Northbound Right-Turn</i>	1,300 ⁶⁸	503'	Yes	156'	Yes	534'	Yes

⁶⁶ Maximum queue in feet (ft) is calculated by multiplying the *Average Queue* by a factor of 1.5.

⁶⁷ The northbound right-turn pocket consists of approximately 470 feet of storage; however, an additional 800 feet of storage from the second northbound left can accommodate the remaining vehicles.

⁶⁸ The northbound right-turn pocket consists of approximately 500 feet of storage; however, an additional 800 feet of storage from the shared left/thru/right-turn lane can accommodate the remaining vehicles.

12.0 CONGESTION MANAGEMENT PROGRAM (CMP) COMPLIANCE ASSESSMENT

This analysis is consistent with the requirements and procedures outlined in the current *Orange County Congestion Management Program (CMP)*. The CMP requires that a traffic impact analysis be conducted for any project generating 2,400 or more daily trips, or 1,600 or more daily trips for projects that directly access the CMP Highway System (HS). As noted in *Section 5.0* of this traffic study, the proposed Project is forecast to generate approximately 4,140 weekday net daily trip-ends and 4,031 net Saturday daily trip-ends and thus meets the criteria requiring a CMP TIA.

The CMPHS includes specific roadways, which include State Highways and Super Streets, which are now known as Smart Streets. Therefore, the CMP TIA analysis requirements relate to the potential impacts only on the specified CMPHS, which in this case includes Imperial Highway. As described in the "Radius of Development Influence" section of the CMP TIA, the study area (i.e. CMP intersections) is recommended to be defined by the CMP links which have a project impact of more than three percent of their daily LOS "E" capacity.

Table 12-1 and **12-2** summarizes the Project percentage impact CMP analysis for seven (7) key roadway segments in the vicinity of the proposed Project along Imperial Highway for Weekday daily and Weekend (Saturday) daily, respectively. Column one (1) of **Table 12-1** shows the CMP LOS "E" Capacity for each roadway segment, column two (2) shows the Project weekday ADT for each roadway segment, column three (3) shows the Project ADT LOS "E" capacity percentages for each roadway segment and column (4) shows whether or not added project traffic meets or exceeds the "three percent" limit.

Review of **Table 12-1** and **12-2** shows that the three percent limit is exceeded on one (1) the seven (7) roadway segments, Imperial Highway east of State College Boulevard (Segment 4), thus requiring a CMP analysis.

There are four (4) CMP intersections in close proximity to the site which are as follows:

<u>Study Intersection</u>	<u>Location</u>
16	Harbor Boulevard at Imperial Highway
20	State College Boulevard at Imperial Highway
21	SR-57 SB Ramps at Imperial Highway
22	SR-57 NB Ramps at Imperial Highway

Tables 12-3, 12-4 and **12-5** present the Existing Plus Project, Year 2022 Plus Project, and Year 2040 Plus Project level of service results based on the CMP thresholds, respectively. As stated previously, a project causes a significant impact if it causes the CMP facility to operate worse than a LOS E, or the project increases the ICU value by more than 0.10 if the CMP facility operates at LOS F without the project.

Review of *Table 12-3* shows that the Project will impact the intersection of State College Boulevard at Imperial Highway during the Saturday Midday peak hour under Existing Plus Project traffic conditions. It should be noted that this impact is consistent with Existing Plus Project impacts discussed previously in *Section 8.1.1*. Consistent with the findings in *Section 8.1.1* for this location, with implementation of recommended improvements detailed in *Section 10.2.1*, the impact of the proposed Project will be offset.

Review of *Tables 12-4* and *12-5* shows that the Project will not impact any of the CMP locations under Year 2022 Plus Project and Year 2040 Plus Project traffic conditions. However, levels of service with recommended improvements for the intersection of State College Boulevard at Imperial Highway have been provided based on Existing Plus Project. As shown, with implementation of recommended improvements detailed in *Section 10.2.1*, the cumulative impact of the proposed Project will be offset in the Year 2022 and Year 2040.

TABLE 12-1
PROJECT PERCENTAGE RADIUS OF INFLUENCE CMP ANALYSIS – WEEKDAY

Roadway Segment		(1) CMP LOS “E” Capacity	(2) Weekday Project ADT	(3) Percentage (3) = (2) ÷ (1)	(4) Radius of Influence (Yes/No)
1.	Imperial Highway, West of Puente Street	56,300	488	1%	No
2.	Imperial Highway, East of Berry Street	56,300	698	1%	No
3.	Imperial Highway, East of Brea Boulevard	56,300	1,147	2%	No
4.	Imperial Highway, East of State College Boulevard	56,300	1,730	3%	Yes
5.	Imperial Highway, East of SR-57 NB Ramps	56,300	828	1%	No
6.	Imperial Highway, East of Associated Road	56,300	672	1%	No
7.	Imperial Highway, East of Castlegate Lane/Placentia Avenue	56,300	401	1%	No

TABLE 12-2
PROJECT PERCENTAGE RADIUS OF INFLUENCE CMP ANALYSIS – WEEKEND (SATURDAY)

Roadway Segment		(1) CMP LOS “E” Capacity	(2) Saturday Project ADT	(3) Percentage (3) = (2) ÷ (1)	(4) Radius of Influence (Yes/No)
1.	Imperial Highway, West of Puente Street	56,300	475	1%	No
2.	Imperial Highway, East of Berry Street	56,300	683	1%	No
3.	Imperial Highway, East of Brea Boulevard	56,300	1,124	2%	No
4.	Imperial Highway, East of State College Boulevard	56,300	1,685	3%	No
5.	Imperial Highway, East of SR-57 NB Ramps	56,300	807	1%	No
6.	Imperial Highway, East of Associated Road	56,300	654	1%	No
7.	Imperial Highway, East of Castlegate Lane/Placentia Avenue	56,300	389	1%	No

TABLE 12-3
EXISTING PLUS PROJECT PEAK HOUR INTERSECTION CAPACITY ANALYSIS – CMP ANALYSIS

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Existing Traffic Conditions		(2) Existing Plus Project Traffic Conditions		(3) Significant Impact		(4) Existing Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
16. Harbor Boulevard at Imperial Highway	E	AM	0.755	C	0.758	C	0.003	No	--	--
		PM	0.735	C	0.740	C	0.005	No	--	--
		Sat MD	0.651	B	0.654	B	0.003	No	--	--
20. State College Boulevard at Imperial Highway	E	AM	0.660	B	0.678	B	0.018	No	0.668	B
		PM	0.778	C	0.798	C	0.020	No	0.758	C
		Sat MD	0.981	E	1.021	F	0.040	Yes	0.964	E⁶⁹
21. SR-57 SB Ramps at Imperial Highway	E	AM	0.550	A	0.564	A	0.014	No	--	--
		PM	0.674	B	0.697	B	0.023	No	--	--
		Sat MD	0.744	C	0.758	C	0.014	No	--	--
22. SR-57 NB Ramps at Imperial Highway	E	AM	0.605	B	0.611	B	0.006	No	--	--
		PM	0.671	B	0.686	B	0.015	No	--	--
		Sat MD	0.724	C	0.733	C	0.009	No	--	--

⁶⁹ It is noted that the mitigation improves to pre-Project conditions.

TABLE 12-4
YEAR 2022 PEAK HOUR INTERSECTION CAPACITY ANALYSIS – CMP ANALYSIS

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Year 2022 Traffic Conditions		(2) Year 2022 Plus Project Traffic Conditions		(3) Significant Impact		(4) Year 2022 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
16. Harbor Boulevard at Imperial Highway	E	AM	0.786	C	0.789	C	0.003	No	--	--
		PM	0.825	D	0.830	D	0.005	No	--	--
		Sat MD	0.708	C	0.711	C	0.003	No	--	--
20. State College Boulevard at Imperial Highway	E	AM	0.722	C	0.739	C	0.017	No	0.721	C
		PM	0.839	D	0.859	D	0.020	No	0.812	D
		Sat MD	1.058	F	1.098	F	0.040	No	1.036	F⁷⁰
21. SR-57 SB Ramps at Imperial Highway	E	AM	0.620	B	0.633	B	0.013	No	--	--
		PM	0.732	C	0.755	C	0.023	No	--	--
		Sat MD	0.808	D	0.822	D	0.014	No	--	--
22. SR-57 NB Ramps at Imperial Highway	E	AM	0.653	B	0.663	B	0.010	No	--	--
		PM	0.730	C	0.745	C	0.015	No	--	--
		Sat MD	0.786	C	0.796	C	0.010	No	--	--

⁷⁰ It is noted that the mitigation improves to pre-Project conditions.

TABLE 12-5
YEAR 2040 PEAK HOUR INTERSECTION CAPACITY ANALYSIS – CMP ANALYSIS

Key Intersection	Minimum Acceptable LOS	Time Period	(1) Year 2040 Traffic Conditions		(2) Year 2040 Plus Project Traffic Conditions		(3) Significant Impact		(4) Year 2040 Plus Project Plus Improvements Traffic Conditions	
			ICU	LOS	ICU	LOS	Increase	Yes/No	ICU	LOS
16. Harbor Boulevard at Imperial Highway	E	AM	0.901	E	0.904	E	0.003	No	--	--
		PM	0.874	D	0.879	D	0.005	No	--	--
		Sat MD	0.751	C	0.754	C	0.003	No	--	--
20. State College Boulevard at Imperial Highway	E	AM	0.780	C	0.797	C	0.017	No	0.778	C
		PM	0.872	D	0.893	D	0.021	No	0.884	D
		Sat MD	1.103	F	1.143	F	0.040	No	1.084	F⁷¹
21. SR-57 SB Ramps at Imperial Highway	E	AM	0.685	B	0.698	B	0.013	No	--	--
		PM	0.764	C	0.787	C	0.023	No	--	--
		Sat MD	0.842	D	0.856	D	0.014	No	--	--
22. SR-57 NB Ramps at Imperial Highway	E	AM	0.710	C	0.719	C	0.009	No	--	--
		PM	0.788	C	0.803	D	0.015	No	--	--
		Sat MD	0.848	D	0.858	D	0.010	No	--	--

⁷¹ It is noted that the mitigation improves to pre-Project conditions in the Saturday midday peak hour.

13.0 CALTRANS FREEWAY ANALYSIS

Caltrans requires the use of analysis methods provided in the Highway Capacity Manual (*HCM*) for the analysis of basic freeway segments. Caltrans “endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D” on State highway facilities”; it does not require that LOS “D” (shall) be maintained. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. For this analysis, LOS D is the target level of service standard and will be utilized to assess project impacts at the key study freeway segments. Based on Caltrans criteria, a Project’s impact is considered significant if the Project causes the LOS to change from an acceptable LOS (i.e. LOS D or better) to a deficient LOS (i.e. LOS E or F) or increase the density on a facility operating at an unacceptable level.

13.1 Basic Freeway Segment Analysis

Basic Freeway Segment Analysis for freeway segments was conducted for the following six (6) Caltrans freeway segments in the vicinity of the proposed Project:

1. SR-57 Northbound, south of Imperial Highway
2. SR-57 Northbound, south of Lambert Road
3. SR-57 Northbound, north of Lambert Road
4. SR-57 Southbound, north of Lambert Road
5. SR-57 Southbound, south of Lambert Road
6. SR-57 Southbound, south of Imperial Highway

13.1.1 Existing Basic Freeway Segment Capacity Analysis

Table 13-1 summarizes the peak hour level of service results at the aforementioned six (6) key freeway segments for Existing traffic conditions. Review of *Table 13-1* indicates that all (6) key freeway segments currently operate at LOS C or better during the AM and/or PM peak hours.

Per Caltrans guidelines, the following is stated in the *Caltrans Guide for the Preparation of Traffic Impact Studies, December 2002*:

“The following criterion is a starting point in determining when a TIS is needed. When a project:

- 1. Generates over 100 peak hour trips assigned to a State highway facility.....*
- 2. Generates 50 to 100 peak hour trips assigned to a State highway facility and noticeable delay approaching LOS C or D.....*
- 3. Generates 1 to 49 peak hour trips assigned to a State highway facility and noticeable delay approaching LOS E or F.....”*

Based on the Caltrans criteria above and the results of the basic freeway segment analysis for Existing traffic conditions as presented in *Table 13-1*, it is determined that no additional analysis is needed for the six (6) key freeway segments since the Project does not generate 50 to 100 peak hour trips assigned to a state highway facility and these segments are forecast to operate at an acceptable LOS D or better during the AM and PM peak hours under Existing traffic conditions.

Appendix H contains the Basic Freeway Segment Analysis calculation worksheets for the six (6) freeway segments for Existing traffic conditions.

TABLE 13-1
EXISTING PEAK HOUR FREEWAY MAINLINE CAPACITY ANALYSIS SUMMARY

Key Basic Freeway Segment	Time Period	Lanes	Project Trips	(1) Existing Traffic Conditions		
				Peak Hour Volume (pc/h/ln)	Density (pc/mi/ln)	LOS
1. SR-57 northbound <i>south of</i> Imperial Highway	AM	5	26	1,476	22.7	C
	PM		44	1,199	18.4	C
	Sat MD		27	1,455	22.4	C
2. SR-57 northbound <i>south of</i> Lambert Road	AM	6	8	1,104	17.0	B
	PM		9	975	15.0	B
	Sat MD		16	1,062	16.3	B
3. SR-57 northbound <i>north of</i> Lambert Road	AM	4	12	1,464	22.6	C
	PM		13	1,454	22.4	C
	Sat MD		24	1,461	22.5	C
4. SR-57 southbound <i>north of</i> Lambert Road	AM	4	14	1,590	24.7	C
	PM		22	1,457	22.4	C
	Sat MD		15	1,696	26.6	D
5. SR-57 southbound <i>south of</i> Lambert Road	AM	4	9	1,396	21.5	C
	PM		16	1,414	21.8	C
	Sat MD		10	1,407	21.6	C
6. SR-57 southbound <i>south of</i> Imperial Highway	AM	4	22	1,341	20.6	C
	PM		22	1,428	22.0	C
	Sat MD		42	1,434	22.1	C

Notes:

- pc/mi/ln = Passenger cars per mile per lane (density)
- **Bold Volume/Density/LOS values** indicate adverse service levels based on the Caltrans LOS Criteria

14.0 SPECIAL ISSUES

14.1 Imperial Highway Collision History

Caltrans has indicated an increased number of collisions at Randolph Avenue/Imperial Highway and State College Boulevard/Imperial Highway and has therefore, requested further analysis at these locations. Per the direction of the City of Brea and Caltrans, five years of collision history has been research via the Statewide Integrated Traffic Records System (SWITRS) for the intersections of Randolph Avenue at Imperial Highway and State College Boulevard at Imperial Highway. The data was compiled from November 2014 through November 2018. Below presents the accident data for State College Boulevard at Imperial Highway. Review of this data shows a collision between a motorists and pedestrian that may be correctable via signal upgrades to the existing traffic signal equipment as necessary to enhance safety. This could include updating the signal to be compliant with current ADA standards (i.e. truncated domes, pedestrian count down heads, etc.). In addition, collisions related to lane changes ranged between 2 to 6 collisions per year. These collisions are due to vehicles making erratic lane changes to try and enter the SR-57 SB On-Ramp along Imperial Highway. These collisions could be corrected via modifying the SR-57 SB On-Ramp to allow for two lanes onto the freeway. It is recommended that the east bound approach be modified to accommodate two through lanes, a shared through/right-turn lane and an exclusive right-turn lane.

State College Boulevard at Imperial Highway		
Time Period	Total	Correctable
11/14 through 11/15	31	1 (Auto/Ped)
11/15 through 11/16	29	6 (Lane Change)
11/16 through 11/17	27	3 (Lane Change)
11/17 through 11/18	31	2 (Lane Change)

Below presents the accident data for Randolph Avenue at Imperial Highway. Review of this data shows no correctable collisions. Therefore, no improvements are recommended. However, it should be noted that Caltrans has an on-going safety improvement project along Imperial Highway to upgrade traffic signal indications and pedestrian facilities and that it is expected that those improvements once completed would reduce the risk of future crashes.

Randolph Avenue at Imperial Highway		
Time Period	Total	Correctable
11/14 through 11/15	7	0
11/15 through 11/16	8	0
11/16 through 11/17	5	0
11/17 through 11/18	7	0

15.0 SUMMARY OF FINDINGS AND CONCLUSIONS

- **Project Description** – Brea Mall Mixed Use Project (hereinafter referred to as Project) in the City of Brea. The Project consists of redevelopment of 17.5-acre in the southwest portion of the Brea Mall property that includes the Sears parcel and adjoining transition areas adjacent to Nordstrom and Macy's. The Project involves demolishing 161,990 square-foot (SF) of the Sears department store and associated auto center and roughly 12 acres of surface parking in order to development 183,615 SF of new retail space, a 128,000 SF health club, and a 312-unit seven-story apartment building. The proposed Project is located west of the State Route (SR) 57 Freeway and is generally bounded by State College Boulevard to the east, Imperial Highway (State Route 91) to the south, Randolph Avenue to the west, and Birch Street to the north. The Project is expected to be developed in several phases with the Year 2022 utilized to assess the Project's potential traffic impacts at full occupancy within a near-term cumulative traffic setting. The Brea Mall can be accessed from three of the four surrounding streets bordering the subject property, State College Boulevard, Randolph Avenue, and Birch Street; no vehicular access is provided from Imperial Highway. Vehicular access from Randolph Avenue is currently provided by two (2) signalized intersections, whereas one (1) signalized access is provided along Birch Street. From State College Boulevard, three (3) signalized intersections provide access to the Brea Mall. No change in access to the Brea Mall is proposed as a part of the Project.
- **Study Scope** – The following twenty-nine (29) key study intersections were selected for detailed peak hour level of service analyses under Existing Traffic Conditions, Existing Plus Project Traffic Conditions, Year 2022 Cumulative Traffic Conditions, Year 2022 Cumulative Plus Project, Year 2040 Traffic Conditions, and Year 2040 Plus Project Traffic Conditions. It should be noted that cities that border the intersection but do not have governing jurisdictions are included in parentheses.

Key Intersection	Applicable Jurisdiction (City Location)				
	Caltrans	City of Brea	City of La Habra	City of Fullerton	City of Placentia
1. Puente Street at Lambert Road	--	Brea	--	--	--
2. Brea Boulevard at Lambert Road	--	Brea	--	--	--
3. State College Boulevard at Lambert Road	--	Brea	--	--	--
4. SR-57 SB Ramps at Lambert Road	Caltrans	(Brea)	--	--	--
5. SR-57 NB Ramps at Lambert Road	Caltrans	(Brea)	--	--	--
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	--	Brea	--	--	--
7. Brea Boulevard at Birch Street	--	Brea	--	--	--
8. Randolph Avenue at Birch Street	--	Brea	--	--	--
9. State College Boulevard at Birch Street	--	Brea	--	--	--
10. S Associated Road at Birch Street	--	Brea	--	--	--
11. N Associated Road at Birch Street	--	Brea	--	--	--
12. Kraemer Boulevard at Birch Street	--	Brea	--	--	--
13. Randolph Avenue at Madison Way	--	Brea	--	--	--
14. Randolph Avenue at Brea Mall	--	Brea	--	--	--

Key Intersection	Applicable Jurisdiction (City Location)				
	Caltrans	City of Brea	City of La Habra	City of Fullerton	City of Placentia
15. Brea Mall South at State College Boulevard	--	Brea	--	--	--
16. Harbor Boulevard at Imperial Highway ⁷²	Caltrans	--	(La Habra)	(Fullerton)	--
17. Puente Street at Imperial Highway	Caltrans	(Brea)	--	(Fullerton)	--
18. Brea Boulevard at Imperial Highway	Caltrans	(Brea)			
19. Randolph Avenue at Imperial Highway	Caltrans	(Brea)	--	--	--
20. State College Blvd at Imperial Highway ⁷²	Caltrans	(Brea)	--	--	--
21. SR-57 SB Ramps at Imperial Highway ⁷²	Caltrans	(Brea)	--	--	--
22. SR-57 NB Ramps at Imperial Highway ⁷²	Caltrans	(Brea)	--	--	--
23. Associated Road at Imperial Highway	Caltrans	(Brea)	--	--	--
24. Castlegate Ln/Placentia Ave at Imperial Hwy	Caltrans	(Brea)	--	--	--
25. Kraemer Boulevard at Imperial Highway	Caltrans	(Brea)	--	--	--
26. Brea Boulevard at Bastanchury Road	--	--	--	Fullerton	--
27. State College Boulevard at Bastanchury Road	--	--	--	Fullerton	--
28. Placentia Avenue at Bastanchury Road	--	--	--	--	Placentia
29. Kraemer Boulevard at Bastanchury Road	--	--	--	--	Placentia

- **Existing Traffic Conditions ICU** – The intersection of State College Boulevard at Imperial Highway currently operates at an unacceptable LOS during the Weekend (Saturday) Midday peak hour. The remaining twenty-six (26) of the twenty-seven (27) key study intersections evaluated under ICU analysis currently operate at an acceptable levels of service during the Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hours.
- **Existing Traffic Conditions HCM** – The intersection of State College Boulevard at Imperial Highway currently operates at an unacceptable LOS during the Weekend (Saturday) Midday peak hour. The remaining twenty-six (26) of the twenty-seven (27) key study intersections evaluated under HCM analysis currently operate at an acceptable levels of service during the Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hours.
- **Project Trip Generation** – The proposed Project is forecast to generate approximately 34,957 Weekday daily trips, with 1,072 trips (634 inbound, 438 outbound) produced in the Weekday AM peak hour and 3,671 trips (1,840 inbound, 1,831 outbound) produced in the Weekday PM peak hour on a “typical” weekday. The proposed Project with the existing Brea Mall is forecast to generate 43,214 Saturday daily trips, with 4,645 trips (2,358 inbound, 2,287 outbound) produced in the Saturday Midday peak hour on a “typical” Saturday.

When the proposed Project is compared to an existing fully occupied Brea Mall site, the proposed Project is forecast to generate 4,140 more Weekday daily trips, 315 more Weekday AM peak hour trips, 424 more Weekday PM peak hour trips, 4,031 more Saturday daily trips, and 441 more Saturday Midday peak hour trips. The potential impact of these added Project trips has been evaluated in this traffic analysis.

⁷² Orange County Congestion Management Program (CMP) intersection.

- ***Related Projects Traffic Characteristics*** – Seven (7) related projects were considered as part of the cumulative background setting. The seven (7) related projects are forecast to generate 28,114 weekday daily trips, with 2,303 trips (1,134 inbound, 1,169 outbound) anticipated during the weekday AM peak hour and 2,571 trips (1,272 inbound, 1,299 outbound) produced during the weekday PM peak hour. On a weekend (Saturday), the related projects are forecast to generate 27,156 weekend daily trips, with 2,527 trips (1,301 inbound, 1,226 outbound) anticipated during the weekend midday peak hour..
- ***Existing Plus Project Traffic Conditions ICU*** – The proposed Project significantly impact one (1) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hour when compared to the LOS standards and significant impact criteria specified in this report. The one (1) location significantly impacted by the proposed Project is as follows:

Key Intersection

20. State College Boulevard at Imperial Highway

However, implementation of recommended improvements will off-set the incremental impact of Project-related traffic. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- ***Existing Plus Project Traffic Conditions HCM*** – The proposed Project will significantly impact one (1) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hour when compared to the LOS standards and significant impact criteria specified in this report. The one (1) location significantly impacted by the proposed Project is as follows:

Key Intersection

19. Randolph Avenue at Imperial Highway

However, implementation of recommended improvements will off-set the incremental impact of Project-related traffic. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- ***Year 2022 Cumulative Traffic Conditions Plus Project ICU*** – The proposed Project will have a cumulative significant impact at one (1) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hour when compared to the LOS standards and significant impact criteria specified in this report. The one (1) location cumulatively impacted by the proposed Project is as follows:

Key Intersection

20. State College Boulevard at Imperial Highway

However, implementation of recommended improvements will off-set the incremental impact of Project-related traffic.

- ***Year 2022 Cumulative Traffic Conditions Plus Project HCM*** – The proposed Project will have a cumulative significant impact at three (3) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hours when compared to the LOS standards and significant impact criteria specified in this report. The three (3) location cumulatively impacted by the proposed Project is as follows:

Key Intersection

- 18. Brea Boulevard at Imperial Highway
- 19. Randolph Avenue at Imperial Highway
- 20. State College Boulevard at Imperial Highway

However, implementation of recommended improvements will off-set the incremental impact of Project-related traffic. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- ***Year 2040 Traffic Conditions Plus Project ICU*** – The proposed Project will have a cumulative significant impact at one (1) of the twenty-seven (27) key study intersections during the Weekend (Saturday) Midday peak hours when compared to the LOS standards and significant impact criteria specified in this report. The one (1) location cumulatively impacted by the proposed Project is as follows:

Key Intersection

- 20. State College Boulevard at Imperial Highway

However, implementation of recommended improvements will off-set the incremental impact of Project-related traffic. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- ***Year 2040 Traffic Conditions Plus Project HCM*** – The proposed Project will cumulatively impact five (5) of the twenty-seven (27) key study intersections, when compared to LOS standards and significant impact criteria specified in this report. The five (5) locations cumulatively impacted by the proposed Project under Year 2040 Plus Project traffic conditions are as follows:

Key Intersection

- 18. Brea Boulevard at Imperial Highway
- 19. Randolph Avenue at Imperial Highway
- 20. State College Boulevard at Imperial Highway
- 22. SR-57 NB Ramps at Imperial Highway
- 23. Associated Road at Imperial Highway

However, implementation of recommended improvements will off-set the incremental impact of Project-related traffic. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- ***Existing Plus Project Recommended Improvements (ICU)*** – The proposed Project is expected to have a significant impact at one (1) of the twenty-seven (27) key study intersections under Existing Plus Project traffic conditions under ICU analysis. As such, the following intersection improvements are recommended to mitigate the significant impacts of the proposed Project under these conditions:
 - **No. 20 State College Boulevard at Imperial Highway:** Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- ***Existing Plus Project Recommended Improvements (HCM)*** – The proposed Project is expected to have a significant impact at one (1) of the twenty-seven (27) key study intersections under Existing Plus Project traffic conditions under HCM analysis. As such, the following intersection improvements are recommended to mitigate the significant impacts of the proposed Project under these conditions:
 - **No. 19 – Randolph Avenue at Imperial Highway:** Restripe the northbound shared left-turn/through lane to a through lane. Modify the existing traffic signal to convert the split phasing on Randolph Avenue to protected left-turn phasing and eight-phase operation. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- ***Year 2022 Cumulative Plus Project Recommended Improvements (ICU)*** – The proposed Project is expected to have a significant impact at one (1) of the twenty-seven (27) key study intersections under Year 2022 Plus Project traffic conditions under ICU analysis. As such, the following intersection improvements are recommended to mitigate the cumulative impacts of the proposed Project under these conditions:
 - **No. 20 – State College Boulevard at Imperial Highway:** *Same as those identified in Existing Plus Project recommended improvements.* Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane

along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- ***Year 2022 Cumulative Plus Project Recommended Improvements (HCM)*** – The proposed Project is expected to have a significant impact at three (3) of the twenty-six (27) key study intersections under Year 2022 Plus Project traffic conditions under HCM analysis. As such, the following intersection improvements are recommended to mitigate the significant impacts of the proposed Project under these conditions:
 - **No. 18 – Brea Boulevard at Imperial Highway:** Restripe the southbound approach to provide a third southbound through lane. Modify the existing traffic signal. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
 - **No. 19 – Randolph Avenue at Imperial Highway:** Restripe the northbound shared left-turn/through lane to a through lane. Modify the existing traffic signal to convert the split phasing on Randolph Avenue to protected left-turn phasing and eight-phase operation. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
 - **No. 20 – State College Boulevard at Imperial Highway:** Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- ***Year 2040 Plus Project Recommended Improvements (ICU)*** – The proposed Project is expected to have a significant impact at one (1) of the twenty-seven (27) key study intersections under Year 2040 Plus Project traffic conditions under ICU analysis. As such, the following intersection improvements are recommended to mitigate the cumulative impacts of the proposed Project under these conditions:
 - **No. 20 – State College Boulevard at Imperial Highway:** *Same as those identified in Existing Plus Project and Year 2022 Plus Project recommended improvements.* Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In

conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- ***Year 2040 Plus Project Recommended Improvements (HCM)*** – The proposed Project is expected to have a significant impact at six (6) of the twenty-seven (27) key study intersections under Year 2040 Plus Project traffic conditions under HCM analysis. As such, the following intersection improvements are recommended to mitigate the significant impacts of the proposed Project under these conditions:
 - **No. 16 – Harbor Boulevard at Imperial Highway:** Widen the west leg to provide an exclusive eastbound right-turn lane. Modify the existing traffic signal to provide southbound right-turn overlap phasing. Right-of-way acquisition will be required. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
 - **No. 18 – Brea Boulevard at Imperial Highway:** *Same as those identified in Year 2022 Plus Project recommended improvements.* Restripe the southbound approach to provide a third southbound through lane. Modify the existing traffic signal. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
 - **No. 19 – Randolph Avenue at Imperial Highway:** *Same as those identified in Year 2022 Plus Project recommended improvements.* Restripe the northbound shared left-turn/through lane to a through lane. Modify the existing traffic signal to convert the split phasing on Randolph Avenue to protected left-turn phasing and eight-phase operation. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
 - **No. 20 – State College Boulevard at Imperial Highway:** *Same as those identified in Year 2022 Plus Project recommended improvements.* Conduct minor widening and restripe the southbound approach to provide an exclusive southbound right-turn lane. Modify the median and restripe the No. 2 SB left-turn lane into a trap left turn lane. Modify the existing traffic signal. In conjunction with the lengthening of the southbound left-turn lane it is recommended that the No. 2 eastbound through lane along Imperial at the SR-57 southbound on-ramp be converted to a shared through/right-turn lane. Since the proposed Project cannot guarantee that these

improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.

- **No. No. 22 – SR-57 Ramps at Imperial Highway** Widen and/or restripe the off-ramp to provide a second exclusive northbound right-turn lane. Modify the existing traffic signal. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- **No. 23 – Associated Road at Imperial Highway:** Restripe the exclusive southbound right-turn lane to a shared through/right-turn lane. Modify the existing traffic signal. Since the proposed Project cannot guarantee that these improvements which are under the jurisdiction of Caltrans will be implemented, a statement of overriding considerations may be required for this location.
- ***Site Access Assessment*** – The intersections of Randolph Avenue at Madison Way, Randolph Avenue at Brea Mall, and Brea Mall South at State College Boulevard are forecast to operate at LOS D or better during the Weekday AM, Weekday PM, and Weekend (Saturday) Midday peak hours in all traffic conditions.
- ***Year 2040 Project Fair-Share Contribution*** –The Project can be expected to pay a proportional “fair-share” of the recommended improvements at the six (6) impacted intersections, which are identified below. It should be noted that while fair share costs have been calculated Caltrans has no mechanism by which the Project can contribute fair share fees to offset the Project’s impacts.

<u>Key Intersection</u>	<u>City/ Jurisdiction</u>	<u>Project Fair-Share Contribution</u>
16. Harbor Boulevard at Imperial Highway	La Habra/Fullerton/Caltrans	3.77%
18. Brea Boulevard at Imperial Highway	Brea/Caltrans	12.04%
19. Randolph Avenue at Imperial Highway	Brea/Caltrans	100.00%
20. State College Boulevard at Imperial Highway	Brea/Caltrans	100.00%
22. SR-57 NB Ramps at Imperial Highway	Brea/Caltrans	11.20%
23. Associated Road at Imperial Highway	Brea/Caltrans	5.09%

- ***Traffic Impact Fees*** – The proposed Project’s Traffic Impact Fee totals \$788,496.00 based on a net increase of 149,625 SF of regional commercial uses along with 312 medium density residential units (i.e. 149,625 SF x \$2.24 per SF = \$335,160 and 312 DU x \$1,453 per DU = \$453,336). The precise fee will be determined upon issuance of Project building permits by the City of Brea Community Development Department.
- ***SR-57 Off-Ramp Queuing Analysis*** - Based on the estimated storage now provided on the off-ramp intersections at the SR-57 Freeway at Lambert Road and Imperial Highway, adequate storage is provided. Therefore, no modifications to the freeway off-ramps are required.

- ***CMP Compliance Assessment*** – The proposed Project will impact one CMP location, State College Boulevard at Imperial Highway, under Existing Plus Project traffic conditions. It should be noted that this impact is consistent with the Existing Plus Project impacts discussed previously in Section 8.1.1. Consistent with the findings presented in Section 8.1.1 for this location, with implementation of recommended improvements discussed in Section 10.2.1, the impact of the proposed Project will be offset. Under Year 2022 Plus Project traffic conditions and Year 2040 Plus Project traffic conditions, the proposed Project will not impact any of the CMP intersections.
- ***Caltrans Basic Freeway Analysis*** – The six (6) key freeway segments are forecast to operate at acceptable levels of service in Existing traffic conditions.
- ***Special Issues*** – Caltrans has indicated an increased number of collisions at Randolph Avenue/Imperial Highway and State College Boulevard/Imperial Highway and has therefore, requested further analysis at these locations. Per the direction of the City of Brea and Caltrans, five years of collision history has been research via the Statewide Integrated Traffic Records System (SWITRS) for the intersections of Randolph Avenue at Imperial Highway and State College Boulevard at Imperial Highway. The data was compiled from November 2014 through November 2018. Below presents the accident data for State College Boulevard at Imperial Highway. Review of this data shows a collision between a motorists and pedestrian that may be correctable via signal upgrades to the existing traffic signal equipment as necessary to enhance safety. This could include updating the signal to be compliant with current ADA standards (i.e. truncated domes, pedestrian count down heads, etc.). In addition, collisions related to lane changes ranged between 2 to 6 collisions per year. These collisions are due to vehicles making erratic lane changes to try and enter the SR-57 SB On-Ramp along Imperial Highway. These collisions could be corrected via modifying the SR-57 SB On-Ramp to allow for two lanes onto the freeway. It is recommended that the east bound approach be modified to accommodate two through lanes, a shared through/right-turn lane and an exclusive right-turn lane.

State College Boulevard at Imperial Highway		
Time Period	Total	Correctable
11/14 through 11/15	31	1 (Auto/Ped)
11/15 through 11/16	29	6 (Lane Change)
11/16 through 11/17	27	3 (Lane Change)
11/17 through 11/18	31	2 (Lane Change)

Below presents the accident data for Randolph Avenue at Imperial Highway. Review of this data shows no correctable collisions. Therefore, no improvements are recommended. However, it should be noted that Caltrans has an on-going safety improvement project along Imperial Highway to upgrade traffic signal indications and pedestrian facilities and that it is expected that those improvements once completed would reduce the risk of future crashes.

Randolph Avenue at Imperial Highway		
Time Period	Total	Correctable
11/14 through 11/15	7	0
11/15 through 11/16	8	0

11/16 through 11/17	5	0
11/17 through 11/18	7	0

APPENDIX A

TRAFFIC STUDY SCOPE OF WORK

MEMORANDUM

To: Mr. Michael Ho, P.E.
Public Works Department
City of Brea

Date: October 15, 2019

From: Richard E. Barretto, P.E., Principal
LLG Ref: 2.19.4099.1
Linscott, Law & Greenspan, Engineers

Subject: ***Traffic Impact Analysis Scope of Work for Brea Mall Expansion Project
Brea, California***

Linscott, Law & Greenspan, Engineers (LLG) is pleased to submit the following Traffic Impact Analysis Scope of Work for the proposed Brea Mall Expansion project in the City of Brea for your review and approval. The work program summarized below is based on our current experience within the City and prior coordination efforts with City staff. In addition, the scope considers discussions with Caltrans staff at our coordination meeting of September 17, 2019, as well as comments provided by City staff on October 3, 2019.

Traffic Study Scope of Work

The Traffic Impact Analysis for the Brea Mall Expansion Project (herein after referred to as Project) will satisfy the traffic impact requirements of the City of Brea and will be consistent with the requirements and procedures outlined in the most current *Congestion Management Program (CMP) for Orange County*. Given the location of the Project site, the criteria outlined in the current Caltrans *Guide for the Preparation of Traffic Impact Studies* will also be considered.

A. Project Location: The Brea Mall Expansion Project is located in the southwest quadrant of the Brea Mall along Randolph Avenue and Imperial Highway in the City of Brea, California. **Figure 1-1** presents a Vicinity Map that illustrates the general location of the Project and surrounding street system. **Figure 2-1** is an existing aerial photograph of the Project site.

B. Project Description:

Existing Brea Mall

The existing Brea Mall site is 1,291,433 square feet (SF) of Gross Leasable Area (GLA) consisting of several major department stores and a mixture of retail shops and restaurant/food uses. It should be noted that the first floor of the vacant Sears department store has been re-occupied by Q's fashion retail store and the second story totaling 80,995 GLA SF is currently still vacant.

Proposed Project

The proposed Project would demolish the total 161,990 SF Sears store (both occupied and vacant) and construct 183,615 SF of additional retail space, a 128,000 SF health club, and 312 medium density residential units. See **Table 2-1** for the Project development summary.



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Vehicular access to the Project from the public streets bordering the subject property are currently provided by two (2) signalized intersections along Randolph Avenue, one (1) signalized intersection along Birch Street, and three (3) signalized intersections along State College Boulevard.

Figure 2-2 illustrates the conceptual site plan for the Project provided by Simon.

C. Traffic Study Locations: The following twenty-nine (29) key study intersections have been selected for evaluation and are subject to review and confirmation by the City of Brea. Twenty-three (23) key roadway segments volumes will be provided for informational purposes only. *Figure 1-1* identifies the study locations.

Key Intersection	Applicable Jurisdiction and/or City Location				
	Caltrans	City of Brea	City of La Habra	City of Fullerton	City of Placentia
1. Puente Street at Lambert Road	--	Brea	--	--	--
2. Brea Boulevard at Lambert Road	--	Brea	--	--	--
3. State College Boulevard at Lambert Road	--	Brea	--	--	--
4. SR-57 SB Ramps at Lambert Road	Caltrans	Brea	--	--	--
5. SR-57 NB Ramps at Lambert Road	Caltrans	Brea	--	--	--
6. Santa Fe Road/Kraemer Boulevard at Lambert Road	--	Brea	--	--	--
7. Brea Boulevard at Birch Street	--	Brea	--	--	--
8. Randolph Avenue at Birch Street	--	Brea	--	--	--
9. State College Boulevard at Birch Street	--	Brea	--	--	--
10. S Associated Road at Birch Street	--	Brea	--	--	--
11. N Associated Road at Birch Street	--	Brea	--	--	--
12. Kraemer Boulevard at Birch Street	--	Brea	--	--	--
13. Randolph Avenue at Madison Way	--	Brea	--	--	--
14. Randolph Avenue at Brea Mall South	--	Brea	--	--	--
15. Brea Mall South at State College Boulevard	--	Brea	--	--	--
16. Harbor Boulevard at Imperial Highway	Caltrans	--	La Habra	Fullerton	--
17. Puente Street at Imperial Highway	Caltrans	Brea	--	Fullerton	--
18. Brea Boulevard at Imperial Highway	Caltrans	Brea			
19. Randolph Avenue at Imperial Highway	Caltrans	Brea	--	--	--
20. State College Boulevard at Imperial Highway	Caltrans	Brea	--	--	--

Key Intersection	Applicable Jurisdiction and/or City Location				
	Caltrans	City of Brea	City of La Habra	City of Fullerton	City of Placentia
21. SR-57 SB Ramps at Imperial Highway	Caltrans	Brea	--	--	--
22. SR-57 NB Ramps at Imperial Highway	Caltrans	Brea	--	--	--
23. Associated Road at Imperial Highway	Caltrans	Brea	--	--	--
24. Castlegate Lane/Placentia Avenue at Imperial Highway	Caltrans	Brea	--	--	--
25. Kraemer Boulevard at Imperial Highway	Caltrans	Brea	--	--	--
26. Brea Boulevard at Bastanchury Road	--	--	--	Fullerton	--
27. State College Boulevard at Bastanchury Road	--	--	--	Fullerton	--
28. Placentia Avenue at Bastanchury Road	--	--	--	--	Placentia
29. Kraemer Boulevard at Bastanchury Road	--	--	--	--	Placentia

D. Traffic Counts: Weekday Daily, AM peak hour and PM peak hour traffic counts, and Weekend (Saturday) Daily and Midday peak hour traffic counts for the twenty-nine (29) key study intersections and twenty-three (23) key roadway segments were collected in 2018 and May and August 2019. The 2018 count locations will be grown by 1% for a baseline Year 2019 traffic condition.

E. Project Traffic Generation:

The trip generation potential of the proposed Project is recommended to be estimated using trip rates contained in the 10th Edition of *Trip Generation*, published by the Institute of Transportation Engineers (ITE), [Washington, D.C., 2017] and observed trip rates of existing Lifetime Fitness facilities. **Table 5-1** summarizes the trip generation rates used in forecasting the vehicular trips generated by the proposed Project and also presents the project's forecast peak hour and daily traffic volumes. As shown in the upper portion of *Table 5-1*, ITE Land Use 221: Multifamily Housing (Mid-Rise) trip rates and ITE Land Use 820: Shopping Center equations, and empirical rates from existing Lifetime Fitness facilities will be used to forecast the trip generation potential of a fully occupied existing Brea Mall and site, as well as the Project.

A review of the middle portion of *Table 5-1* indicates that a fully occupied Brea Mall (including the currently vacant second story of Sears) is forecast to generate approximately 30,817 Weekday daily trips, with 757 trips (469 inbound, 288 outbound) produced in the Weekday AM peak hour and 3,247 trips (1,559

inbound, 1,688 outbound) produced in the Weekday PM peak hour on a “typical” weekday. A fully occupied Brea Mall is forecast to generate 39,183 Saturday daily trips, with 4,204 trips (2,186 inbound, 2,018 outbound) produced in the Saturday Midday peak hour on a “typical” Saturday.

The lower portion of *Table 5-1* presents the trip generation associated with the existing occupied Brea Mall and the additional proposed Project uses. A review of lower portion of this table indicates that the proposed Project with the existing Brea Mall is forecast to generate approximately 34,957 Weekday daily trips, with 1,072 trips (634 inbound, 438 outbound) produced in the Weekday AM peak hour and 3,671 trips (1,840 inbound, 1,831 outbound) produced in the Weekday PM peak hour on a “typical” weekday. The proposed Project with the existing Brea Mall is forecast to generate 43,214 Saturday daily trips, with 4,645 trips (2,358 inbound, 2,287 outbound) produced in the Saturday Midday peak hour on a “typical” Saturday.

When the proposed Project is compared to an existing fully occupied Brea Mall site, the proposed Project is forecast to generate 4,140 more Weekday daily trips, 315 more Weekday AM peak hour trips, 424 more Weekday PM peak hour trips, 4,031 more Saturday daily trips, and 441 more Saturday Midday peak hour trips.

F. Project Trip Distribution Pattern: See attached *Figures 5-1* and *5-2* for the Project Trip Distribution for the commercial and residential components, respectively, for review by the City. The Project Trip Distribution for the retail and residential components have been distributed and assigned to the adjacent street system based on Project Select Zone model runs and have been further refined based on the following considerations:

- location of site access points in relation to the surrounding street system,
- the site's proximity to major traffic carriers and regional access routes,
- physical characteristics of the circulation system such as lane channelization and presence of traffic signals that affect travel patterns,
- presence of traffic congestion in the surrounding vicinity, and
- ingress/egress availability at the project site.

G. Near-Term Cumulative Background Traffic:

- Project Completion Year: The Project is expected to be completed by 2022.
- Ambient Growth Rate: 1% per year
- Cumulative Projects: Planned and/or approved projects within a two-mile radius and in the vicinity of the Project site that may contribute traffic to the Project study area have been researched at the City of Brea and adjacent jurisdictions (i.e. Fullerton, La Habra, Placentia). Currently, six (6) projects,

inclusive of the Brea Plaza Expansion project, are proposed for inclusion in the near-term cumulative traffic assessment. **Table 6-1** shows the six (6) cumulative projects that will be included in the analysis. **Figure 6-1** shows the six (6) cumulative project locations. Related projects will be reconfirmed with the above-mentioned cities.

Per the direction of City staff the Brea 265 Project has been included as a related project as part of Year 2040 background traffic conditions.

H. Long-Term Buildout Traffic: Long-Term traffic volume forecasts will be developed based on OCTA prepared models. Contact OCTA and formally request preparation of OCTAM 4.0 approved computer traffic model runs for baseline conditions and buildout conditions for the AM and PM peak periods and daily traffic conditions.

Forecast future buildout traffic volumes using the following methodology:

- a. Peak period traffic volumes will be converted to peak hour (i.e., one-hour) traffic volumes using a conversion factor of 0.3566 for the AM peak hour and 0.2662 for the PM peak hour;
- b. Calculate the difference between the baseline and buildout peak period traffic volumes and convert to AM and PM peak hour (i.e., one-hour) link traffic volumes;
- c. Link traffic volumes (i.e., two-way directional traffic volumes on each roadway segment) will be post-processed using the “b-turns” program and the relationship of the base year validation model run output to the base year "ground" traffic counts to develop buildout AM and PM peak hour traffic volumes.

Per the direction of City staff, the Brea 265 Specific Plan project will be included as a related project as part of Year 2040 background traffic conditions.

I. Analysis Scenarios: Prepare AM peak hour and PM peak hour Level of Service (LOS) calculations at up to twenty-nine (29) study intersections to determine the potential impacts of the proposed Project. The following traffic scenarios will be prepared.

1. Existing Baseline (Existing + Fully Occupied Mall) Traffic Conditions;
2. Existing Baseline (Existing + Fully Occupied Mall) Plus Project Traffic Conditions;
3. Scenario (2) with Mitigation, if necessary;
4. Near-Term (Year 2022 to be confirmed) Background Traffic Conditions (Existing plus Ambient Growth plus Related Projects);

5. Near-Term (Year 2022 to be confirmed) Background Plus Project Traffic Conditions;
6. Scenario (5) with Mitigation, if necessary;
7. Long-Term Buildout Traffic Conditions;
8. Long-Term Buildout Plus Project Traffic Conditions; and
9. Scenario (8) with Mitigation, if necessary.

For the City of Brea, Fullerton and Caltrans intersections the LOS calculations will be based on the most current version of the Highway Capacity Manual (HCM 6th Edition) methodology. For the City of Brea and Placentia the Intersection Capacity Utilization (ICU) methodology for signalized intersections. All HCM analysis will be completed via Vistro 7.6.

J. Impact Criteria and Thresholds: The following impact criteria will be applied for each jurisdiction.

City of Brea

For the City of Brea under HCM methodology analysis, a significant LOS impact occurs when the proposed Project causes the level of service at an intersection to fall below LOS D with the addition of Project traffic to baseline conditions. For intersections that already operate at unacceptable LOS E or F under the baseline conditions, a significant impact is defined as the proposed Project causing an increase in average critical delay value by 2.0 seconds or more. This significant impact criteria would only apply to those intersections located within the City of Brea and under its sole jurisdiction. At locations within the City of Brea but under the jurisdiction of Caltrans (i.e. study locations located along Imperial (SR-90) Highway), Caltrans LOS standards and impact criteria would apply.

For the City of Brea under ICU methodology analysis, an impact is considered to be significant if the Project causes an intersection at LOS D or better to degrade to LOS E or F, or if the Project increases traffic demand at a signalized study intersection by 0.020 or greater and the intersection is forecast to operate at LOS E or F.

City of La Habra

For ICU analysis, LOS D is the acceptable condition that should be maintained during the morning and evening peak commute hours on all intersections within the City of La Habra, except those on the CMPHS of Orange County, where LOS E is defined in the CMP for Orange County as the acceptable limit and is acceptable for State Highway intersections. An impact is considered to be significant if the Project causes an intersection to degrade to LOS E or F, or if the Project increases traffic demand at a signalized study intersection by 0.010 or greater and the intersection is forecast to operate at LOS E or F.

City of Placentia

The City of Placentia considers LOS D (ICU = 0.81 – 0.90) to be the minimum acceptable LOS for all key study intersections. Impacts to local and regional transportation systems are considered significant if:

- The intersection operates at LOS E or F and the project increases traffic demand at the study intersection by 1% of capacity (ICU increase ≥ 0.010). At unsignalized intersections, a “significant” adverse traffic impact is defined as a project that adds 1% or more traffic delay (seconds per vehicle) at an intersection operating at LOS E or F.

City of Fullerton

According to the City of Fullerton, LOS D is the minimum acceptable condition that should be maintained during the peak commute hours. Impacts are considered significant if:

- For signalized intersections, an impact is considered to be significant if the project causes an intersection at LOS D or better to degrade to LOS E or F.

Caltrans

Consistent with the *Caltrans Guide for the Preparation of Traffic Impact Studies*, the following criteria has been utilized to determine project impacts at the state-controlled study intersections:

- Caltrans endeavors to maintain a target LOS at the transition between LOS “C” and LOS “D” on State highway facilities. However, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. Caltrans has established that LOS D is the operating standard for all Caltrans facilities. Caltrans has determined that all state-owned facilities that operate below LOS D should be identified and improved to an acceptable LOS. The *Caltrans Traffic Impact Study Guidelines dated December 2002* states that if an existing State-owned facility operates at less than the target LOS (i.e. LOS D); the existing service level should be maintained.

J. Caltrans Facilities Analysis:

- Conduct freeway mainline analysis as outlined in Caltrans’ requirements for the following six (6) segments:
 - 1) SR-57 Northbound, south of Imperial Highway
 - 2) SR-57 Northbound, south of Lambert Road
 - 3) SR-57 Northbound, north of Lambert Road

- 4) SR-57 Southbound, north of Lambert Road
 - 5) SR-57 Southbound, south of Lambert Road
 - 6) SR-57 Southbound, south of Imperial Highway
- Conduct freeway merge/diverge analysis as outlined in Caltrans' requirements for the following four (4) segments:
 - 1) SR-57 Northbound Off-Ramp *to* Imperial Highway
 - 2) SR-57 Northbound Loop On-Ramp *from* Imperial Highway
 - 3) SR-57 Northbound Slip On-Ramp *from* Imperial Highway
 - 4) SR-57 Northbound Off-Ramp *to* Lambert Road
 - 5) SR-57 Northbound On-Ramp *from* Lambert Road
 - 6) SR-57 Southbound Off-Ramp *to* Lambert Road
 - 7) SR-57 Southbound On-Ramp *from* Lambert Road
 - 8) SR-57 Southbound Off-Ramp *to* Imperial Highway
 - 9) SR-57 Southbound Loop On-Ramp *from* Imperial Highway
 - 10) SR-57 Southbound Slip On-Ramp *from* Imperial Highway

K. Other Issues:

- Conduct a Synchro assessment at the two Project Driveways located closest to Imperial Highway along State College Boulevard and Randolph Avenue to assess if the stacking requirements with the proposed Project are adequate. It is our understanding the City and Caltrans would like to ensure that Randolph Avenue does not queue back from the Project Driveway onto Imperial Highway. As it relates to State College it is our understanding the City and/or Caltrans are concerned with how the southbound dual lefts will interact with the freeway on-ramp. In addition, conduct Synchro assessment for the SR-57 Ramps intersections at Lambert Road and Imperial Highway to document existing and future queuing at the ramp intersections.
- VMT analysis.
- Evaluate Site Access and Internal Circulation of the proposed expansion and improvement area of the Brea Mall.
- Identify measures to mitigate the impact of project traffic including roadway and intersection widening, traffic signals installation & modification signing, localized street improvement striping/channelization and all others improvements to provide acceptable LOS.
- Research planned improvements along the SR-57 Freeway within the vicinity of the Project. In addition, research SR-57 Ramp improvements at Imperial Highway and/or Lambert Road.

- Work with the City and/or Caltrans to obtain five years of accident history data at the intersections of Randolph Avenue/Imperial Highway and State College Boulevard/Imperial Highway to see if improvements could be made to correct avoidable collisions.
- Discuss existing bike facilities and transit service within Project vicinity, inclusive of those that current exists and/or are proposed within the Brea Mall. Given the Brea Mall is a key destination and transfer location for transit users, discussion current service/routes to and from the site, and operational characteristics, inclusive of potential benefits and/or challenges created by the Project.

We appreciate the opportunity to provide this scope of work. Should you have any questions, please call us at (949)825-6175. Thank you.

Approved by:

City of Brea

Date

cc. File
 Shane Green, P.E., LLG

TABLE 2-1
PROJECT DEVELOPMENT SUMMARY

Land Use/Project Description	Development Totals
<u>Existing Occupied Brea Mall:</u>	
▪ Existing Occupied Mall ¹	1,210,438 SF GLA
<u>Existing Occupied Brea Mall + Vacancy:</u>	
▪ Existing Occupied Mall	1,210,438 SF GLA
▪ Vacant Second Story Sears Tenant ²	<u>80,995 SF GLA</u>
<i>Fully Occupied Brea Mall</i>	<i>1,291,433 SF GLA</i>
<u>Existing Occupied Brea Mall + Proposed Project:</u>	
▪ Existing Occupied Mall	1,210,438 SF GLA
▪ Existing Occupied Mall to be Demolished	-80,995 SF GLA
▪ Proposed Project Commercial	
o Sporting Goods ³	50,019 SF GLA
o Fitness Center ³	128,000 SF GLA
o Level 1 Mall	123,053 SF GLA
o Level 2 Mall ³	<u>10,543 SF GLA</u>
<i>Existing Occupied Brea Mall + Proposed Project Subtotal</i>	<i>1,441,058 SF GLA</i>
▪ Proposed Project Multifamily Homes ⁴	
o Studio	35 Units
o 1 Bedroom	162 Units
o 2 Bedroom	<u>115 Units</u>
<i>Proposed Residential</i>	<i>312 Units</i>

¹ Table 1, Brea Mall Redevelopment Project Land Use Summary, received May 1, 2019, indicates that the existing occupied mall as 1,291,433 SF. 80,995 SF (first story of 161,990 SF Sears tenant) has since been reoccupied by Q's fashion retail store for an existing occupied mall of 1,210,438 SF.

² As the lower level of the 161,990 SF Sears tenant has been reoccupied, 80,995 SF of the upper level remains vacant.

³ 5o5 Design site plan, dated June 10, 2019.

⁴ AO site plan, dated June 10, 2019.

TABLE 5-1
PROJECT TRAFFIC GENERATION RATES AND FORECAST⁵

ITE Land Use Code/ Project Description	Weekday							Saturday			
	Daily 2-Way	AM Peak Hour			PM Peak Hour			Daily 2-Way	MD Peak Hour		
		Enter	Exit	Total	Enter	Exit	Total		Enter	Exit	Total
<u>Trip Generation Factors:</u>											
• 221: Multifamily Housing (Mid-Rise) (TE/DU) ⁶	5.44	26%	74%	0.36	61%	39%	0.44	4.91	49%	51%	0.44
• 820: Shopping Center (TE/TSF GLA)	Eq. ⁷	62%	38%	Eq. ⁷	48%	52%	Eq. ⁷	Eq. ⁷	52%	48%	Eq. ⁷
• Empirical Life Time Fitness/Health Club (TE/TSF) ⁸	27.44	1.02	0.51	1.53	1.85	0.97	2.83	26.35	1.04	1.79	2.83
<u>Existing Occupied Brea Mall:</u>											
• Existing Shopping Center (1,210,438 SF)	32,766	469	288	757	1,651	1,788	3,439	41,824	2,308	2,130	4,438
Pass-by Reduction ⁹	<u>-3,277</u>	<u>-23</u>	<u>-15</u>	<u>-38</u>	<u>-165</u>	<u>-179</u>	<u>-344</u>	<u>-4,182</u>	<u>-231</u>	<u>-213</u>	<u>-444</u>
Existing Occupied Brea Mall Subtotal	29,489	446	273	719	1,486	1,609	3,095	37,642	2,077	1,917	3,994
<u>Existing Occupied Brea Mall + Vacancy:</u>											
• Fully Occupied Shopping Center (1,291,433 SF) ¹⁰	34,241	494	303	797	1,732	1,876	3,608	43,537	2,429	2,242	4,671
Pass-by Reduction ⁹	<u>-3,424</u>	<u>-25</u>	<u>-15</u>	<u>-40</u>	<u>-173</u>	<u>-188</u>	<u>-361</u>	<u>-4,354</u>	<u>-243</u>	<u>-224</u>	<u>-467</u>
Fully Occupied Brea Mall Total	30,817	469	288	757	1,559	1,688	3,247	39,183	2,186	2,018	4,204
<u>Existing Occupied Brea Mall + Proposed Project:</u>											
• Proposed Shopping Center (1,313,058 SF) ¹¹	34,630	501	307	808	1,753	1,900	3,653	43,988	2,461	2,272	4,733
Internal Capture ¹²	<u>-747</u>	<u>-1</u>	<u>-1</u>	<u>-2</u>	<u>-22</u>	<u>-39</u>	<u>-61</u>	<u>-674</u>	<u>-29</u>	<u>-31</u>	<u>-60</u>
Proposed Shopping Center Subtotal	33,883	500	306	806	1,731	1,861	3,592	43,314	2,432	2,241	4,673
Pass-by Reduction ⁹	<u>-3,388</u>	<u>-25</u>	<u>-15</u>	<u>-40</u>	<u>-173</u>	<u>-186</u>	<u>-359</u>	<u>-4,331</u>	<u>-243</u>	<u>-224</u>	<u>-467</u>
Proposed Shopping Center Subtotal	30,495	475	291	766	1,558	1,675	3,233	38,983	2,189	2,017	4,206
• Proposed Health Club (128,000 SF)	3,512	131	65	196	237	125	362	3,373	133	229	362
• Proposed Residential (312 DU)	1,697	29	83	112	84	53	137	1,532	67	70	137
Internal Capture ¹²	<u>-747</u>	<u>-1</u>	<u>-1</u>	<u>-2</u>	<u>-39</u>	<u>-22</u>	<u>-61</u>	<u>-674</u>	<u>-31</u>	<u>-29</u>	<u>-60</u>
Proposed Residential Subtotal	950	28	82	110	45	31	76	858	36	41	77
Existing Occupied Brea Mall + Proposed Project Total	34,957	634	438	1,072	1,840	1,831	3,671	43,214	2,358	2,287	4,645
Net Trip Generation (Existing Occupied Brea Mall + Proposed Project) - (Existing Occupied Brea Mall + Vacancy)	4,140	165	150	315	281	143	424	4,031	172	269	441

Notes:
TE/TSF GLA = Trip End per Thousand Square Feet Gross Leasable Area
TE/DU = Trip End per Dwelling Unit

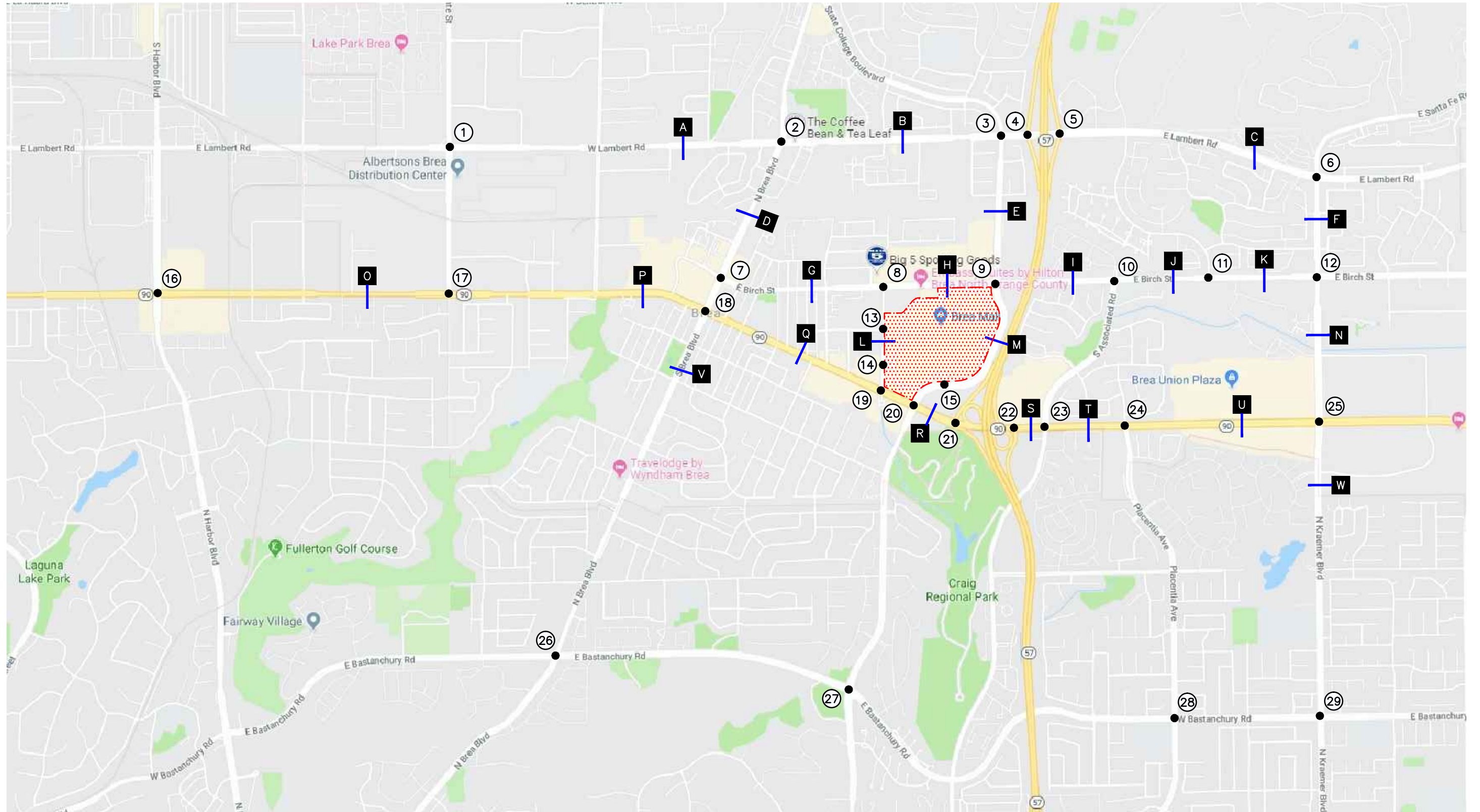
⁵ Source: *Trip Generation*, 10th Edition, Institute of Transportation Engineers (ITE), Washington, D.C. (2017).
⁶ Mid-Rise Multifamily Housing consists of buildings that are between 3 and 10 levels.
⁷ Trip Generation rates based on the following equations:
▪ Weekday Daily: $\text{Ln}(T) = 0.68\text{Ln}(X) + 5.57$
▪ Weekday AM Peak Hour: $T = 0.50(X) + 151.78$
▪ Weekday PM Peak Hour: $\text{Ln}(T) = 0.74\text{Ln}(X) + 2.89$
▪ Saturday Daily: $\text{Ln}(T) = 0.62\text{Ln}(X) + 6.24$
▪ Saturday Peak Hour of Generator: $\text{Ln}(T) = 0.79\text{Ln}(X) + 2.79$
⁸ Source: *Northshore Mall Redevelopment Traffic Impact and Access Study Appendix Table A-2*, prepared by VHB, dated April 2018. Based on trip rates from empirical count data collected by VHB at Life Time Fitness facilities in Westwood and Framingham, Massachusetts.
⁹ The pass-by trip reductions applied to retail trips are 10% for Weekday Daily, 5% for Weekday AM peak hour, 10% for Weekday PM peak hour, 10% for Saturday Daily, and 10% for Saturday Midday peak hour.
¹⁰ The fully occupied Brea Mall includes the existing 1,210,438 SF of occupied mall and 80,995 SF of second floor Sears vacancy.
¹¹ The proposed Brea Mall includes the existing 1,210,438 SF of occupied mall, 80,995 SF of the occupied first floor of the Sears building to be demolished, and 183,615 SF of additional commercial.
¹² Consistent with the *Trip Generation Handbook*, published by ITE (2017), Project trip generation was adjusted to account for internal capture between the retail and residential components of the Project. As there is no Saturday internal capture worksheets available, Weekday Daily and Weekday PM peak hour calculations have been applied to Saturday Daily and Saturday Midday peak hour.

TABLE 6-1
LOCATION AND DESCRIPTION OF CUMULATIVE PROJECTS¹³

No.	Description	Location/Address	Size
<u>City of Brea¹⁴</u>			
1.	CVS	390 N. Brea Boulevard	13,000 SF Pharmacy with Drive-Through, 1,700 SF Coffee Shop with Drive-through
2.	Brea Place	State College Boulevard at Birch Street	790 DU Apartments, 5,000 SF Office, 150 Room Hotel
3.	Downtown Hotel	220 S. Brea Boulevard	116 Room Hotel, 4,000 SF High Turnover Sit Down Restaurant
4.	Mercury Apartments	Southwest corner of Berry Street at Mercury Lane	120 DU Apartments
5.	Brea Plaza Expansion Project	409-477 S. Associated Road & 1555, 1609, 1623, 1643 E. Imperial Highway	Demolish 18,750 SF Movie Theater and 7,500 SF Restaurant; Construct 150 Room Hotel, 4,997 SF Restaurant, 16,914 SF Office
<u>City of Fullerton</u>			
6.	Beckman Business Center	4300 North Harbor Boulevard	522,250 SF Warehousing, 166,185 SF General Light Industrial, 248,230 SF Manufacturing, 42,000 SF Office

¹³ Source: City of Brea, Fullerton, and La Habra Planning Departments.

¹⁴ Per the direction of City staff the Brea 265 Project has been included as a related project as part of Year 2040 background traffic conditions.



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SOURCE: GOOGLE

KEY

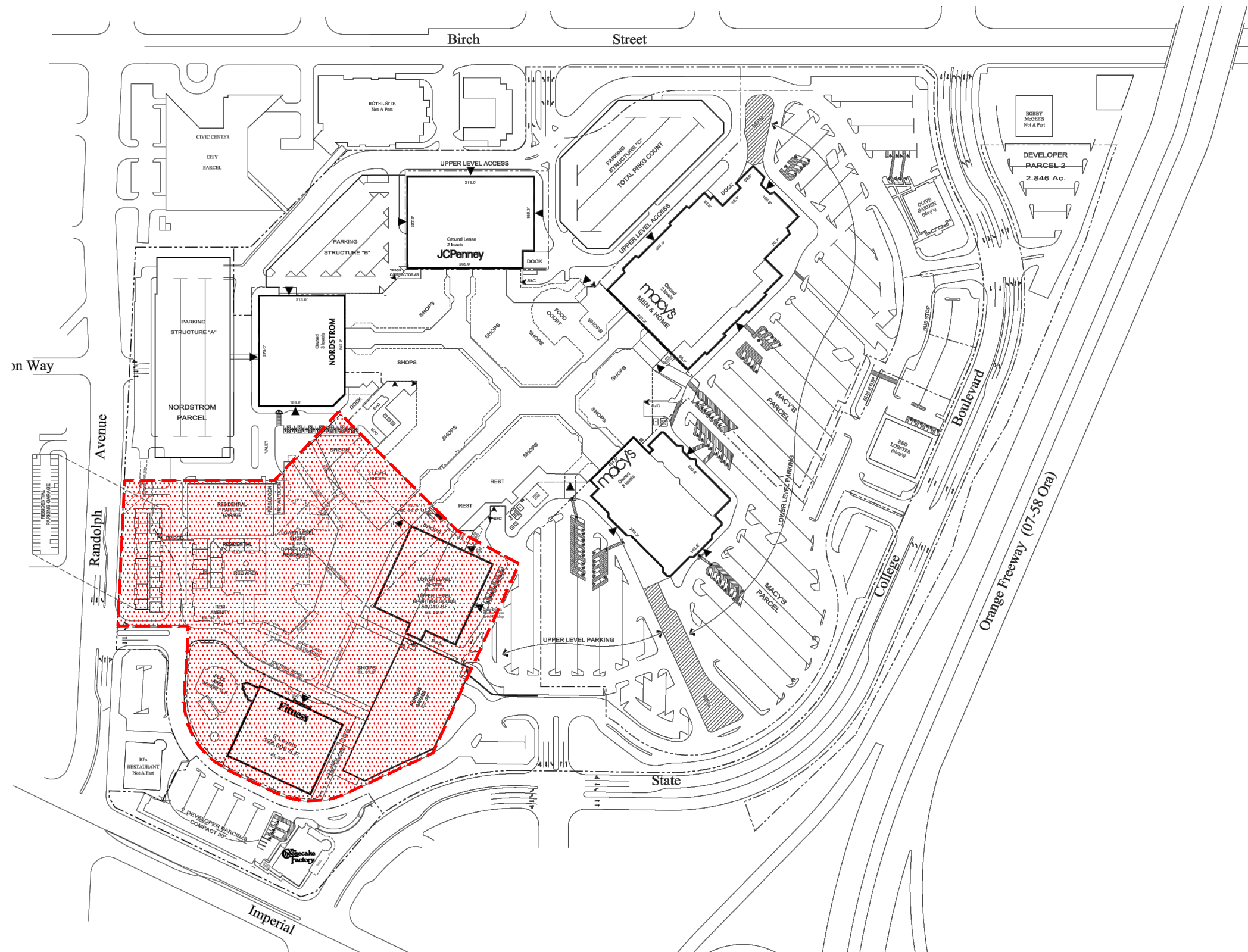
- # = STUDY INTERSECTION
- # = STUDY ROADWAY SEGMENT
- # = PROJECT SITE

FIGURE 1-1

VICINITY MAP
BREA MALL EXPANSION, BREA



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SOURCE: SIMON

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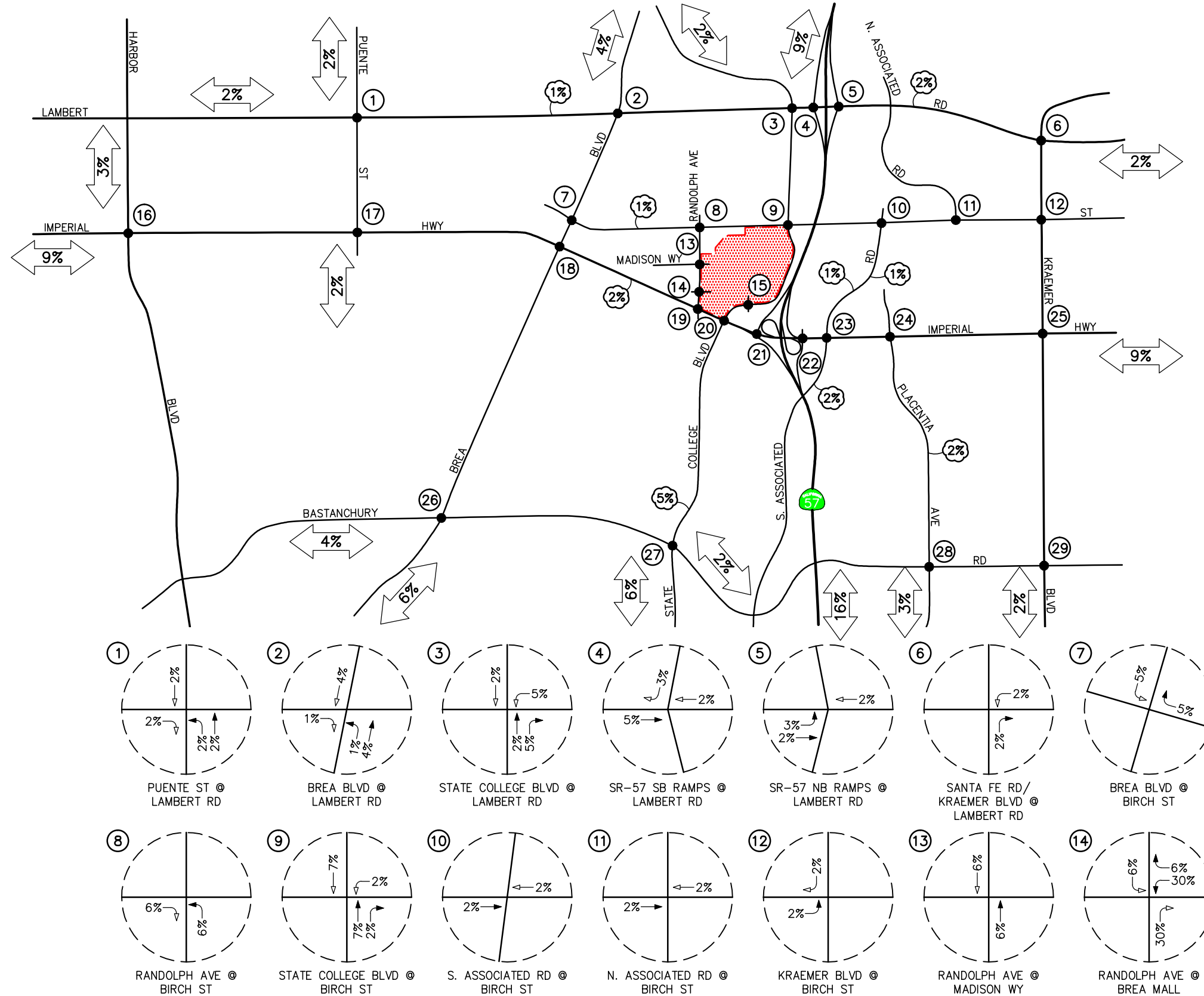
= PROJECT SITE

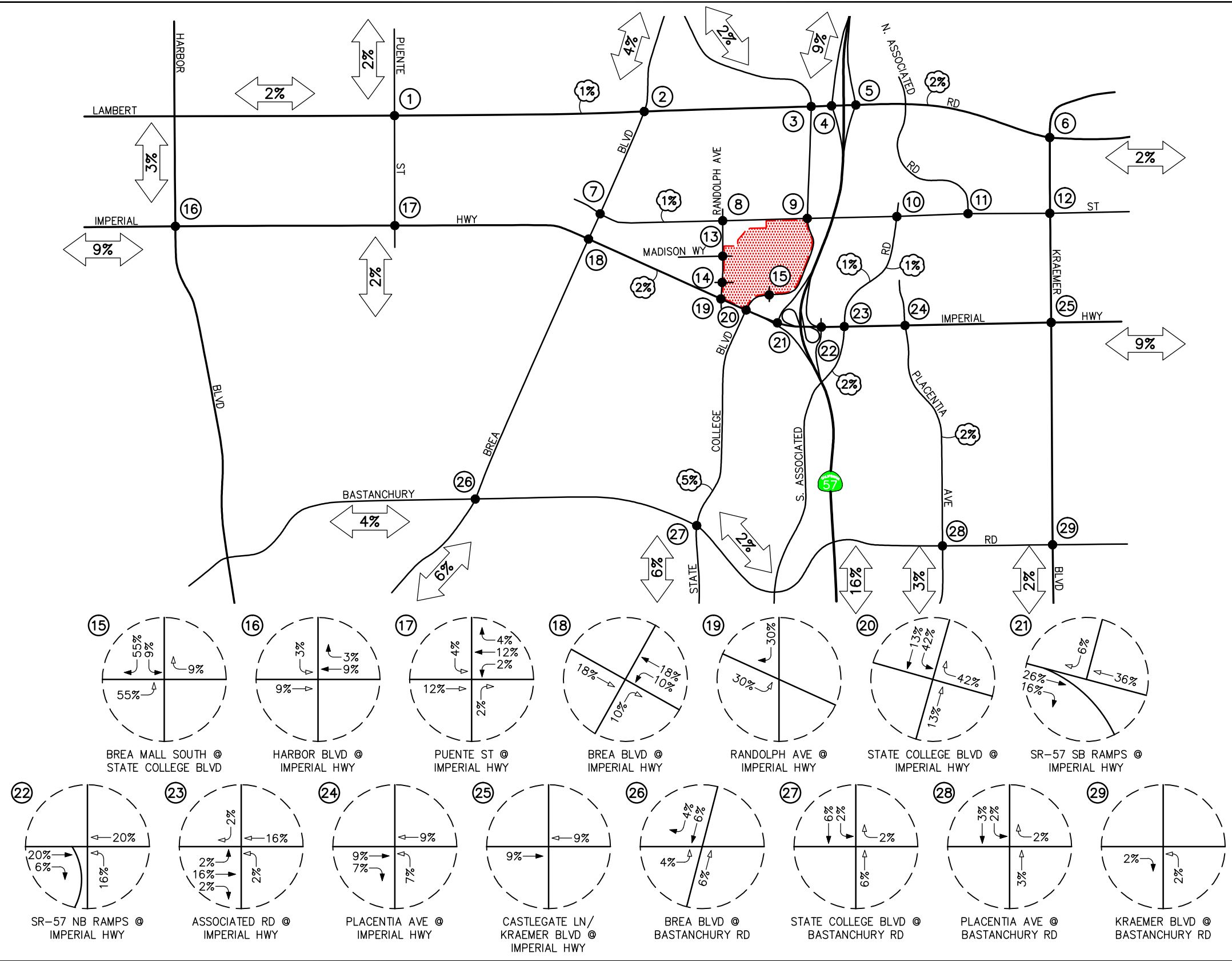


NO SCALE

FIGURE 2-2

PROPOSED SITE PLAN
BREA MALL EXPANSION, BREA





KEY

- # = STUDY INTERSECTION
- ↔ = INBOUND PERCENTAGE
- = OUTBOUND PERCENTAGE
- [Red Hatched Box] = PROJECT SITE

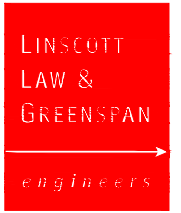
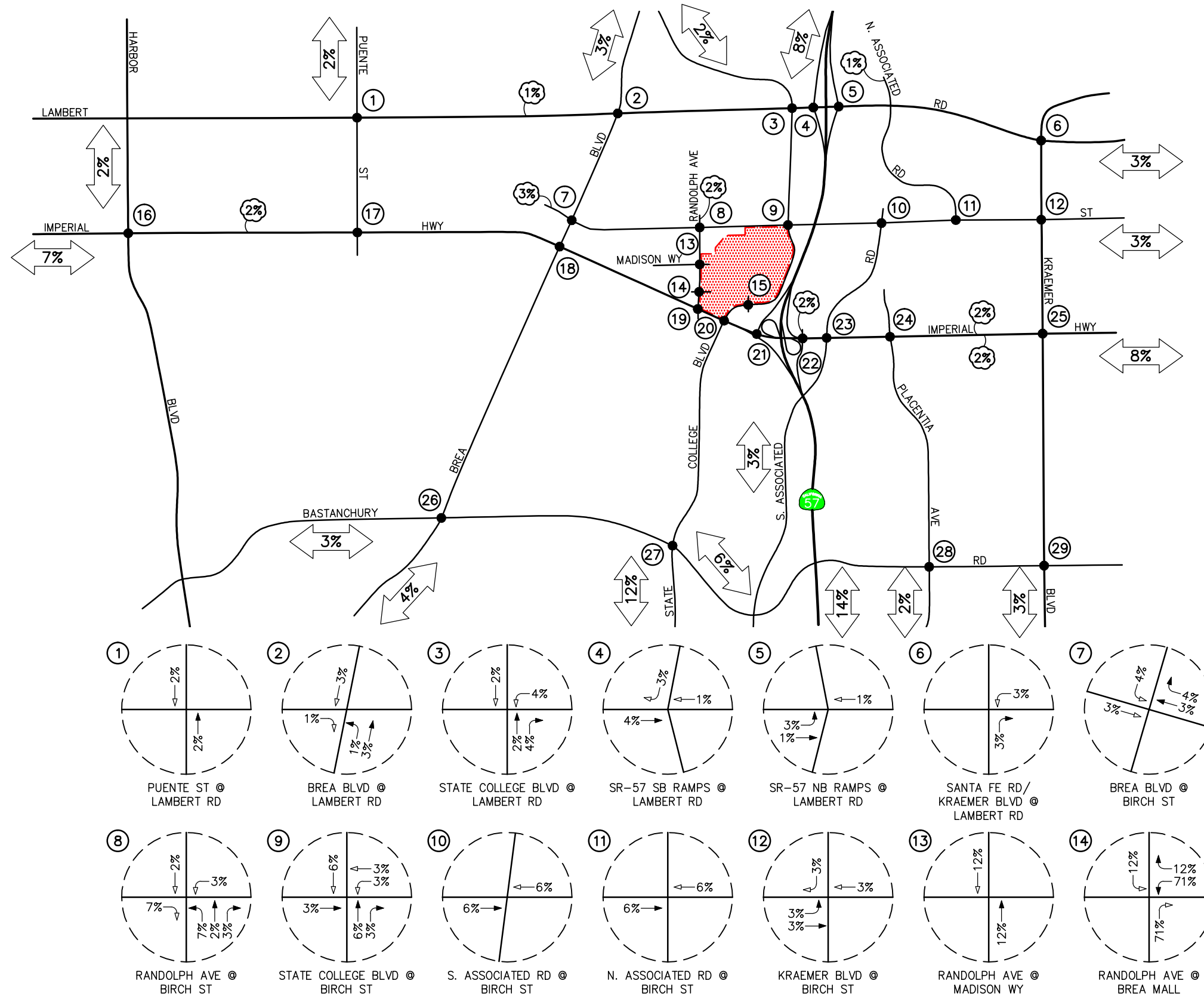


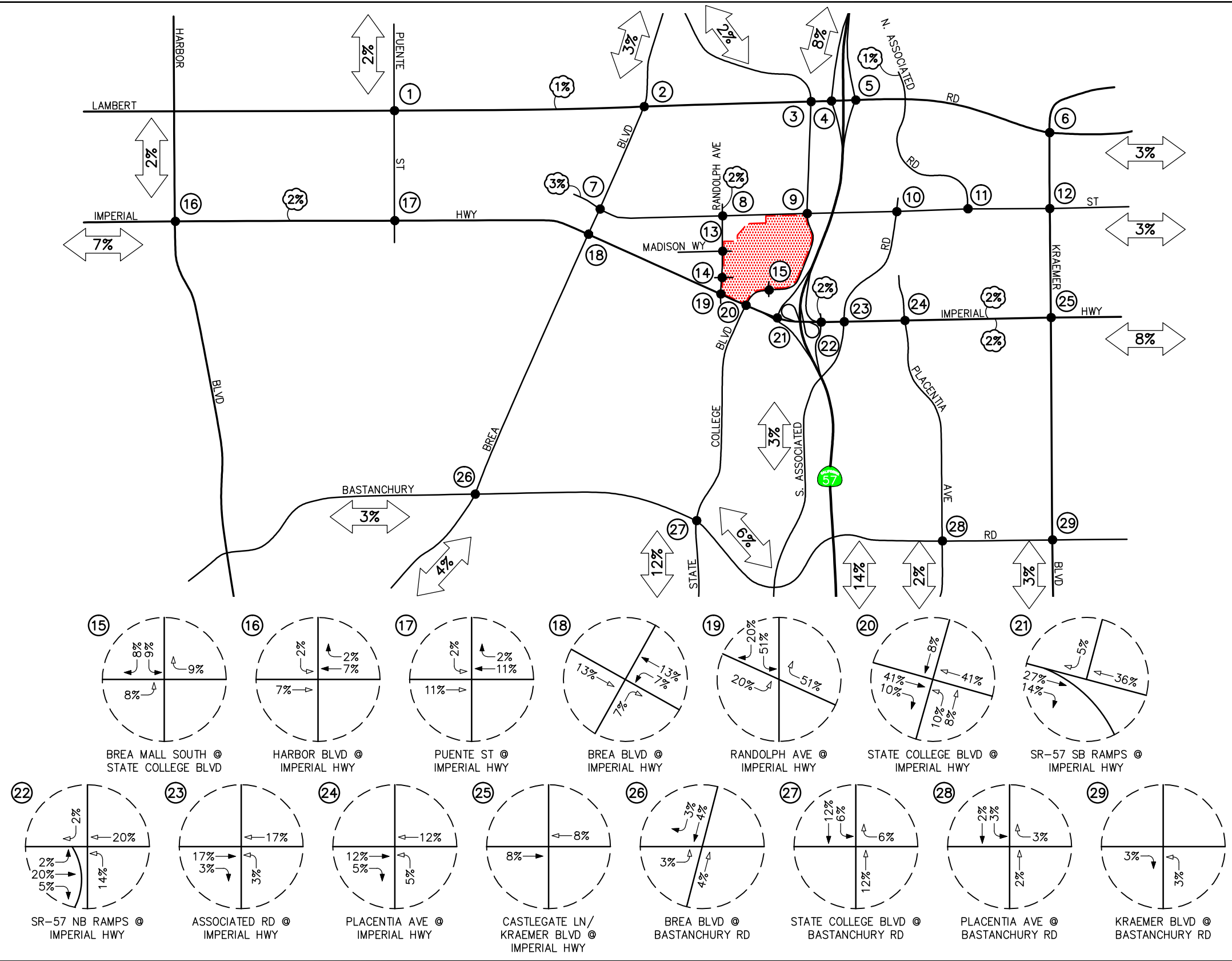
FIGURE 5-1B

PROJECT TRIP DISTRIBUTION – COMMERCIAL

BREA MALL EXPANSION, BREA

n:\4000\2194099 - brea mall expansion & improvement, brea\dwg\4099 f5-1b.dwg LDP 11:30:21 10-15-2019 besa





KEY

- # = STUDY INTERSECTION
- ↔ = INBOUND PERCENTAGE
- ↔ = OUTBOUND PERCENTAGE
- [Red Hatched Box] = PROJECT SITE

FIGURE 5-2B

PROJECT TRIP DISTRIBUTION – RESIDENTIAL
BREA MALL EXPANSION, BREA

**LINSCOTT
LAW &
GREENSPAN**
engineers

N
NO SCALE

n:\4000\2194099 - brea mall expansion & improvement, brea\dwg\4099 f5-2b.dwg LDP 13:41:24 10-15-2019 besa



- KEY**
- 1. CVS
 - 2. BREA PLACE
 - 3. DOWNTOWN HOTEL
 - 4. MERCURY APARTMENTS
 - 5. BREA PLAZA
 - 6. BECKMAN BUSINESS CENTER

SOURCE: GOOGLE

KEY

- # = CUMULATIVE PROJECT LOCATION
- [Red Hatched Box] = BREA MALL

FIGURE 6-1

LOCATION OF CUMULATIVE PROJECTS
BREA MALL MIXED-USE PROJECT, BREA

APPENDIX B

EXISTING TRAFFIC COUNT DATA

APPENDIX B-1

EXISTING INTERSECTION TRAFFIC COUNT DATA

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Puente St & W Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-001
Date: 5/22/2019

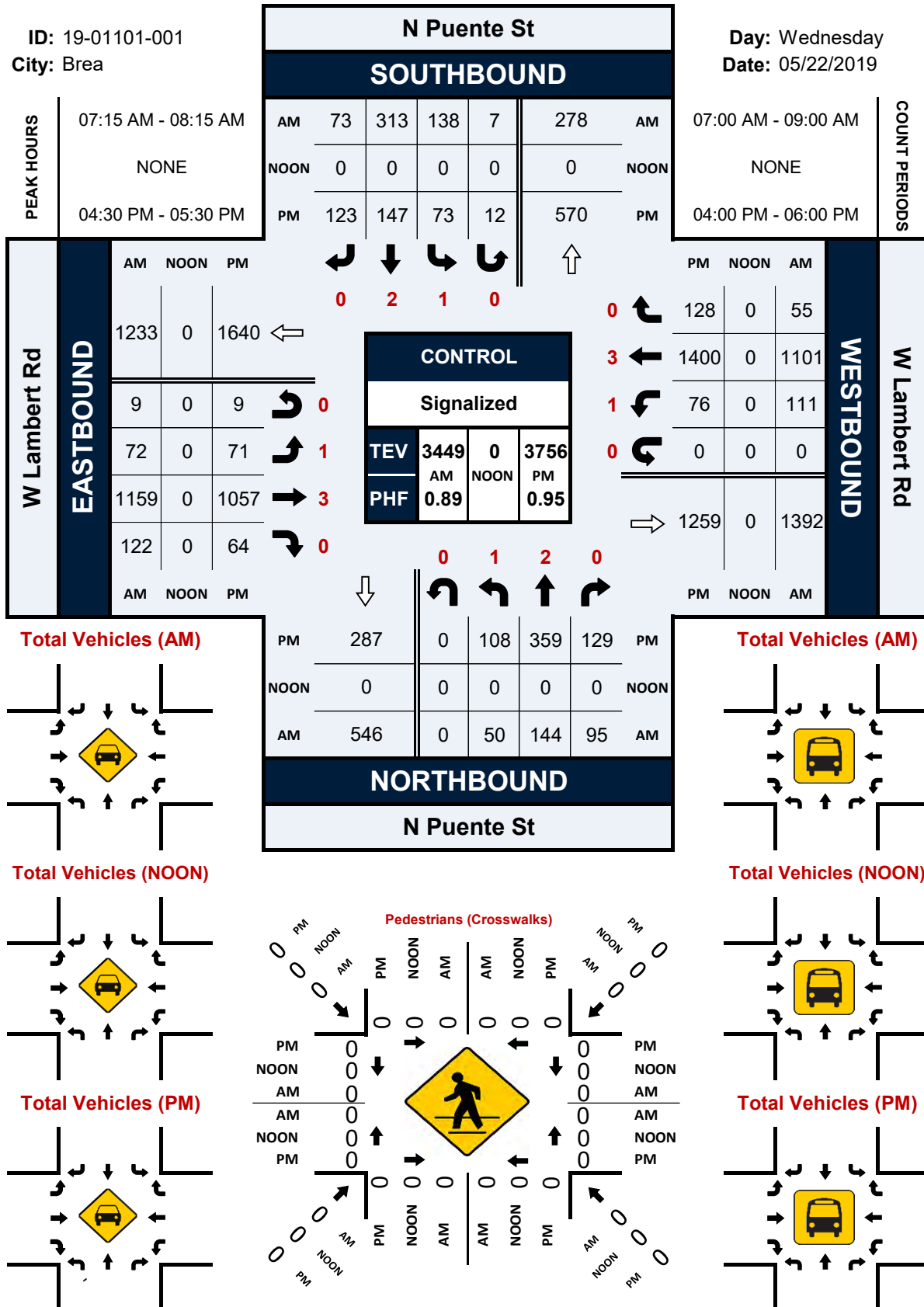
Total

NS/EW Streets:		N Puente St				N Puente St				W Lambert Rd				W Lambert Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
	7:00 AM	15	17	15	0	26	45	12	0	14	240	15	1	26	244	6	0	676
	7:15 AM	12	33	22	0	29	55	18	2	10	263	20	0	30	298	20	0	812
	7:30 AM	11	22	26	0	42	85	22	2	19	303	21	2	25	280	7	0	867
	7:45 AM	12	47	28	0	33	108	19	2	24	306	48	3	34	286	17	0	967
	8:00 AM	15	42	19	0	34	65	14	1	19	287	33	4	22	237	11	0	803
	8:15 AM	8	21	27	0	28	50	12	2	18	302	27	1	27	261	10	1	795
	8:30 AM	10	25	23	0	16	55	19	1	19	254	17	9	11	264	15	0	738
	8:45 AM	16	15	18	0	26	55	13	2	7	262	9	2	21	240	14	0	700
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		99	222	178	0	234	518	129	12	130	2217	190	22	196	2110	100	1	6358
PEAK HR :		07:15 AM - 08:15 AM				138	313	73	7	72	1159	122	9	111	1101	55	0	TOTAL
PEAK HR VOL :		50	144	95	0	138	313	73	7	72	1159	122	9	111	1101	55	0	3449
PEAK HR FACTOR :		0.833	0.766	0.848	0.000	0.821	0.725	0.830	0.875	0.750	0.947	0.635	0.563	0.816	0.924	0.688	0.000	0.892
		0.830				0.819				0.894				0.910				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
	4:00 PM	28	74	27	0	17	60	24	1	16	237	20	2	8	287	31	0	832
	4:15 PM	23	85	26	0	17	29	16	4	13	231	15	1	12	301	37	0	810
	4:30 PM	20	75	36	0	23	48	38	1	18	302	16	4	16	370	26	0	993
	4:45 PM	28	61	37	0	18	29	23	5	12	237	20	2	14	380	27	0	893
	5:00 PM	35	89	36	0	15	46	36	3	11	257	19	3	22	336	37	0	945
	5:15 PM	25	134	20	0	17	24	26	3	30	261	9	0	24	314	38	0	925
	5:30 PM	21	96	28	0	14	34	17	2	21	232	15	3	16	316	30	0	845
	5:45 PM	23	91	20	0	18	32	14	3	12	250	12	4	15	324	47	0	865
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		203	705	230	0	139	302	194	22	133	2007	126	19	127	2628	273	0	7108
PEAK HR :		04:30 PM - 05:30 PM				73	147	123	12	71	1057	64	9	76	1400	128	0	TOTAL
PEAK HR VOL :		108	359	129	0	73	147	123	12	71	1057	64	9	76	1400	128	0	3756
PEAK HR FACTOR :		0.771	0.670	0.872	0.000	0.793	0.766	0.809	0.600	0.592	0.875	0.800	0.563	0.792	0.921	0.842	0.000	0.946
		0.832				0.807				0.883				0.952				

N Puente St & W Lambert Rd**Peak Hour Turning Movement Count**

ID: 19-01101-001
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

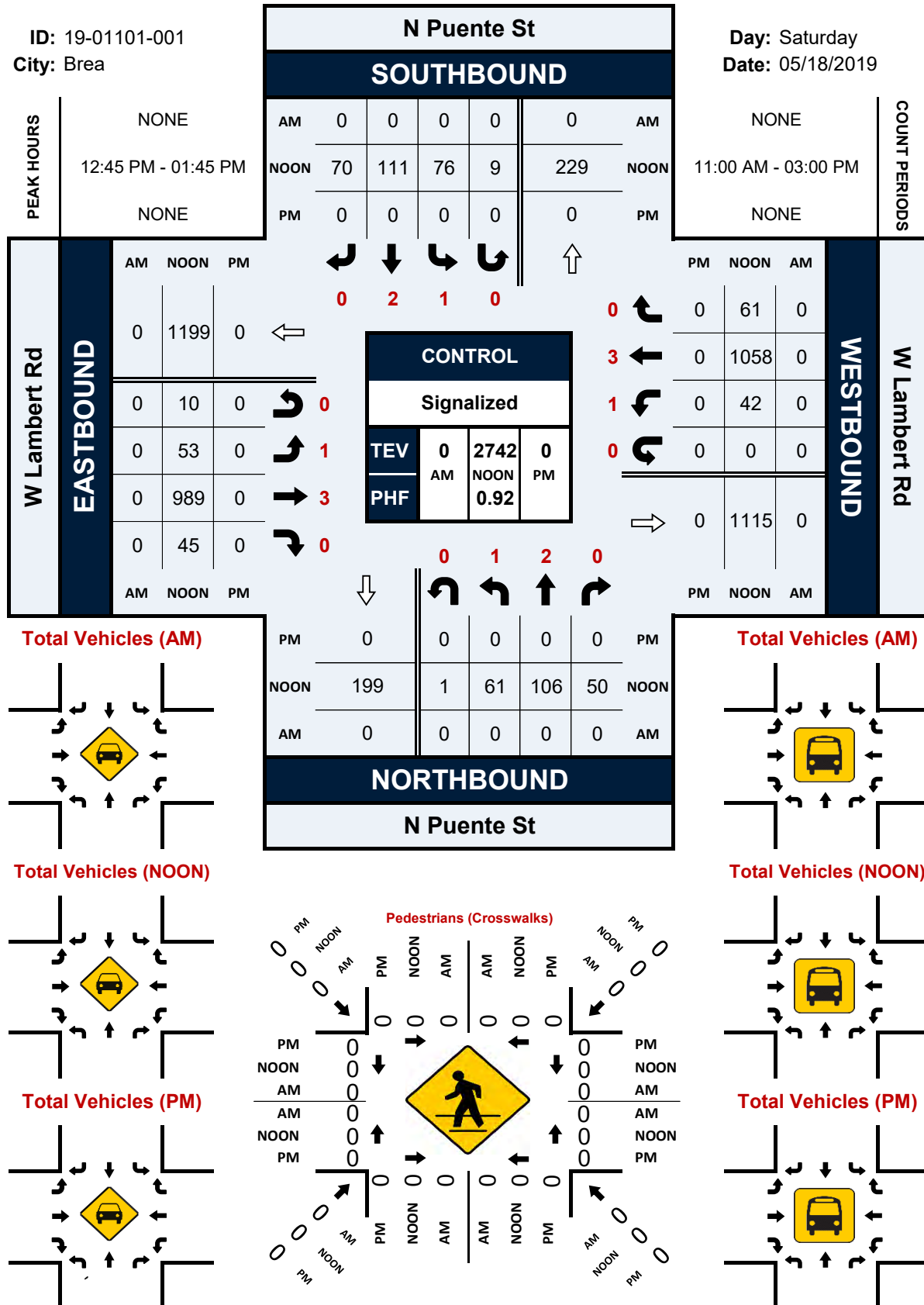
Location: N Puente St & W Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-001
Date: 5/18/2019

Total

NS/EW Streets:		N Puente St				N Puente St				W Lambert Rd				W Lambert Rd				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
11:00 AM		16	29	12	0	17	24	15	0	10	198	3	3	14	201	8	0	550
11:15 AM		12	24	11	2	17	33	10	0	14	214	13	3	8	236	12	0	609
11:30 AM		25	36	18	1	12	37	18	0	11	215	14	3	6	229	28	0	653
11:45 AM		15	23	15	0	15	29	15	1	11	238	22	2	18	249	14	2	669
12:00 PM		16	28	16	1	14	42	12	2	13	233	10	2	10	141	4	1	545
12:15 PM		22	37	22	0	15	18	35	3	14	224	12	3	0	58	5	1	469
12:30 PM		24	40	22	0	15	27	27	1	18	243	14	3	5	123	4	1	567
12:45 PM		18	32	8	0	20	31	26	2	9	254	13	1	10	306	18	0	748
1:00 PM		11	29	12	0	22	24	24	2	11	237	12	3	11	232	15	0	645
1:15 PM		16	28	12	0	16	24	11	1	17	254	8	2	6	280	16	0	691
1:30 PM		16	17	18	1	18	32	9	4	16	244	12	4	15	240	12	0	658
1:45 PM		10	20	14	1	15	25	14	0	10	247	12	2	10	238	15	0	633
2:00 PM		9	34	14	1	15	23	10	1	6	230	13	0	15	241	10	0	622
2:15 PM		15	37	15	0	24	29	20	3	15	196	14	2	8	270	11	0	659
2:30 PM		14	29	24	2	21	27	12	3	14	232	14	6	5	269	13	0	685
2:45 PM		18	22	13	0	34	30	16	3	10	216	6	2	15	265	13	0	663
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		257	465	246	9	290	455	274	26	199	3675	192	41	156	3578	198	5	10066
		26.31%	47.59%	25.18%	0.92%	27.75%	43.54%	26.22%	2.49%	4.85%	89.48%	4.67%	1.00%	3.96%	90.88%	5.03%	0.13%	
PEAK HR :		12:45 PM - 01:45 PM																TOTAL
PEAK HR VOL :		61	106	50	1	76	111	70	9	53	989	45	10	42	1058	61	0	2742
PEAK HR FACTOR :		0.847	0.828	0.694	0.250	0.864	0.867	0.673	0.563	0.779	0.973	0.865	0.625	0.700	0.864	0.847	0.000	0.916
		0.940				0.842				0.976				0.869				

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: N Brea Blvd & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-002
Date: 5/22/2019

Total

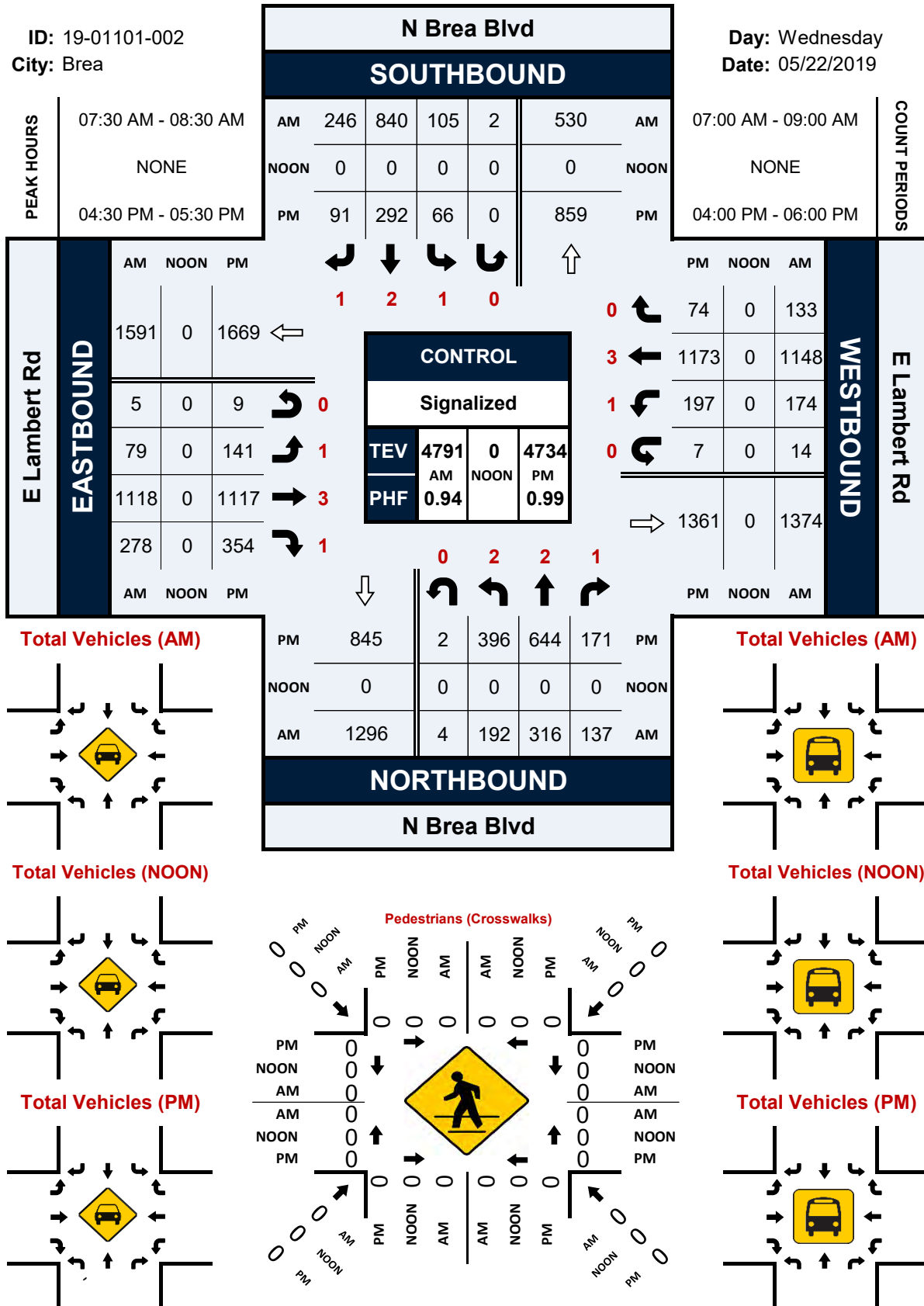
NS/EW Streets:	N Brea Blvd				N Brea Blvd				E Lambert Rd				E Lambert Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	3 ET	1 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
7:00 AM	29	32	21	1	21	195	84	0	11	242	45	4	37	209	5	3	939
7:15 AM	30	37	22	0	12	193	67	0	13	257	45	0	51	298	10	3	1038
7:30 AM	36	48	21	3	26	194	76	2	7	305	81	1	37	316	13	1	1167
7:45 AM	67	60	41	0	23	208	58	0	13	283	67	0	38	294	23	4	1179
8:00 AM	45	99	42	0	32	207	49	0	21	266	59	2	48	268	38	1	1177
8:15 AM	44	109	33	1	24	231	63	0	38	264	71	2	51	270	59	8	1268
8:30 AM	37	58	38	0	35	181	64	0	13	273	61	2	70	273	19	4	1128
8:45 AM	48	54	30	1	29	171	50	0	11	258	62	1	57	286	6	3	1067
TOTAL VOLUMES :	336	497	248	6	202	1580	511	2	127	2148	491	12	389	2214	173	27	8963
APPROACH %'s :	30.91%	45.72%	22.82%	0.55%	8.80%	68.85%	22.27%	0.09%	4.57%	77.32%	17.67%	0.43%	13.88%	78.99%	6.17%	0.96%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	192	316	137	4	105	840	246	2	79	1118	278	5	174	1148	133	14	4791
PEAK HR FACTOR :	0.716	0.725	0.815	0.333	0.820	0.909	0.809	0.250	0.520	0.916	0.858	0.625	0.853	0.908	0.564	0.438	0.945
	0.868				0.938				0.939				0.947				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	3 ET	1 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
4:00 PM	102	159	39	1	11	80	13	0	34	266	74	6	28	254	14	0	1081
4:15 PM	95	143	39	0	12	62	19	0	34	234	72	2	36	275	27	5	1055
4:30 PM	92	161	38	1	28	71	18	0	52	290	82	3	36	294	22	1	1189
4:45 PM	92	170	42	1	17	68	24	0	23	266	77	4	42	354	16	4	1200
5:00 PM	85	155	39	0	9	84	26	0	46	305	95	1	53	274	15	0	1187
5:15 PM	127	158	52	0	12	69	23	0	20	256	100	1	66	251	21	2	1158
5:30 PM	116	177	46	2	14	93	15	0	31	215	78	1	57	268	20	3	1136
5:45 PM	121	163	55	0	24	82	47	0	28	220	78	2	44	274	18	4	1160
TOTAL VOLUMES :	830	1286	350	5	127	609	185	0	268	2052	656	20	362	2244	153	19	9166
APPROACH %'s :	33.59%	52.04%	14.16%	0.20%	13.79%	66.12%	20.09%	0.00%	8.95%	68.49%	21.90%	0.67%	13.03%	80.78%	5.51%	0.68%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	396	644	171	2	66	292	91	0	141	1117	354	9	197	1173	74	7	4734
PEAK HR FACTOR :	0.780	0.947	0.822	0.500	0.589	0.869	0.875	0.000	0.678	0.916	0.885	0.563	0.746	0.828	0.841	0.438	0.986
	0.900				0.943				0.907				0.872				

N Brea Blvd & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-002
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brea Blvd & Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01133-002
Date: 6/29/2019

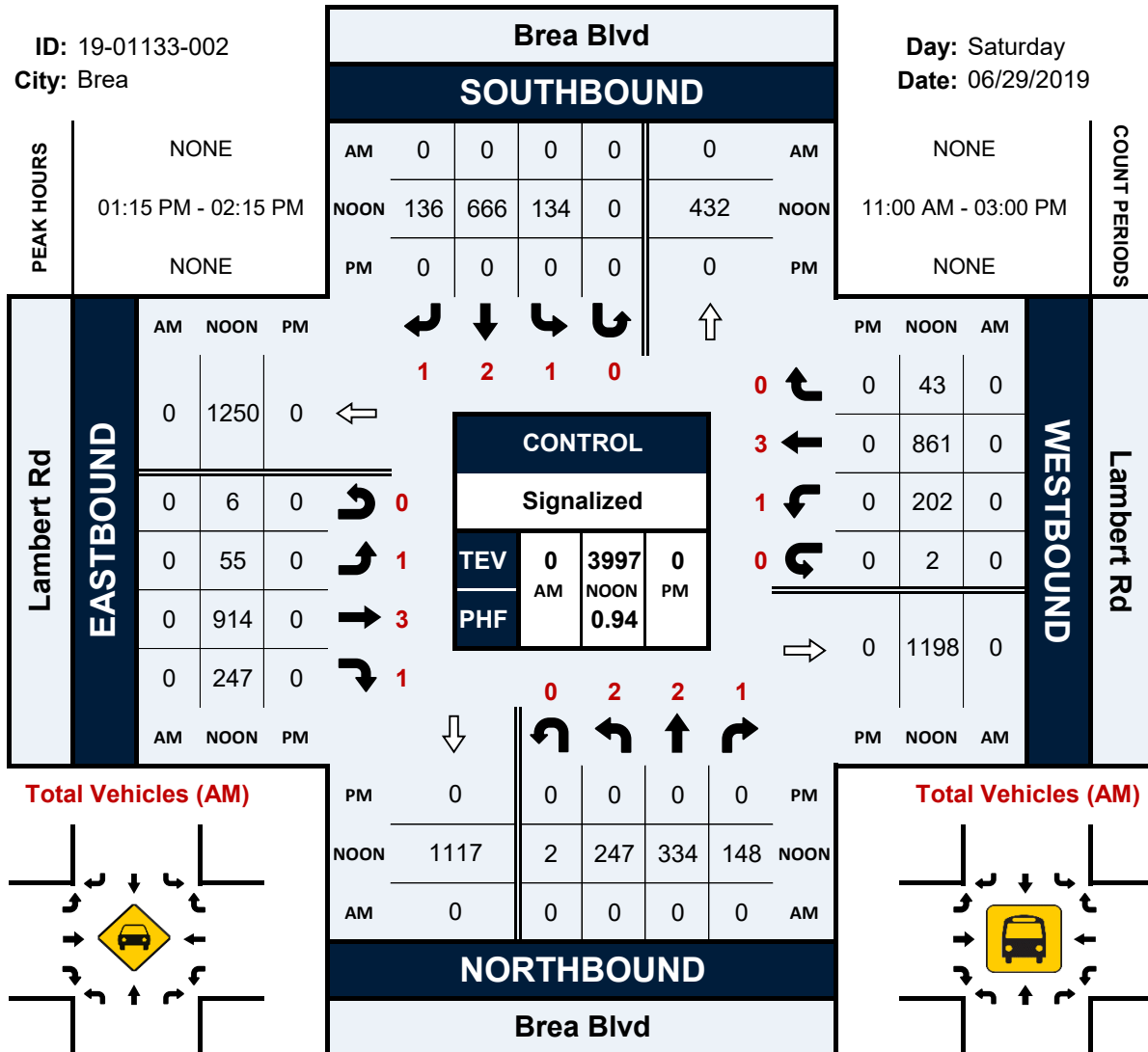
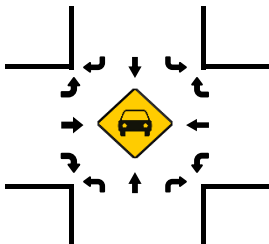
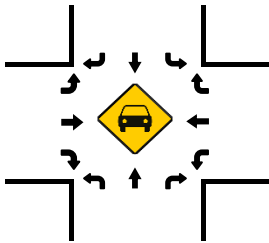
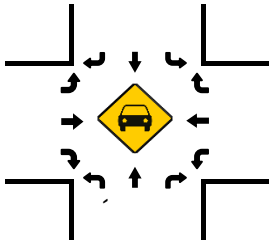
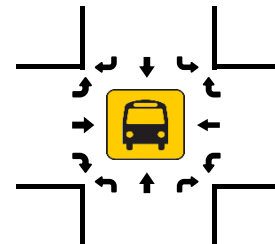
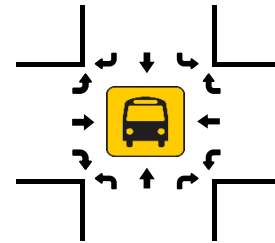
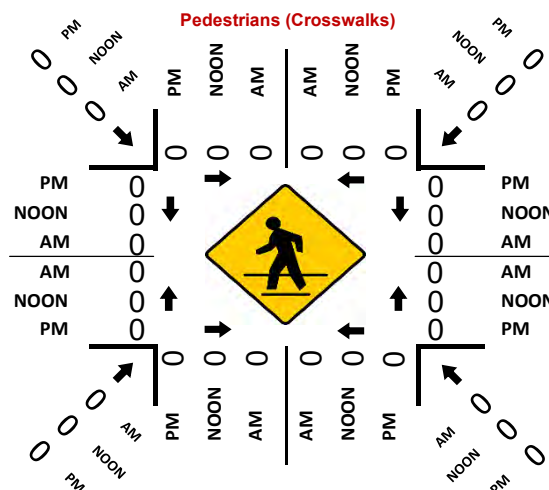
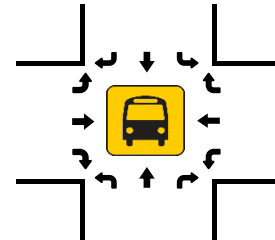
Total

NS/EW Streets:		Brea Blvd				Brea Blvd				Lambert Rd				Lambert Rd					
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL		
	2	1	0		1	2	1	0	1	3	1	0	1	3	0	0			
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU			
	11:00 AM	64	71	32	4	8	79	11	0	15	204	79	4	37	200	9		2	819
	11:15 AM	44	86	27	5	18	77	14	0	15	182	61	2	39	211	11		2	794
	11:30 AM	57	81	29	0	7	74	12	0	10	217	60	2	41	238	16		2	846
	11:45 AM	54	82	36	1	10	109	14	0	8	231	66	4	53	214	14		4	900
	12:00 PM	58	68	41	1	22	81	10	1	8	203	88	5	28	201	10		5	830
	12:15 PM	60	65	25	2	8	76	17	0	11	214	79	3	49	233	5		1	848
	12:30 PM	66	72	24	4	13	80	12	0	17	236	69	4	52	261	15		0	925
12:45 PM	58	96	33	2	9	101	20	0	19	165	80	2	61	238	14	1	899		
1:00 PM	67	89	30	4	12	134	30	0	15	213	67	5	61	209	8	1	945		
1:15 PM	72	77	41	1	16	194	44	0	11	226	64	1	71	235	6	1	1060		
1:30 PM	59	97	42	0	38	188	22	0	14	245	56	2	60	200	14	0	1037		
1:45 PM	47	80	38	1	44	144	41	0	15	205	67	2	37	207	13	1	942		
2:00 PM	69	80	27	0	36	140	29	0	15	238	60	1	34	219	10	0	958		
2:15 PM	57	75	39	0	23	123	21	0	18	218	68	0	22	229	7	0	900		
2:30 PM	78	94	23	2	20	134	39	1	10	214	63	2	41	185	7	3	916		
2:45 PM	73	81	29	2	10	99	33	0	10	202	54	2	31	200	10	3	839		
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL		
APPROACH %'s :	983	1294	516	29	294	1833	369	2	211	3413	1081	41	717	3480	169	26	14458		
	34.83%	45.85%	18.28%	1.03%	11.77%	73.38%	14.77%	0.08%	4.45%	71.91%	22.78%	0.86%	16.33%	79.23%	3.85%	0.59%			
PEAK HR :	01:15 PM - 02:15 PM																TOTAL		
PEAK HR VOL :	247	334	148	2	134	666	136	0	55	914	247	6	202	861	43	2	3997		
PEAK HR FACTOR :	0.858	0.861	0.881	0.500	0.761	0.858	0.773	0.000	0.917	0.933	0.922	0.750	0.711	0.916	0.768	0.500	0.943		
	0.923				0.921				0.964				0.885						

Brea Blvd & Lambert Rd**Peak Hour Turning Movement Count**

ID: 19-01133-002
City: Brea

Day: Saturday
Date: 06/29/2019

**Total Vehicles (AM)****Total Vehicles (NOON)****Total Vehicles (PM)****Total Vehicles (AM)****Total Vehicles (NOON)****Total Vehicles (PM)**

National Data & Surveying Services

Intersection Turning Movement Count

Location: N State College Blvd & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-003
Date: 5/22/2019

Total

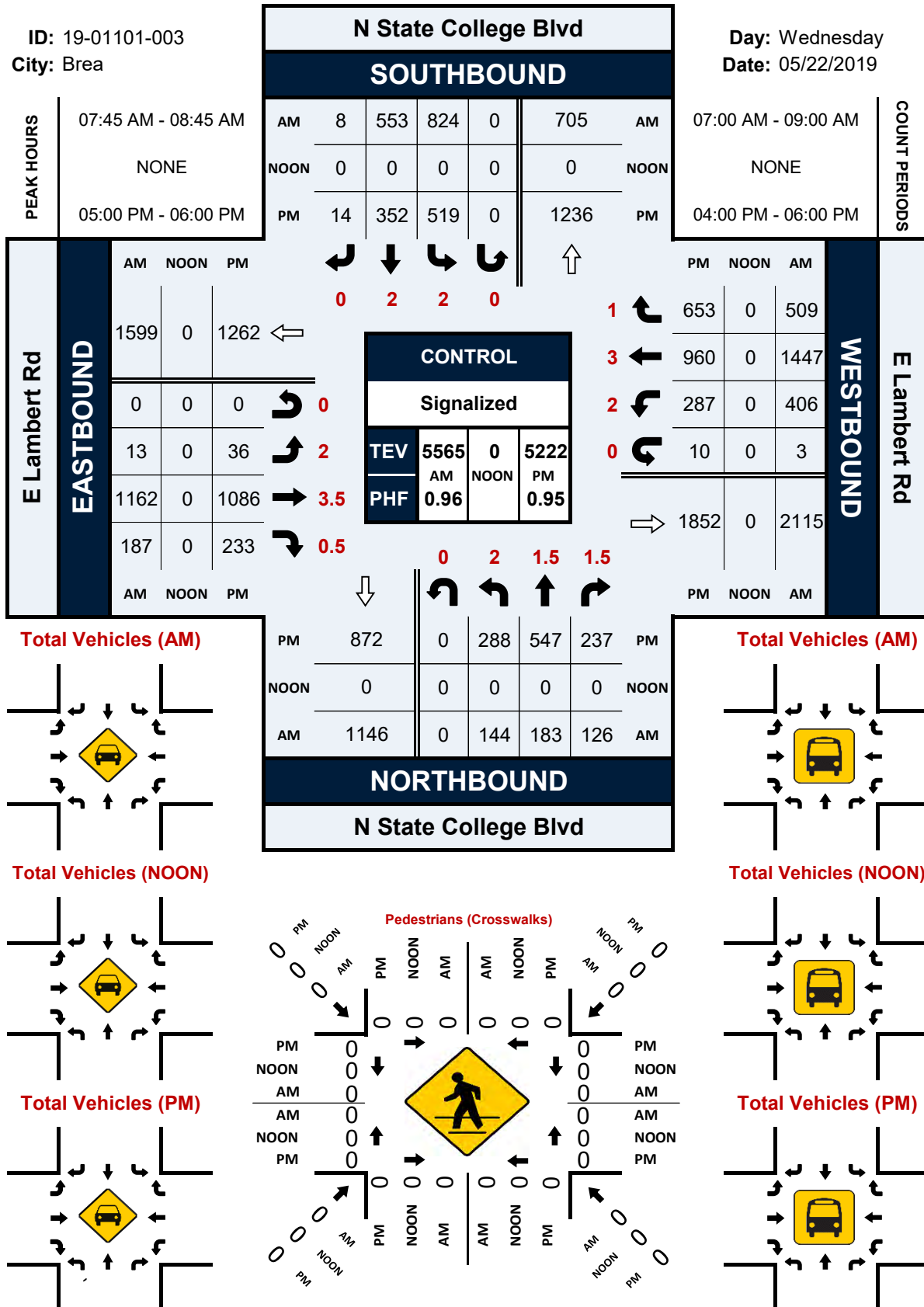
NS/EW Streets:		N State College Blvd				N State College Blvd				E Lambert Rd				E Lambert Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2	1.5	1.5	0	2	2	0	0	2	3.5	0.5	0	2	3	1	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
	7:00 AM	12	28	19	0	131	119	0	0	1	228	41	0	79	257	75	0	990
	7:15 AM	16	22	32	0	158	146	0	0	4	235	38	1	102	344	99	1	1198
	7:30 AM	17	24	22	0	158	144	0	0	0	258	59	0	92	369	114	1	1258
	7:45 AM	32	36	29	0	192	162	1	0	2	291	64	0	116	391	105	2	1423
	8:00 AM	47	47	29	0	210	109	3	0	1	272	46	0	102	355	124	1	1346
	8:15 AM	37	53	34	0	201	148	2	0	3	305	48	0	101	378	141	0	1451
	8:30 AM	28	47	34	0	221	134	2	0	7	294	29	0	87	323	139	0	1345
	8:45 AM	13	21	25	0	183	122	1	0	1	262	37	0	118	343	139	0	1265
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		202	278	224	0	1454	1084	9	0	19	2145	362	1	797	2760	936	5	10276
PEAK HR :		07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :		144	183	126	0	824	553	8	0	13	1162	187	0	406	1447	509	3	5565
PEAK HR FACTOR :		0.766	0.863	0.926	0.000	0.932	0.853	0.667	0.000	0.464	0.952	0.730	0.000	0.875	0.925	0.902	0.375	0.959
		0.913				0.970				0.954				0.954				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2	1.5	1.5	0	2	2	0	0	2	3.5	0.5	0	2	3	1	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
	4:00 PM	62	117	64	0	108	65	0	0	2	307	34	2	56	270	213	4	1304
	4:15 PM	59	152	67	0	115	57	3	0	2	278	48	1	58	279	180	7	1306
	4:30 PM	66	123	74	0	131	67	0	0	1	264	53	0	71	297	178	4	1329
	4:45 PM	75	162	44	0	110	84	3	0	6	196	52	0	68	298	170	0	1268
	5:00 PM	55	142	49	0	114	82	3	0	14	198	58	0	83	231	154	5	1188
	5:15 PM	84	131	50	0	148	89	3	0	11	334	60	0	60	243	158	3	1374
	5:30 PM	71	141	66	0	122	87	4	0	5	312	64	0	78	241	163	1	1355
	5:45 PM	78	133	72	0	135	94	4	0	6	242	51	0	66	245	178	1	1305
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		550	1101	486	0	983	625	20	0	47	2131	420	3	540	2104	1394	25	10429
PEAK HR :		05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :		288	547	237	0	519	352	14	0	36	1086	233	0	287	960	653	10	5222
PEAK HR FACTOR :		0.857	0.963	0.823	0.000	0.877	0.936	0.875	0.000	0.643	0.813	0.910	0.000	0.864	0.980	0.917	0.500	0.950
		0.947				0.922				0.836				0.974				

N State College Blvd & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-003
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: N State College Blvd & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-003
Date: 5/18/2019

Total

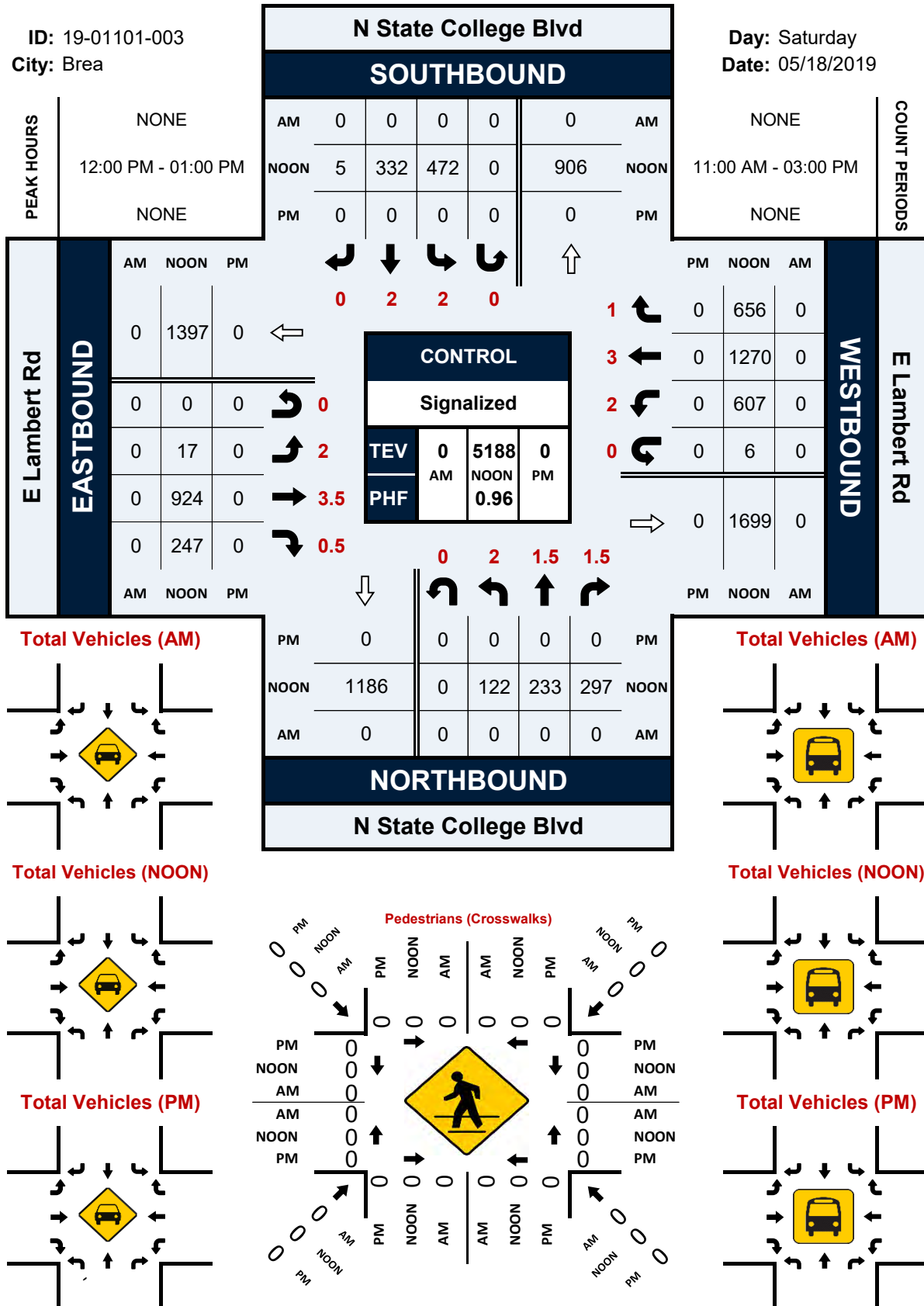
NS/EW Streets:		N State College Blvd				N State College Blvd				E Lambert Rd				E Lambert Rd				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	1.5 NT	1.5 NR	0 NU	2 SL	2 ST	0 SR	0 SU	2 EL	3.5 ET	0.5 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
11:00 AM		27	46	46	0	127	65	2	0	3	198	27	1	101	244	140	4	1031
11:15 AM		22	57	69	0	125	65	0	0	6	202	45	0	113	275	139	0	1118
11:30 AM		25	62	75	0	161	86	1	0	1	208	37	0	104	292	142	2	1196
11:45 AM		29	54	65	0	119	89	2	0	3	185	45	0	111	341	137	0	1180
12:00 PM		26	59	55	0	105	81	0	0	3	217	64	0	138	352	154	1	1255
12:15 PM		31	60	90	0	122	87	2	0	4	212	54	0	144	303	148	1	1258
12:30 PM		28	60	76	0	106	73	2	0	6	275	73	0	150	335	171	2	1357
12:45 PM		37	54	76	0	139	91	1	0	4	220	56	0	175	280	183	2	1318
1:00 PM		29	51	66	0	142	76	1	0	4	228	53	0	115	257	163	0	1185
1:15 PM		33	69	84	0	108	73	2	0	2	265	49	0	101	248	148	3	1185
1:30 PM		23	58	95	0	116	75	3	0	4	236	54	1	104	274	157	1	1201
1:45 PM		22	76	84	0	140	84	2	0	6	238	51	0	122	293	173	2	1293
2:00 PM		32	62	88	0	128	60	1	0	2	246	34	0	107	296	164	1	1221
2:15 PM		38	62	84	0	127	61	6	0	3	180	41	0	117	301	161	4	1185
2:30 PM		35	64	100	0	131	62	3	0	2	236	42	0	107	333	158	1	1274
2:45 PM		29	59	91	0	124	84	0	0	6	250	52	0	131	283	176	0	1285
TOTAL VOLUMES :		NL 466	NT 953	NR 1244	NU 0	SL 2020	ST 1212	SR 28	SU 0	EL 59	ET 3596	ER 777	EU 2	WL 1940	WT 4707	WR 2514	WU 24	TOTAL 19542
APPROACH %'s :		17.50%	35.79%	46.71%	0.00%	61.96%	37.18%	0.86%	0.00%	1.33%	81.10%	17.52%	0.05%	21.12%	51.25%	27.37%	0.26%	
PEAK HR :		12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :		122	233	297	0	472	332	5	0	17	924	247	0	607	1270	656	6	5188
PEAK HR FACTOR :		0.824	0.971	0.825	0.000	0.849	0.912	0.625	0.000	0.708	0.840	0.846	0.000	0.867	0.902	0.896	0.750	0.956
		0.901				0.876				0.839				0.965				

N State College Blvd & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-003
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-57 SB Ramps & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-004
Date: 5/22/2019

Total

NS/EW Streets:	SR-57 SB Ramps				SR-57 SB Ramps				E Lambert Rd				E Lambert Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	0	0	0	1.5	0	1.5	0	0	2.5	1.5	0	2	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
7:00 AM	0	0	0	0	230	1	125	0	0	241	132	0	33	308	0	0	1070
7:15 AM	0	0	0	0	267	0	149	0	0	312	128	0	36	385	0	0	1277
7:30 AM	0	0	0	0	270	0	150	0	0	296	129	0	58	413	0	0	1316
7:45 AM	0	0	0	0	288	0	136	0	0	375	126	0	38	485	0	1	1449
8:00 AM	0	0	0	0	223	0	116	0	0	404	120	0	53	476	0	1	1393
8:15 AM	0	0	0	0	257	0	121	0	0	397	132	0	59	522	0	0	1488
8:30 AM	0	0	0	0	209	1	115	0	0	403	160	0	54	446	0	1	1389
8:45 AM	0	0	0	0	235	0	149	0	0	345	136	0	64	458	0	1	1388
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	1979	2	1061	0	0	2773	1063	0	395	3493	0	4	10770
PEAK HR :	07:45 AM - 08:45 AM				65.06%	0.07%	34.88%	0.00%	0.00%	72.29%	27.71%	0.00%	10.15%	89.75%	0.00%	0.10%	
PEAK HR VOL :	0	0	0	0	977	1	488	0	0	1579	538	0	204	1929	0	3	TOTAL
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.848	0.250	0.897	0.000	0.000	0.977	0.841	0.000	0.864	0.924	0.000	0.750	5719
						0.864				0.940				0.919			0.961

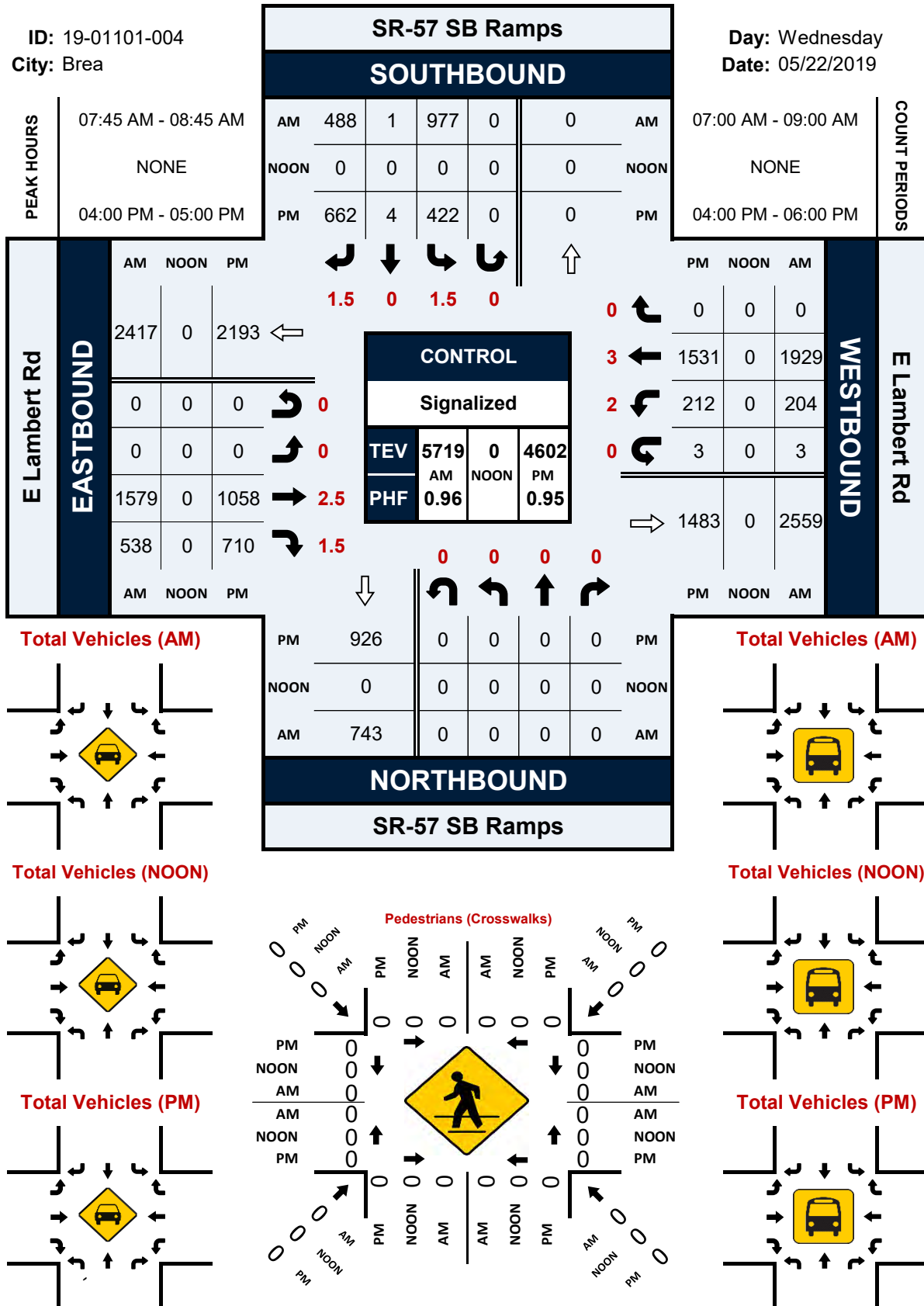
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0	0	0	0	1.5	0	1.5	0	0	2.5	1.5	0	2	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
4:00 PM	0	0	0	0	116	1	143	0	0	292	209	0	52	391	0	1	1205
4:15 PM	0	0	0	0	114	1	172	0	0	301	151	0	45	362	0	2	1148
4:30 PM	0	0	0	0	92	1	183	0	0	256	195	0	63	372	0	0	1162
4:45 PM	0	0	0	0	100	1	164	0	0	209	155	0	52	406	0	0	1087
5:00 PM	0	0	0	0	100	6	165	0	0	172	185	0	85	292	0	0	1005
5:15 PM	0	0	0	0	150	2	149	0	0	359	200	0	70	322	0	1	1253
5:30 PM	0	0	0	0	144	1	168	0	0	322	172	0	55	325	0	0	1187
5:45 PM	0	0	0	0	98	0	151	0	0	314	148	0	60	358	0	0	1129
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	914	13	1295	0	0	2225	1415	0	482	2828	0	4	9176
PEAK HR :	04:00 PM - 05:00 PM				41.13%	0.59%	58.28%	0.00%	0.00%	61.13%	38.87%	0.00%	14.54%	85.33%	0.00%	0.12%	
PEAK HR VOL :	0	0	0	0	422	4	662	0	0	1058	710	0	212	1531	0	3	TOTAL
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.909	1.000	0.904	0.000	0.000	0.879	0.849	0.000	0.841	0.943	0.000	0.375	4602
						0.948				0.882				0.953			0.955

SR-57 SB Ramps & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-004
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-57 SB Ramps & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-004
Date: 5/18/2019

Total

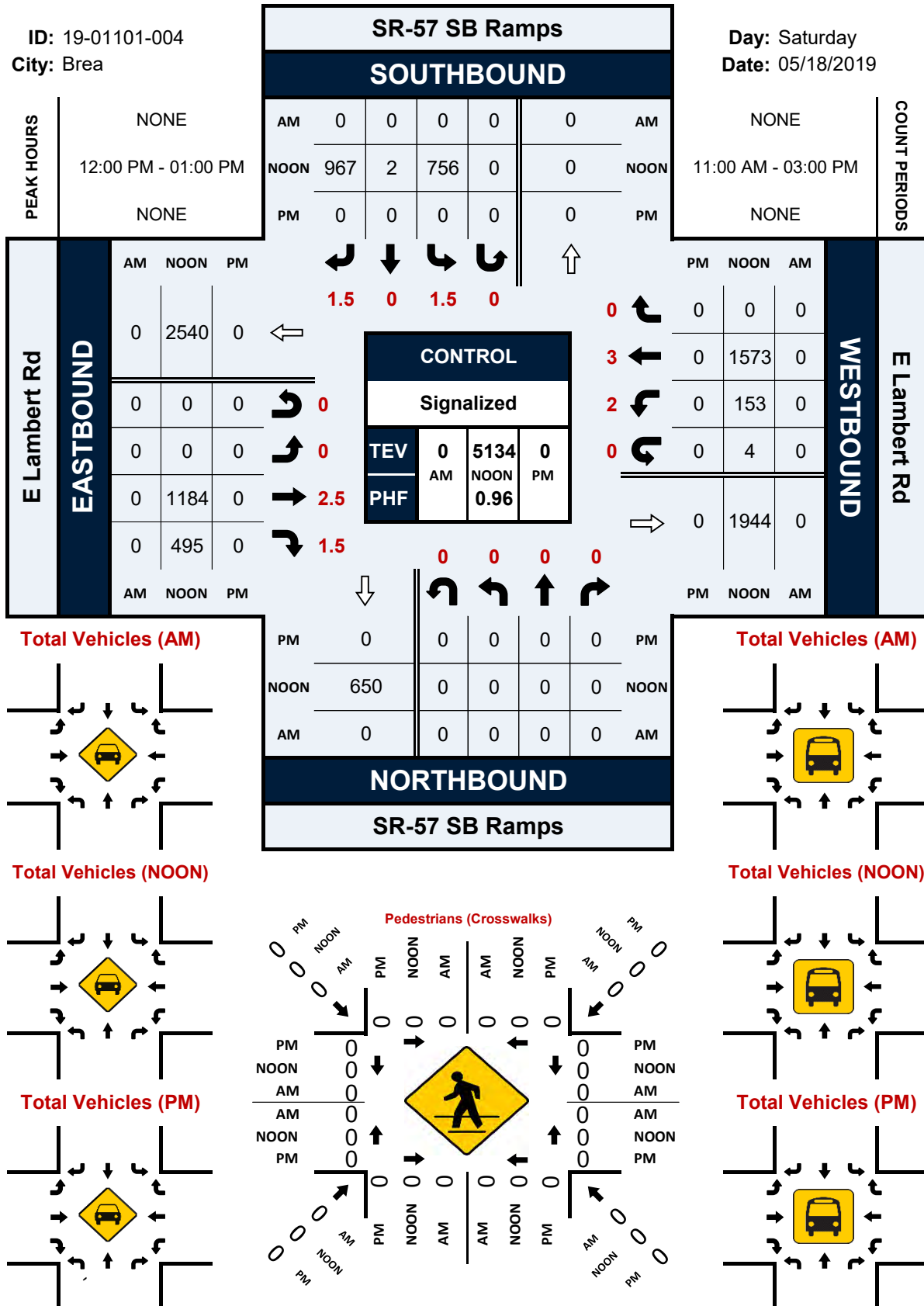
NS/EW Streets:		SR-57 SB Ramps				SR-57 SB Ramps				E Lambert Rd				E Lambert Rd				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	0 NT	0 NR	0 NU	1.5 SL	0 ST	1.5 SR	0 SU	0 EL	2.5 ET	1.5 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
11:00 AM	0	0	0	0	123	0	179	0	0	252	136	0	56	310	0	0	1056	
11:15 AM	0	0	0	0	102	0	191	0	0	248	155	0	82	325	0	1	1104	
11:30 AM	0	0	0	0	103	0	208	0	0	253	176	0	61	350	0	2	1153	
11:45 AM	0	0	0	0	105	0	213	0	0	266	125	0	68	364	0	0	1141	
12:00 PM	0	0	0	0	166	1	247	0	0	254	118	0	44	411	0	0	1241	
12:15 PM	0	0	0	0	210	0	225	0	0	284	128	0	34	358	0	0	1239	
12:30 PM	0	0	0	0	210	1	245	0	0	314	126	0	41	400	0	1	1338	
12:45 PM	0	0	0	0	170	0	250	0	0	332	123	0	34	404	0	3	1316	
1:00 PM	0	0	0	0	160	0	194	0	0	318	129	0	58	318	0	0	1177	
1:15 PM	0	0	0	0	146	1	184	0	0	298	147	0	38	297	0	0	1111	
1:30 PM	0	0	0	0	139	0	219	0	0	335	124	0	55	333	0	0	1205	
1:45 PM	0	0	0	0	154	0	208	0	0	330	122	0	51	371	0	0	1236	
2:00 PM	0	0	0	0	140	1	215	0	0	302	141	0	61	320	0	1	1181	
2:15 PM	0	0	0	0	113	1	222	0	0	272	151	0	72	378	0	0	1209	
2:30 PM	0	0	0	0	128	0	198	0	0	289	156	0	68	374	0	0	1213	
2:45 PM	0	0	0	0	120	0	210	0	0	332	141	0	60	367	0	0	1230	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	0	0	0	2289	5	3408	0	0	4679	2198	0	883	5680	0	8	19150
		12:00 PM - 01:00 PM				40.14%	0.09%	59.77%	0.00%	0.00%	68.04%	31.96%	0.00%	13.44%	86.44%	0.00%	0.12%	
PEAK HR :						756	2	967	0	0	1184	495	0	153	1573	0	4	5134
PEAK HR VOL :		0	0	0	0	0.900	0.500	0.967	0.000	0.000	0.892	0.967	0.000	0.869	0.957	0.000	0.333	0.959
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.946				0.923				0.951				

SR-57 SB Ramps & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-004
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-57 NB Ramps & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-005
Date: 5/22/2019

Total

NS/EW Streets:		SR-57 NB Ramps				SR-57 NB Ramps				E Lambert Rd				E Lambert Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	0 NT	1 NR	0 NU	0 SL	0 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	0 WL	2.5 WT	1.5 WR	0 WU	
7:00 AM		189	0	88	0	0	0	0	0	72	409	0	0	0	143	124	0	1025
7:15 AM		265	0	100	0	0	0	0	0	75	497	0	1	0	169	118	0	1225
7:30 AM		243	0	93	0	0	0	0	0	60	520	0	1	0	220	128	0	1265
7:45 AM		276	0	124	0	0	0	0	0	58	596	0	2	0	253	111	0	1420
8:00 AM		231	0	115	0	0	0	0	0	53	588	0	1	0	305	108	0	1401
8:15 AM		236	0	106	0	0	0	0	0	86	557	0	0	0	337	124	0	1446
8:30 AM		227	1	114	0	0	0	0	0	62	544	0	0	0	282	109	0	1339
8:45 AM		239	0	124	0	0	0	0	0	66	528	0	0	0	287	113	0	1357
TOTAL VOLUMES:		1906	1	864	0	0	0	0	0	532	4239	0	5	0	1996	935	0	10478
APPROACH %'s:		68.78%	0.04%	31.18%	0.00%					11.14%	88.76%	0.00%	0.10%	0.00%	68.10%	31.90%	0.00%	
PEAK HR:		07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL:		970	1	459	0	0	0	0	0	259	2285	0	3	0	1177	452	0	5606
PEAK HR FACTOR:		0.879	0.250	0.925	0.000	0.000	0.000	0.000	0.000	0.753	0.958	0.000	0.375	0.000	0.873	0.911	0.000	0.969
		0.894								0.971				0.883				

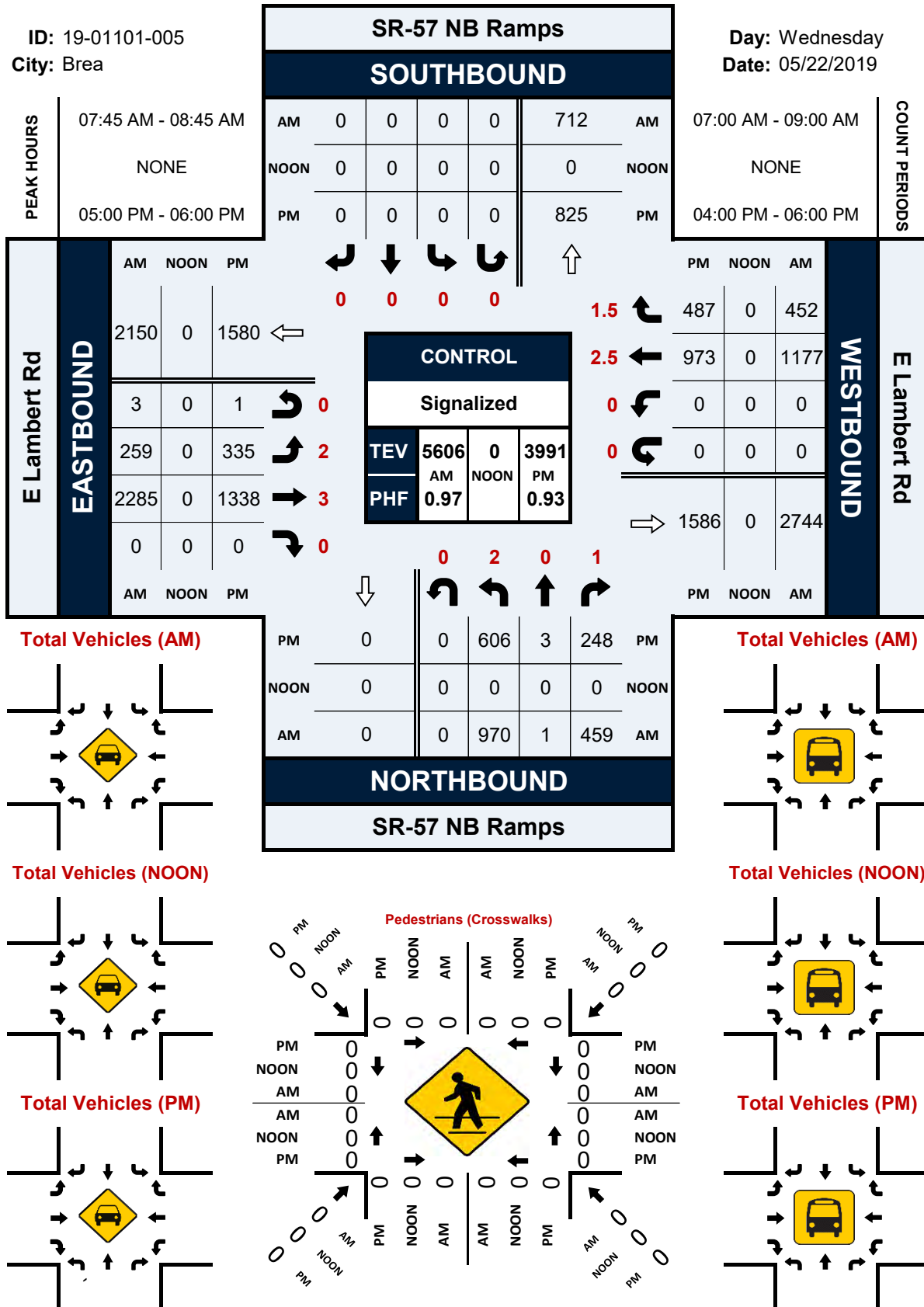
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	0 NT	1 NR	0 NU	0 SL	0 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	0 WL	2.5 WT	1.5 WR	0 WU	
4:00 PM		223	0	95	0	0	0	0	0	57	329	0	1	0	242	115	0	1062
4:15 PM		202	0	72	0	0	0	0	0	81	349	0	1	0	233	122	0	1060
4:30 PM		172	1	72	0	0	0	0	0	77	265	0	0	0	242	127	0	956
4:45 PM		176	1	69	0	0	0	0	0	57	232	0	0	0	253	121	0	909
5:00 PM		127	1	46	0	0	0	0	0	54	231	0	1	0	264	119	0	843
5:15 PM		141	0	63	0	0	0	0	0	85	411	0	0	0	247	125	0	1072
5:30 PM		176	1	78	0	0	0	0	0	95	363	0	0	0	222	112	0	1047
5:45 PM		162	1	61	0	0	0	0	0	101	333	0	0	0	240	131	0	1029
TOTAL VOLUMES:		1379	5	556	0	0	0	0	0	607	2513	0	3	0	1943	972	0	7978
APPROACH %'s:		71.08%	0.26%	28.66%	0.00%					19.44%	80.47%	0.00%	0.10%	0.00%	66.66%	33.34%	0.00%	
PEAK HR:		05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL:		606	3	248	0	0	0	0	0	335	1338	0	1	0	973	487	0	3991
PEAK HR FACTOR:		0.861	0.750	0.795	0.000	0.000	0.000	0.000	0.000	0.829	0.814	0.000	0.250	0.000	0.921	0.929	0.000	0.931
		0.840								0.844				0.953				

SR-57 NB Ramps & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-005
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-57 NB Ramps & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-005
Date: 5/18/2019

Total

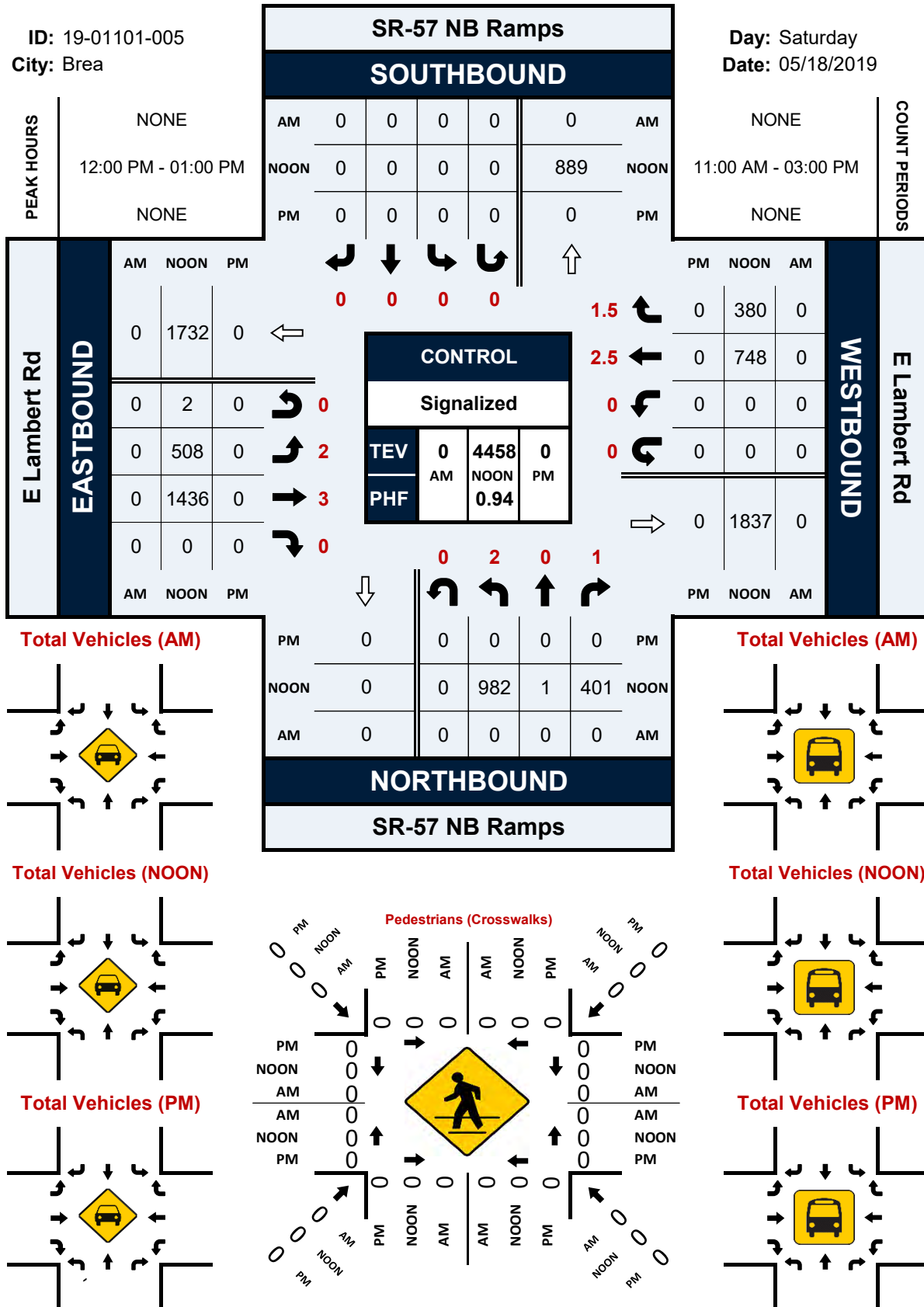
NS/EW Streets:		SR-57 NB Ramps				SR-57 NB Ramps				E Lambert Rd				E Lambert Rd				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	0 NT	1 NR	0 NU	0 SL	0 ST	0 SR	0 SU	2 EL	3 ET	0 ER	0 EU	0 WL	2.5 WT	1.5 WR	0 WU	
11:00 AM		170	0	64	0	0	0	0	0	103	267	0	1	0	212	88	0	905
11:15 AM		210	2	86	0	0	0	0	0	109	246	0	1	0	171	95	0	920
11:30 AM		211	1	99	0	0	0	0	0	105	243	0	0	0	219	86	0	964
11:45 AM		209	0	93	0	0	0	0	0	119	257	0	2	0	231	91	0	1002
12:00 PM		248	0	97	0	0	0	0	0	99	324	0	0	0	196	83	0	1047
12:15 PM		232	1	107	0	0	0	0	0	107	377	0	0	0	170	102	0	1096
12:30 PM		252	0	99	0	0	0	0	0	145	390	0	1	0	194	106	0	1187
12:45 PM		250	0	98	0	0	0	0	0	157	345	0	1	0	188	89	0	1128
1:00 PM		191	0	82	0	0	0	0	0	150	332	0	0	0	178	76	0	1009
1:15 PM		181	0	105	0	0	0	0	0	153	302	0	0	0	167	91	0	999
1:30 PM		191	0	70	0	0	0	0	0	147	316	0	1	0	186	114	0	1025
1:45 PM		214	1	82	0	0	0	0	0	166	316	0	2	0	204	103	0	1088
2:00 PM		200	0	100	0	0	0	0	0	131	321	0	1	0	193	106	0	1052
2:15 PM		211	0	104	0	0	0	0	0	103	267	0	0	0	228	106	0	1019
2:30 PM		211	0	86	0	0	0	0	0	131	279	0	0	0	241	87	0	1035
2:45 PM		192	1	103	0	0	0	0	0	152	307	0	1	0	216	97	0	1069
TOTAL VOLUMES :		NL 3373	NT 6	NR 1475	NU 0	SL 0	ST 0	SR 0	SU 0	EL 2077	ET 4889	ER 0	EU 11	WL 0	WT 3194	WR 1520	WU 0	TOTAL 16545
APPROACH %'s :		69.49%	0.12%	30.39%	0.00%					29.77%	70.07%	0.00%	0.16%	0.00%	67.76%	32.24%	0.00%	
PEAK HR :		12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :		982	1	401	0	0	0	0	0	508	1436	0	2	0	748	380	0	4458
PEAK HR FACTOR :		0.974	0.250	0.937	0.000	0.000	0.000	0.000	0.000	0.809	0.921	0.000	0.500	0.000	0.954	0.896	0.000	0.939
		0.986								0.908				0.940				

SR-57 NB Ramps & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-005
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: N Kraemer Blvd & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-006
Date: 5/22/2019

Total

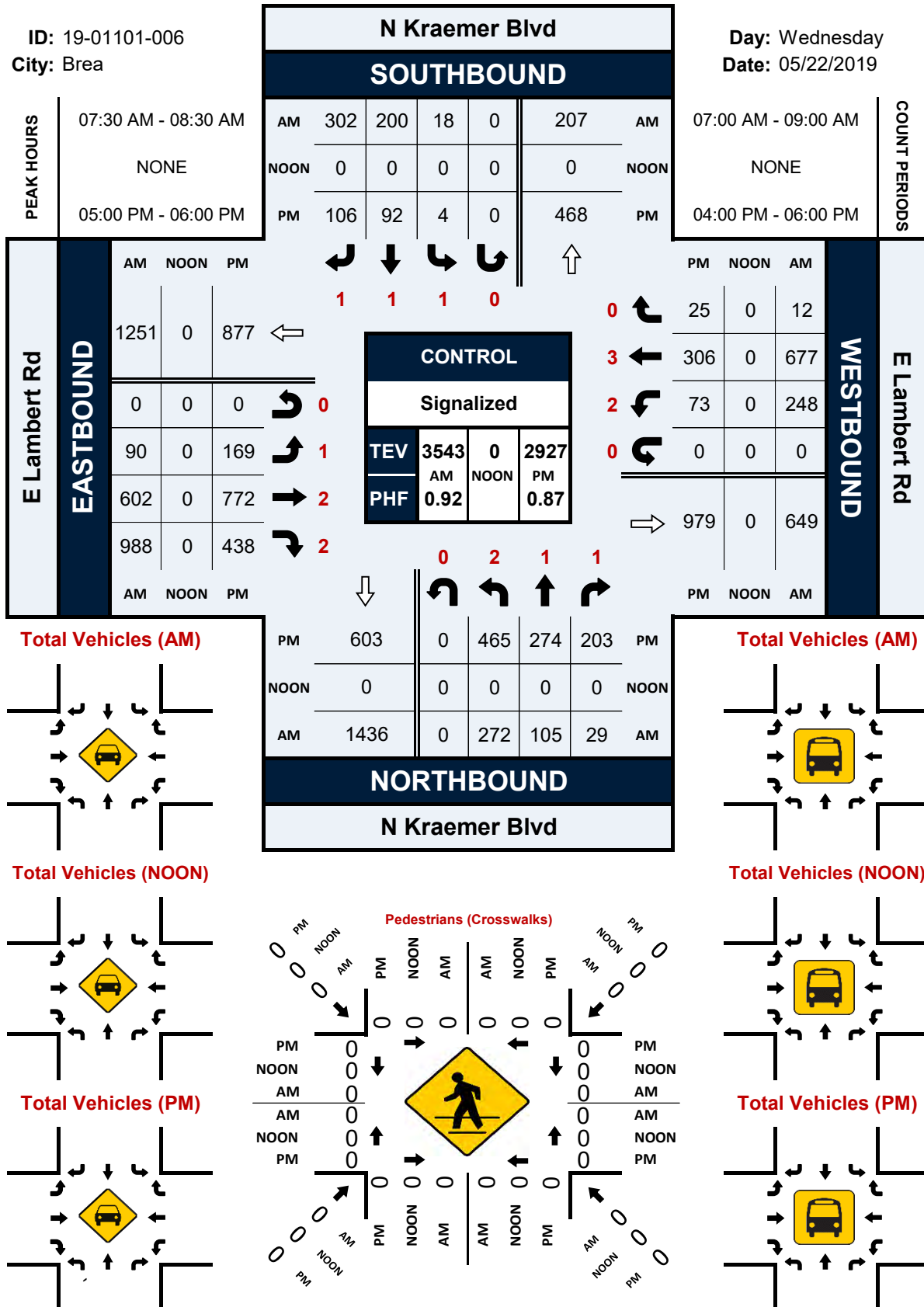
NS/EW Streets:		N Kraemer Blvd				N Kraemer Blvd				E Lambert Rd				E Lambert Rd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2	1	1	0	1	1	1	0	1	2	2	0	2	3	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
	7:00 AM	49	7	2	0	0	35	35	0	11	130	242	0	53	139	1	0	704
	7:15 AM	57	7	2	0	0	43	59	0	10	154	244	0	50	168	2	0	796
	7:30 AM	53	14	5	0	5	69	59	0	8	156	251	0	69	176	4	0	869
	7:45 AM	73	47	9	0	12	63	71	0	23	152	283	0	71	152	5	0	961
	8:00 AM	85	29	7	0	0	22	98	0	20	136	226	0	66	181	3	0	873
	8:15 AM	61	15	8	0	1	46	74	0	39	158	228	0	42	168	0	0	840
	8:30 AM	77	13	6	0	0	41	64	0	34	147	239	0	45	191	1	0	858
	8:45 AM	58	17	4	0	0	39	82	0	31	145	223	0	35	164	1	0	799
TOTAL VOLUMES :		513	149	43	0	18	358	542	0	176	1178	1936	0	431	1339	17	0	6700
APPROACH %'s :		72.77%	21.13%	6.10%	0.00%	1.96%	39.00%	59.04%	0.00%	5.35%	35.81%	58.84%	0.00%	24.12%	74.93%	0.95%	0.00%	
PEAK HR :		07:30 AM - 08:30 AM				18	200	302	0	90	602	988	0	248	677	12	0	TOTAL
PEAK HR VOL :		272	105	29	0	0.375	0.725	0.770	0.000	0.577	0.953	0.873	0.000	0.873	0.935	0.600	0.000	3543
PEAK HR FACTOR :		0.800	0.559	0.806	0.000	0.375	0.725	0.770	0.000	0.577	0.953	0.873	0.000	0.873	0.935	0.600	0.000	0.922
		0.787				0.890				0.917				0.937				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2	1	1	0	1	1	1	0	1	2	2	0	2	3	0	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	
	4:00 PM	152	48	45	0	0	26	19	0	34	185	128	0	28	123	12	0	800
	4:15 PM	101	41	51	0	0	29	31	0	44	211	141	0	19	78	7	0	753
	4:30 PM	137	44	63	0	0	28	23	0	23	155	105	0	12	74	4	0	668
	4:45 PM	133	58	60	0	1	27	28	0	36	144	84	0	10	71	7	0	659
	5:00 PM	115	65	55	0	3	17	24	0	33	133	93	0	3	72	8	0	621
	5:15 PM	102	83	54	0	1	29	26	0	51	247	136	0	18	83	8	0	838
	5:30 PM	128	78	47	0	0	29	22	0	44	212	102	0	27	59	2	0	750
	5:45 PM	120	48	47	0	0	17	34	0	41	180	107	0	25	92	7	0	718
TOTAL VOLUMES :		988	465	422	0	5	202	207	0	306	1467	896	0	142	652	55	0	5807
APPROACH %'s :		52.69%	24.80%	22.51%	0.00%	1.21%	48.79%	50.00%	0.00%	11.46%	54.96%	33.57%	0.00%	16.73%	76.80%	6.48%	0.00%	
PEAK HR :		05:00 PM - 06:00 PM				4	92	106	0	169	772	438	0	73	306	25	0	TOTAL
PEAK HR VOL :		465	274	203	0	0.333	0.793	0.779	0.000	0.828	0.781	0.805	0.000	0.676	0.832	0.781	0.000	2927
PEAK HR FACTOR :		0.908	0.825	0.923	0.000	0.333	0.793	0.779	0.000	0.828	0.781	0.805	0.000	0.676	0.832	0.781	0.000	0.873
		0.931				0.902				0.794				0.815				

N Kraemer Blvd & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-006
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: N Kraemer Blvd & E Lambert Rd
City: Brea
Control: Signalized

Project ID: 19-01101-006
Date: 5/18/2019

Total

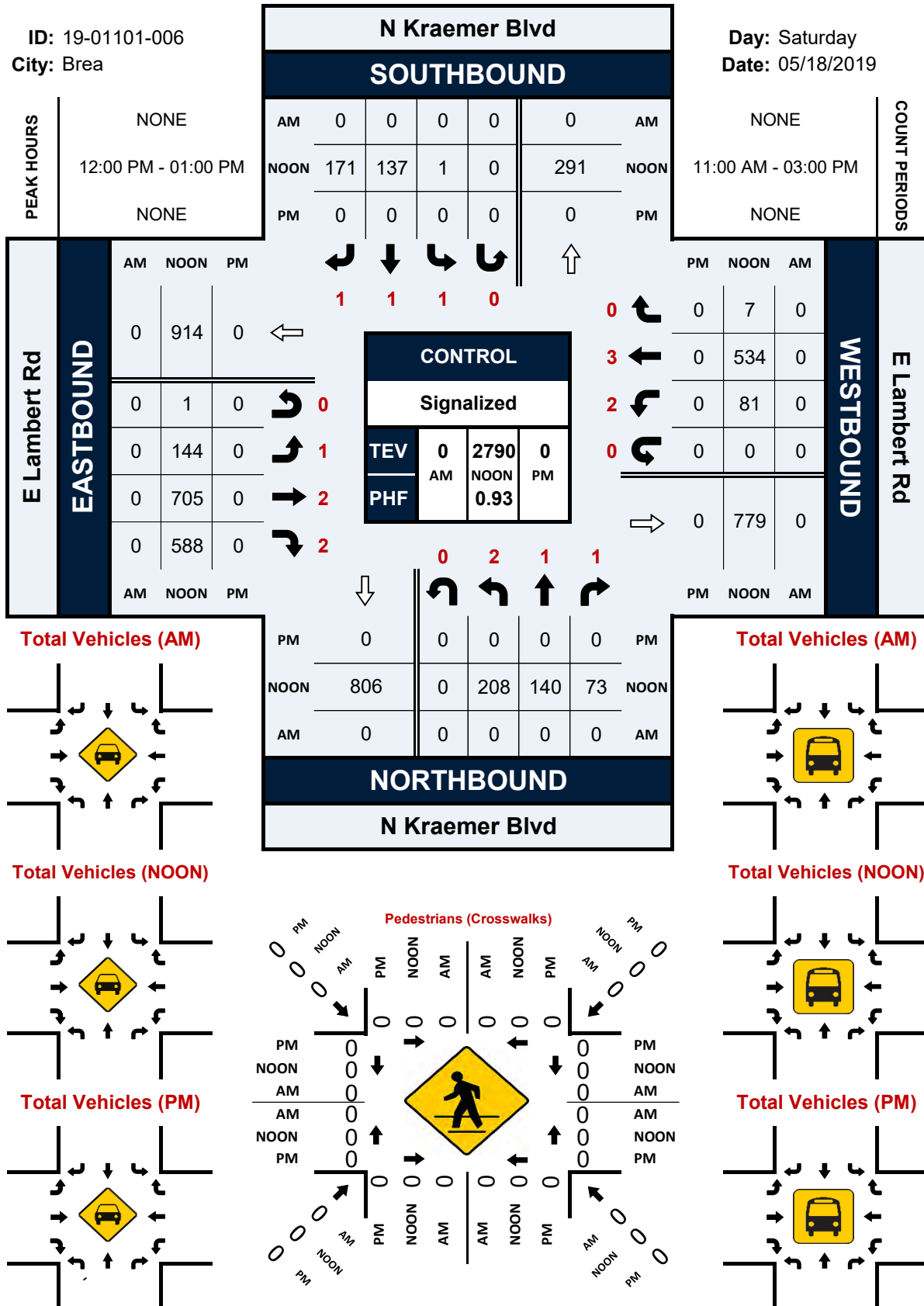
NS/EW Streets:		N Kraemer Blvd				N Kraemer Blvd				E Lambert Rd				E Lambert Rd				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		1	1	0		1	1	0		1	2	2	0	2	3	0	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
11:00 AM	67	33	18	0	0	49	51	0	38	130	80	0	14	130	2	0	612	
11:15 AM	47	36	14	0	0	33	54	0	26	172	85	0	24	157	2	0	650	
11:30 AM	44	25	17	0	1	36	38	0	27	131	76	0	27	137	2	0	561	
11:45 AM	52	29	20	0	1	48	50	0	28	156	92	0	25	155	1	0	657	
12:00 PM	55	32	17	0	1	40	35	0	29	181	112	0	21	153	2	0	678	
12:15 PM	46	32	18	0	0	35	42	0	46	169	135	0	14	127	2	0	666	
12:30 PM	62	48	17	0	0	24	41	0	34	185	195	0	19	127	2	0	754	
12:45 PM	45	28	21	0	0	38	53	0	35	170	146	1	27	127	1	0	692	
1:00 PM	47	36	20	0	1	30	44	0	41	178	121	0	13	115	0	0	646	
1:15 PM	51	47	17	0	1	29	36	0	44	170	109	1	14	120	0	0	639	
1:30 PM	81	21	17	0	0	20	39	0	50	154	108	0	13	124	2	0	629	
1:45 PM	58	29	26	0	0	33	41	0	39	171	117	0	20	155	0	0	689	
2:00 PM	49	29	26	0	2	26	26	0	41	177	104	0	17	140	4	0	641	
2:15 PM	65	23	24	0	1	26	41	0	27	190	97	1	11	178	3	1	688	
2:30 PM	65	27	22	0	1	29	36	0	44	186	113	0	17	180	1	0	721	
2:45 PM	40	34	19	0	1	30	37	0	38	208	106	2	15	144	1	0	675	
TOTAL VOLUMES :	NL 874	NT 509	NR 313	NU 0	SL 10	ST 526	SR 664	SU 0	EL 587	ET 2728	ER 1796	EU 5	WL 291	WT 2269	WR 25	WU 1	TOTAL 10598	
APPROACH %'s :	51.53%	30.01%	18.46%	0.00%	0.83%	43.83%	55.33%	0.00%	11.47%	53.32%	35.11%	0.10%	11.25%	87.74%	0.97%	0.04%		
PEAK HR :	12:00 PM - 01:00 PM																TOTAL	
PEAK HR VOL :	208	140	73	0	1	137	171	0	144	705	588	1	81	534	7	0	2790	
PEAK HR FACTOR :	0.839	0.729	0.869	0.000	0.250	0.856	0.807	0.000	0.783	0.953	0.754	0.250	0.750	0.873	0.875	0.000	0.925	
	0.829				0.849				0.868				0.884					

N Kraemer Blvd & E Lambert Rd

Peak Hour Turning Movement Count

ID: 19-01101-006
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brea Blvd & W Birch St
City: Brea
Control: Signalized

Project ID: 19-01101-007
Date: 5/22/2019

Total

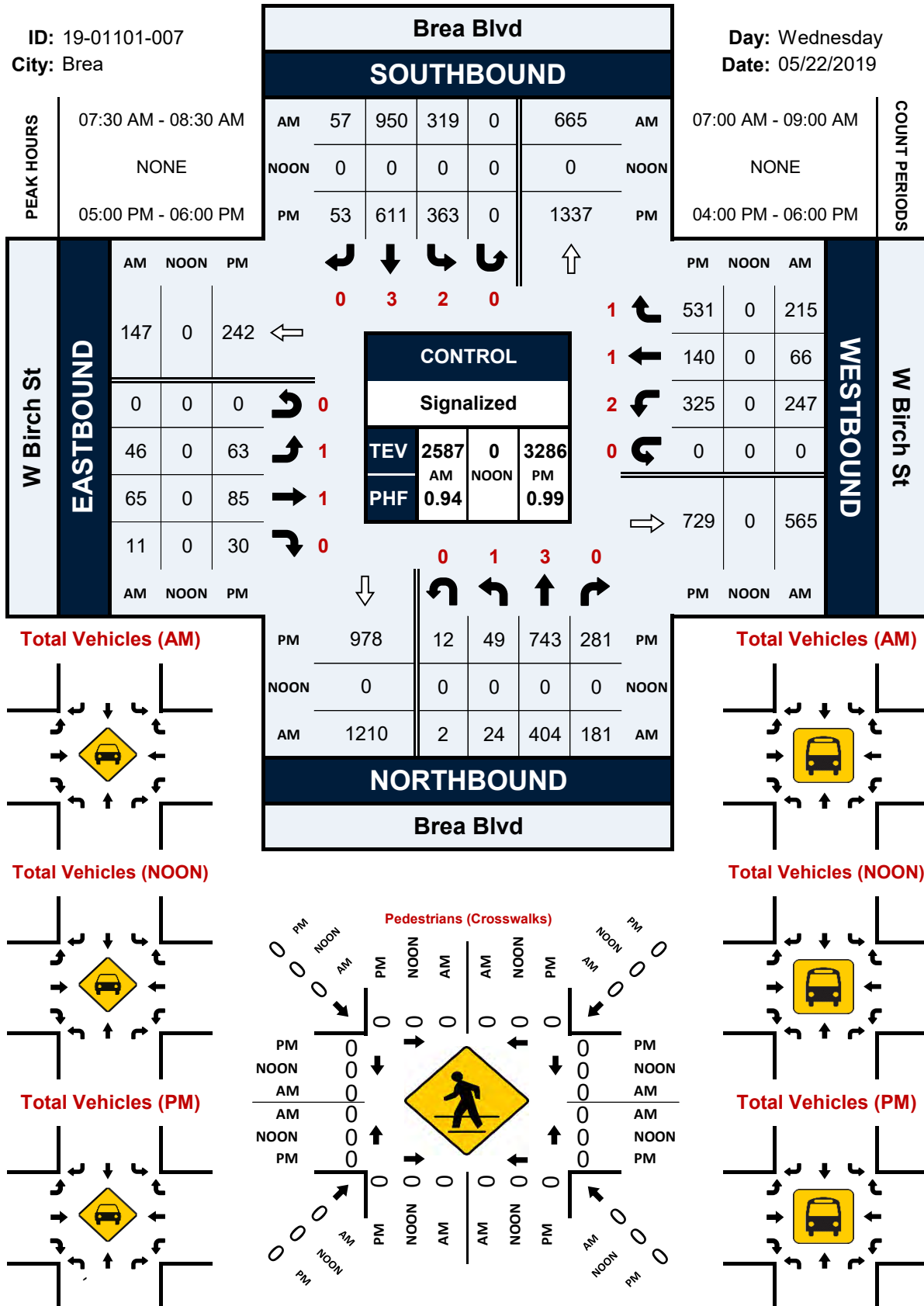
NS/EW Streets:		Brea Blvd				Brea Blvd				W Birch St				W Birch St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	3 NT	0 NR	0 NU	2 SL	3 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	2 WL	1 WT	1 WR	0 WU	
	7:00 AM	4	50	21	0	34	229	12	0	4	8	9	0	36	7	23	0	437
	7:15 AM	5	57	36	0	47	236	9	0	6	7	6	0	45	9	26	0	489
	7:30 AM	3	85	42	0	81	244	14	0	7	19	5	0	42	9	36	0	587
	7:45 AM	11	105	67	1	79	193	18	0	9	14	3	0	69	35	68	0	672
	8:00 AM	6	128	47	0	69	255	13	0	16	17	2	0	71	13	51	0	688
	8:15 AM	4	86	25	1	90	258	12	0	14	15	1	0	65	9	60	0	640
	8:30 AM	3	98	46	0	61	210	17	0	8	16	4	0	68	11	31	0	573
	8:45 AM	6	90	39	0	64	224	11	0	9	12	7	0	67	16	41	0	586
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		42	699	323	2	525	1849	106	0	73	108	37	0	463	109	336	0	4672
		3.94%	65.57%	30.30%	0.19%	21.17%	74.56%	4.27%	0.00%	33.49%	49.54%	16.97%	0.00%	50.99%	12.00%	37.00%	0.00%	
PEAK HR :		07:30 AM - 08:30 AM				319	950	57	0	46	65	11	0	247	66	215	0	TOTAL
PEAK HR VOL :		24	404	181	2													2587
PEAK HR FACTOR :		0.545	0.789	0.675	0.500	0.886	0.921	0.792	0.000	0.719	0.855	0.550	0.000	0.870	0.471	0.790	0.000	0.940
		0.830				0.921				0.871				0.767				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	3 NT	0 NR	0 NU	2 SL	3 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	2 WL	1 WT	1 WR	0 WU	
	4:00 PM	3	149	53	1	78	108	15	0	17	27	5	0	77	24	112	0	669
	4:15 PM	10	174	56	2	58	117	9	0	15	24	7	0	89	28	101	0	690
	4:30 PM	9	192	70	1	74	118	13	0	21	21	8	0	81	32	114	0	754
	4:45 PM	11	165	69	4	85	131	14	0	13	33	11	0	70	32	109	0	747
	5:00 PM	9	195	77	4	87	168	13	0	13	21	5	0	89	31	117	0	829
	5:15 PM	10	182	69	4	91	148	10	0	15	23	11	0	82	25	126	0	796
	5:30 PM	10	176	62	1	99	165	15	0	18	23	6	0	75	33	151	0	834
	5:45 PM	20	190	73	3	86	130	15	0	17	18	8	0	79	51	137	0	827
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		82	1423	529	20	658	1085	104	0	129	190	61	0	642	256	967	0	6146
		3.99%	69.28%	25.75%	0.97%	35.63%	58.74%	5.63%	0.00%	33.95%	50.00%	16.05%	0.00%	34.42%	13.73%	51.85%	0.00%	
PEAK HR :		05:00 PM - 06:00 PM				363	611	53	0	63	85	30	0	325	140	531	0	TOTAL
PEAK HR VOL :		49	743	281	12													3286
PEAK HR FACTOR :		0.613	0.953	0.912	0.750	0.917	0.909	0.883	0.000	0.875	0.924	0.682	0.000	0.913	0.686	0.879	0.000	0.985
		0.948				0.920				0.908				0.933				

Brea Blvd & W Birch St

Peak Hour Turning Movement Count

ID: 19-01101-007
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brea Blvd & Birch St
City: Brea
Control: Signalized

Project ID: 19-01133-007
Date: 6/29/2019

Total

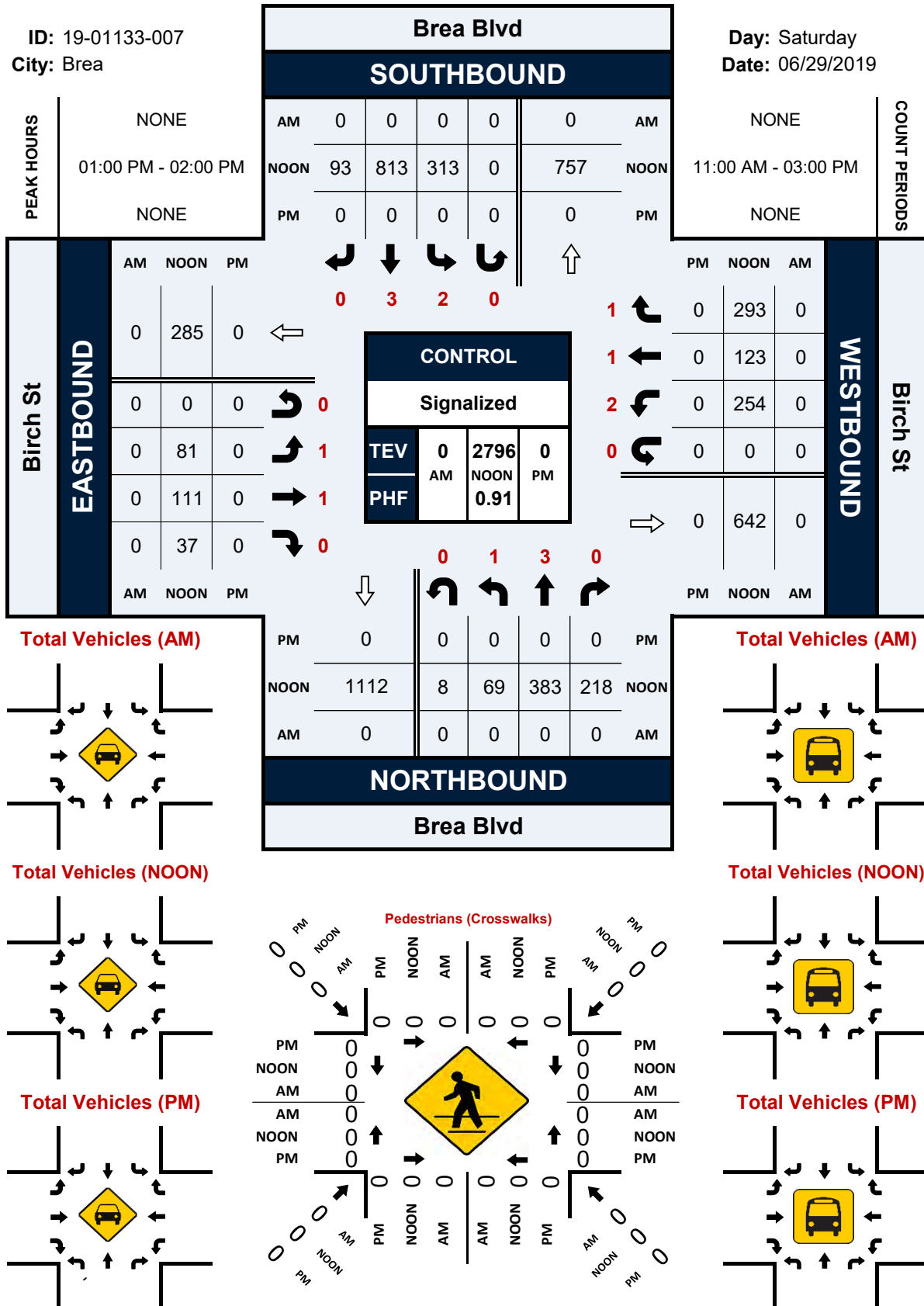
NS/EW Streets:		Brea Blvd				Brea Blvd				Birch St				Birch St				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		1 NL	3 NT	0 NR	0 NU	2 SL	3 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	2 WL	1 WT	1 WR	0 WU	TOTAL
11:00 AM		14	86	53	0	69	103	19	0	27	16	6	0	63	16	56	0	528
11:15 AM		12	89	49	0	74	105	24	0	21	28	11	0	59	36	62	0	570
11:30 AM		14	100	43	2	70	112	18	0	22	23	12	0	56	25	57	0	554
11:45 AM		21	98	41	0	64	126	27	0	15	21	11	0	55	29	67	0	575
12:00 PM		17	90	60	9	74	123	21	0	21	21	13	0	55	33	67	0	604
12:15 PM		16	91	55	2	64	146	24	0	17	26	9	0	67	27	60	0	604
12:30 PM		22	104	55	4	68	115	30	0	13	23	12	0	58	23	62	0	589
12:45 PM		11	107	46	0	83	164	23	0	17	18	9	0	66	30	72	0	646
1:00 PM		18	101	53	1	75	192	21	0	12	18	12	0	57	32	73	0	665
1:15 PM		18	98	68	2	69	243	26	0	27	26	8	0	65	41	81	0	772
1:30 PM		18	91	45	4	88	208	24	0	16	33	10	0	58	29	73	0	697
1:45 PM		15	93	52	1	81	170	22	0	26	34	7	0	74	21	66	0	662
2:00 PM		9	93	41	1	91	141	17	0	17	36	10	0	64	29	80	0	629
2:15 PM		11	94	60	0	80	138	18	0	19	25	12	0	69	27	58	0	611
2:30 PM		20	72	51	3	83	156	17	0	23	24	9	0	70	23	99	0	650
2:45 PM		13	84	48	7	81	115	24	0	13	30	8	0	53	24	93	0	593
TOTAL VOLUMES :		NL 249	NT 1491	NR 820	NU 36	SL 1214	ST 2357	SR 355	SU 0	EL 306	ET 402	ER 159	EU 0	WL 989	WT 445	WR 1126	WU 0	TOTAL 9949
APPROACH %'s :		9.59%	57.43%	31.59%	1.39%	30.92%	60.04%	9.04%	0.00%	35.29%	46.37%	18.34%	0.00%	38.63%	17.38%	43.98%	0.00%	
PEAK HR :		01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :		69	383	218	8	313	813	93	0	81	111	37	0	254	123	293	0	2796
PEAK HR FACTOR :		0.958	0.948	0.801	0.500	0.889	0.836	0.894	0.000	0.750	0.816	0.771	0.000	0.858	0.750	0.904	0.000	0.905
		0.911				0.902				0.854				0.896				

Brea Blvd & Birch St

Peak Hour Turning Movement Count

ID: 19-01133-007
City: Brea

Day: Saturday
Date: 06/29/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Market PI/S Randolph Ave & E Birch St
City: Brea
Control: Signalized

Project ID: 19-01101-008
Date: 5/22/2019

Total

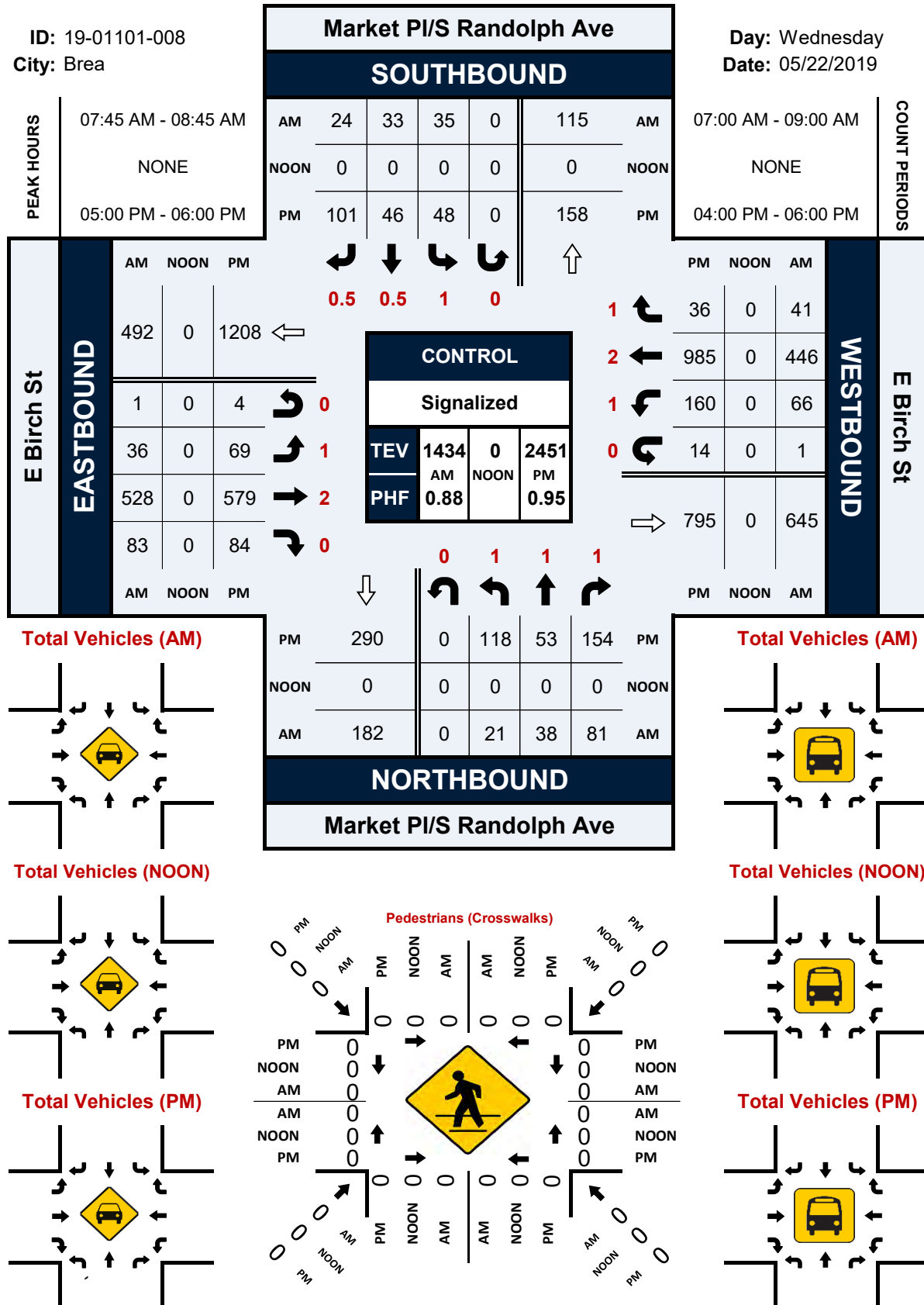
NS/EW Streets:	Market PI/S Randolph Ave				Market PI/S Randolph Ave				E Birch St				E Birch St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
7:00 AM	5	2	14	0	5	4	3	0	5	68	12	1	9	54	3	0	185
7:15 AM	3	3	16	0	5	5	7	0	5	95	22	0	11	77	4	0	253
7:30 AM	4	4	17	0	9	4	3	0	2	133	13	1	9	90	8	0	297
7:45 AM	6	7	23	0	10	5	6	0	6	170	21	0	15	127	12	0	408
8:00 AM	5	15	13	0	3	7	7	0	11	116	28	0	13	93	8	0	319
8:15 AM	4	6	18	0	15	12	5	0	7	110	18	1	13	129	12	1	351
8:30 AM	6	10	27	0	7	9	6	0	12	132	16	0	25	97	9	0	356
8:45 AM	7	11	17	0	6	6	6	0	15	115	15	0	22	112	7	1	340
TOTAL VOLUMES :	NL 40	NT 58	NR 145	NU 0	SL 60	ST 52	SR 43	SU 0	EL 63	ET 939	ER 145	EU 3	WL 117	WT 779	WR 63	WU 2	TOTAL 2509
APPROACH %'s :	16.46%	23.87%	59.67%	0.00%	38.71%	33.55%	27.74%	0.00%	5.48%	81.65%	12.61%	0.26%	12.17%	81.06%	6.56%	0.21%	
PEAK HR :	07:45 AM - 08:45 AM																TOTAL
PEAK HR VOL :	21	38	81	0	35	33	24	0	36	528	83	1	66	446	41	1	1434
PEAK HR FACTOR :	0.875	0.633	0.750	0.000	0.583	0.688	0.857	0.000	0.750	0.776	0.741	0.250	0.660	0.864	0.854	0.250	0.879
	0.814				0.719				0.822				0.894				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
4:00 PM	28	11	38	0	16	8	14	0	10	116	20	2	21	220	7	1	512
4:15 PM	23	15	24	0	11	11	18	0	15	118	19	0	32	199	13	1	499
4:30 PM	24	12	35	0	9	6	26	0	16	136	28	0	41	210	8	1	552
4:45 PM	33	7	35	0	17	7	21	0	16	122	32	0	20	187	8	4	509
5:00 PM	27	6	32	0	12	13	21	0	21	151	26	1	36	261	9	7	623
5:15 PM	32	19	37	0	18	14	30	0	13	145	24	1	53	248	9	1	644
5:30 PM	30	17	46	0	10	12	17	0	17	139	21	1	39	251	8	3	611
5:45 PM	29	11	39	0	8	7	33	0	18	144	13	1	32	225	10	3	573
TOTAL VOLUMES :	NL 226	NT 98	NR 286	NU 0	SL 101	ST 78	SR 180	SU 0	EL 126	ET 1071	ER 183	EU 6	WL 274	WT 1801	WR 72	WU 21	TOTAL 4523
APPROACH %'s :	37.05%	16.07%	46.89%	0.00%	28.13%	21.73%	50.14%	0.00%	9.09%	77.27%	13.20%	0.43%	12.64%	83.07%	3.32%	0.97%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	118	53	154	0	48	46	101	0	69	579	84	4	160	985	36	14	2451
PEAK HR FACTOR :	0.922	0.697	0.837	0.000	0.667	0.821	0.765	0.000	0.821	0.959	0.808	1.000	0.755	0.943	0.900	0.500	0.951
	0.874				0.786				0.925				0.954				

Market Pl/S Randolph Ave & E Birch St

Peak Hour Turning Movement Count

ID: 19-01101-008
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

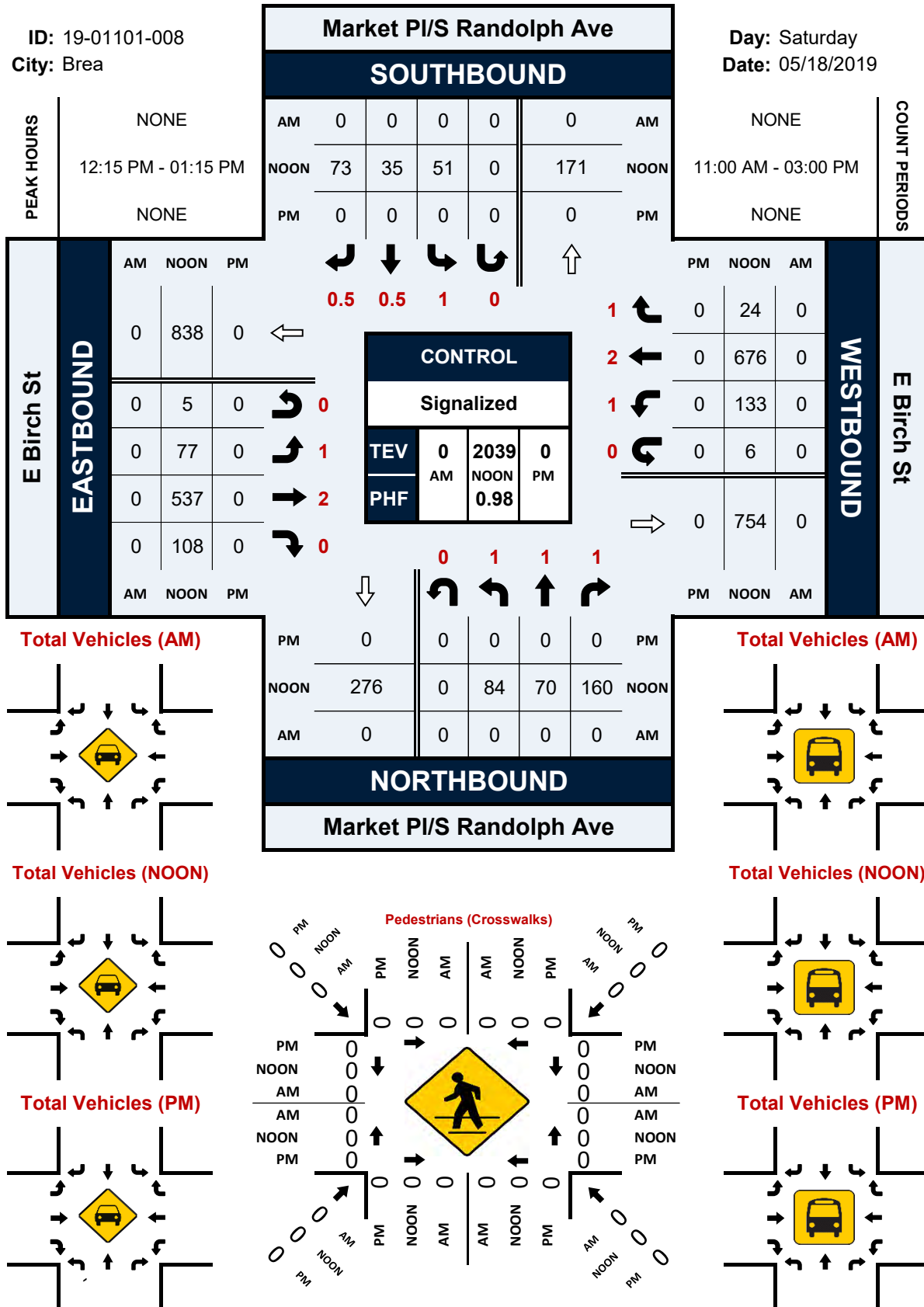
Location: Market Pl/S Randolph Ave & E Birch St
City: Brea
Control: Signalized

Project ID: 19-01101-008
Date: 5/18/2019

Total

NS/EW Streets:		Market Pl/S Randolph Ave				Market Pl/S Randolph Ave				E Birch St				E Birch St				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	1 NT	1 NR	0 NU	1 SL	0.5 ST	0.5 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
11:00 AM		20	13	42	0	10	10	18	0	17	104	22	2	35	116	9	0	418
11:15 AM		17	16	47	0	7	14	14	0	20	110	17	1	23	124	8	2	420
11:30 AM		18	12	47	0	9	7	17	0	17	113	26	0	32	131	13	3	445
11:45 AM		10	14	36	0	9	9	14	0	19	150	21	2	41	166	7	2	500
12:00 PM		29	15	51	0	12	10	12	0	18	115	24	0	47	164	5	1	503
12:15 PM		18	13	37	0	9	5	13	0	28	131	19	1	37	170	4	3	488
12:30 PM		21	22	34	0	14	6	18	0	14	158	21	2	28	177	4	1	520
12:45 PM		24	16	51	0	12	10	21	0	20	127	35	1	31	159	7	1	515
1:00 PM		21	19	38	0	16	14	21	0	15	121	33	1	37	170	9	1	516
1:15 PM		25	23	52	0	7	18	12	0	17	112	11	0	26	150	3	5	461
1:30 PM		19	17	43	0	14	12	15	0	14	134	17	1	29	159	3	2	479
1:45 PM		18	26	38	0	14	8	18	0	15	124	20	0	34	139	6	0	460
2:00 PM		21	16	38	0	5	14	12	0	9	121	27	0	22	142	7	0	434
2:15 PM		22	16	43	0	7	14	11	0	19	119	28	2	48	154	10	3	496
2:30 PM		29	21	54	0	9	5	20	0	12	100	21	0	23	147	6	0	447
2:45 PM		24	12	47	0	13	9	12	0	16	111	19	0	42	166	14	3	488
TOTAL VOLUMES :		NL 336	NT 271	NR 698	NU 0	SL 167	ST 165	SR 248	SU 0	EL 270	ET 1950	ER 361	EU 13	WL 535	WT 2434	WR 115	WU 27	TOTAL 7590
APPROACH %'s :		25.75%	20.77%	53.49%	0.00%	28.79%	28.45%	42.76%	0.00%	10.41%	75.17%	13.92%	0.50%	17.20%	78.24%	3.70%	0.87%	
PEAK HR :		12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :		84	70	160	0	51	35	73	0	77	537	108	5	133	676	24	6	2039
PEAK HR FACTOR :		0.875	0.795	0.784	0.000	0.797	0.625	0.869	0.000	0.688	0.850	0.771	0.625	0.899	0.955	0.667	0.500	0.980
		0.863				0.779				0.932				0.967				

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: State College Blvd & Birch St
City: Brea
Control: Signalized

Project ID: 18-01231-005
Date: 11/13/2018

Total

NS/EW Streets:		State College Blvd				State College Blvd				Birch St				Birch St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	0 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	
	7:00 AM	12	23	11	0	116	168	22	0	16	95	7	0	20	76	40	0	606
	7:15 AM	21	19	19	0	131	235	13	0	9	89	10	0	20	85	43	0	694
	7:30 AM	14	22	24	0	160	220	30	0	20	137	14	0	10	114	58	0	823
	7:45 AM	20	34	27	0	184	144	49	0	23	121	8	0	19	172	88	0	889
	8:00 AM	16	37	20	0	117	134	45	0	18	126	13	0	23	153	68	0	770
	8:15 AM	17	35	17	0	99	104	44	0	27	84	10	0	34	137	55	0	663
	8:30 AM	11	39	15	0	64	81	51	0	28	65	11	0	18	127	43	0	553
	8:45 AM	20	33	9	0	73	84	59	0	12	82	17	0	23	117	43	0	572
TOTAL VOLUMES :		131	242	142	0	944	1170	313	0	153	799	90	0	167	981	438	0	5570
APPROACH %'s :		25.44%	46.99%	27.57%	0.00%	38.90%	48.21%	12.90%	0.00%	14.68%	76.68%	8.64%	0.00%	10.53%	61.85%	27.62%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :		71	112	90	0	592	733	137	0	70	473	45	0	72	524	257	0	3176
PEAK HR FACTOR :		0.845	0.757	0.833	0.000	0.804	0.780	0.699	0.000	0.761	0.863	0.804	0.000	0.783	0.762	0.730	0.000	0.893
		0.843				0.891				0.860				0.764				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	2 NT	1 NR	0 NU	2 SL	2 ST	0 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	2 WT	1 WR	0 WU	
	4:00 PM	27	67	34	0	62	71	55	0	54	139	44	0	28	163	82	0	826
	4:15 PM	33	83	36	0	67	65	64	0	43	153	29	0	33	150	102	0	858
	4:30 PM	33	71	47	0	70	79	58	0	32	138	31	0	27	200	116	0	902
	4:45 PM	31	75	35	0	87	72	58	0	35	161	29	0	33	238	145	0	999
	5:00 PM	24	75	43	0	62	72	65	0	48	170	46	0	33	231	153	0	1022
	5:15 PM	31	85	41	0	70	83	56	0	43	184	30	0	29	223	146	0	1021
	5:30 PM	45	92	27	0	72	73	64	1	57	184	41	0	36	203	123	0	1018
	5:45 PM	34	84	34	0	54	71	77	2	48	158	39	0	46	168	101	0	916
TOTAL VOLUMES :		258	632	297	0	544	586	497	3	360	1287	289	0	265	1576	968	0	7562
APPROACH %'s :		21.74%	53.24%	25.02%	0.00%	33.37%	35.95%	30.49%	0.18%	18.60%	66.48%	14.93%	0.00%	9.43%	56.11%	34.46%	0.00%	
PEAK HR :		04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :		131	327	146	0	291	300	243	1	183	699	146	0	131	895	567	0	4060
PEAK HR FACTOR :		0.728	0.889	0.849	0.000	0.836	0.904	0.935	0.250	0.803	0.950	0.793	0.000	0.910	0.940	0.926	0.000	0.993
		0.921				0.962				0.911				0.955				

Day: Tuesday
Date: 11/13/2018



INTERSECTION TURNING MOVEMENT COUNTS

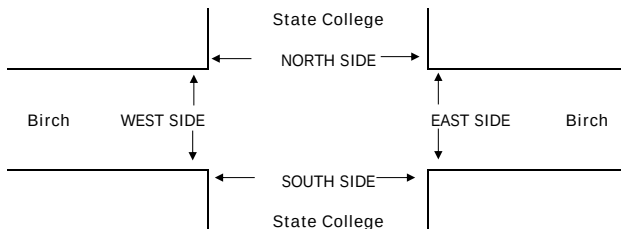
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Sat, May 18, 19	LOCATION: NORTH & SOUTH: EAST & WEST:	Brea State College Birch	PROJECT #: LOCATION #: CONTROL:	SC2213 1 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

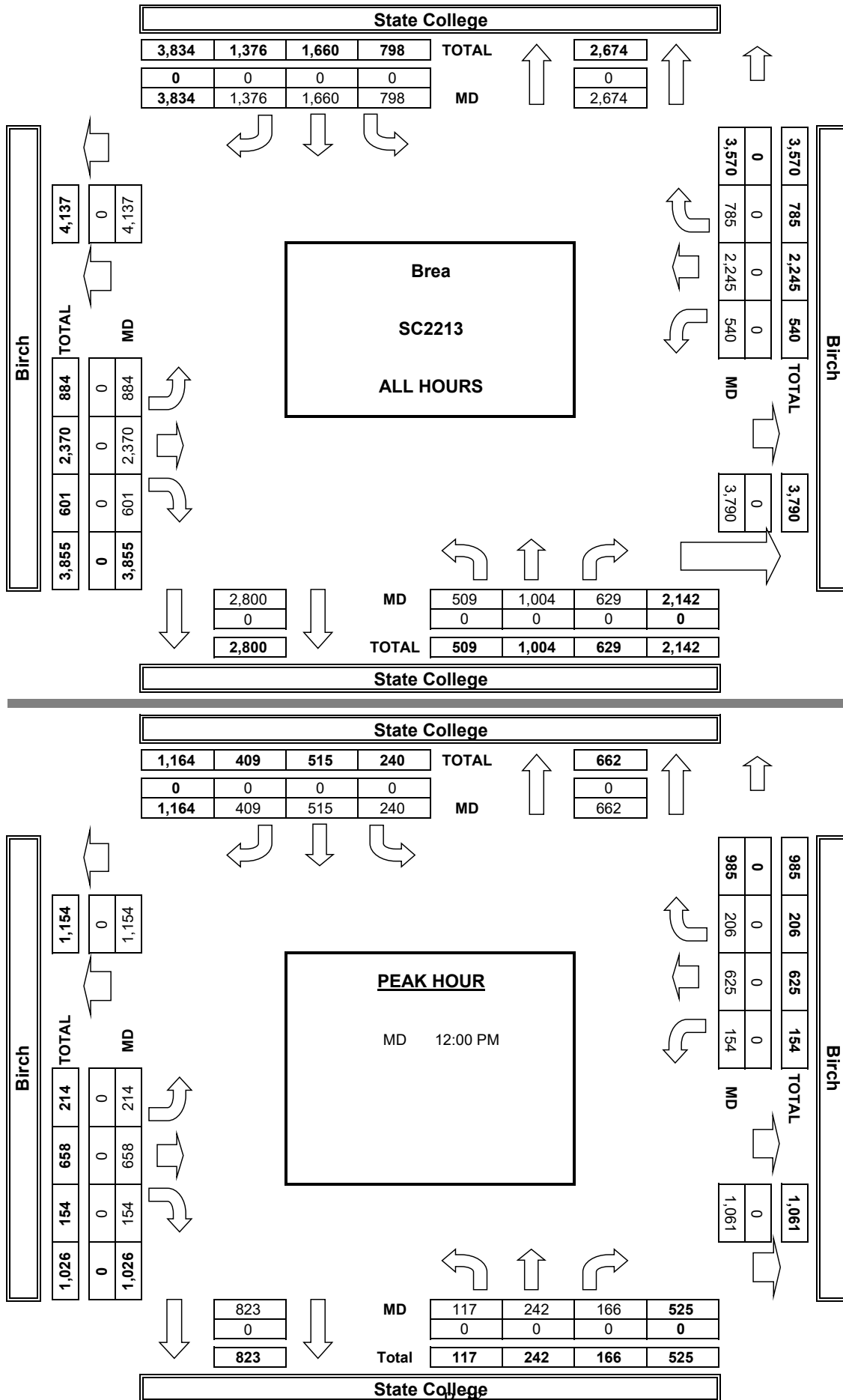
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
	State College			State College			Birch			Birch				NB	SB	EB	WB	TTL
LANES:	NL 2	NT 2	NR 1	SL 2	ST 2	SR 0	EL 2	ET 2	ER 1	WL 2	WT 2	WR 1	TOTAL	0	0	0	0	0
11:00 AM	26	36	27	35	83	69	37	117	32	32	147	40	681	0	0	0	0	0
11:15 AM	33	63	22	39	102	78	44	107	35	35	142	44	744	0	0	0	0	0
11:30 AM	30	62	28	41	92	84	54	130	27	35	141	46	770	0	2	1	1	4
11:45 AM	29	52	33	67	98	89	40	154	46	37	175	55	875	0	0	0	0	0
12:00 PM	24	57	37	61	119	95	55	148	40	39	160	46	881	0	1	1	0	2
12:15 PM	37	60	40	73	126	97	51	158	35	40	150	51	918	0	1	0	0	1
12:30 PM	35	59	45	46	125	104	60	180	44	44	170	52	964	0	1	1	0	2
12:45 PM	21	66	44	60	145	113	48	172	35	31	145	57	937	0	0	1	0	1
1:00 PM	40	49	51	55	98	82	62	156	36	32	140	54	855	0	0	0	0	0
1:15 PM	38	78	42	65	101	60	58	153	42	34	127	35	833	0	1	1	0	2
1:30 PM	41	70	37	51	98	71	53	164	46	35	128	50	844	0	2	0	0	2
1:45 PM	25	69	45	56	110	90	76	149	42	26	138	55	881	0	0	1	0	1
2:00 PM	34	69	36	36	74	78	66	140	35	28	117	58	771	0	0	1	0	1
2:15 PM	32	62	52	30	94	95	58	139	30	32	110	57	791	0	0	0	0	0
2:30 PM	28	81	43	33	77	79	65	159	36	37	122	45	805	0	0	0	0	0
2:45 PM	36	71	47	50	118	92	57	144	40	23	133	40	851	0	0	0	0	0
VOLUMES	509	1,004	629	798	1,660	1,376	884	2,370	601	540	2,245	785	13,401	0	8	7	1	16
APPROACH %	24%	47%	29%	21%	43%	36%	23%	61%	16%	15%	63%	22%						
APP/DEPART	2,142	/	2,674	3,834	/	2,800	3,855	/	3,790	3,570	/	4,137	0					
BEGIN PEAK HR	12:00 PM																	
VOLUMES	117	242	166	240	515	409	214	658	154	154	625	206	3,700					
APPROACH %	22%	46%	32%	21%	44%	35%	21%	64%	15%	16%	63%	21%						
PEAK HR FACTOR	0.944			0.915			0.903			0.926			0.960					
APP/DEPART	525	/	662	1,164	/	823	1,026	/	1,061	985	/	1,154	0					



MD	11:00 AM
	11:15 AM
	11:30 AM
	11:45 AM
	12:00 PM
	12:15 PM
	12:30 PM
	12:45 PM
	1:00 PM
	1:15 PM
	1:30 PM
	1:45 PM
	2:00 PM
	2:15 PM
	2:30 PM
2:45 PM	
	TOTAL
	AM BEGIN PEAK HR

[illegible][illegible][illegible]

AimTD LLC
TURNING MOVEMENT COUNTS



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Associated Rd & Birch St
City: Brea
Control: Signalized

Project ID: 18-01231-006
Date: 11/13/2018

Total

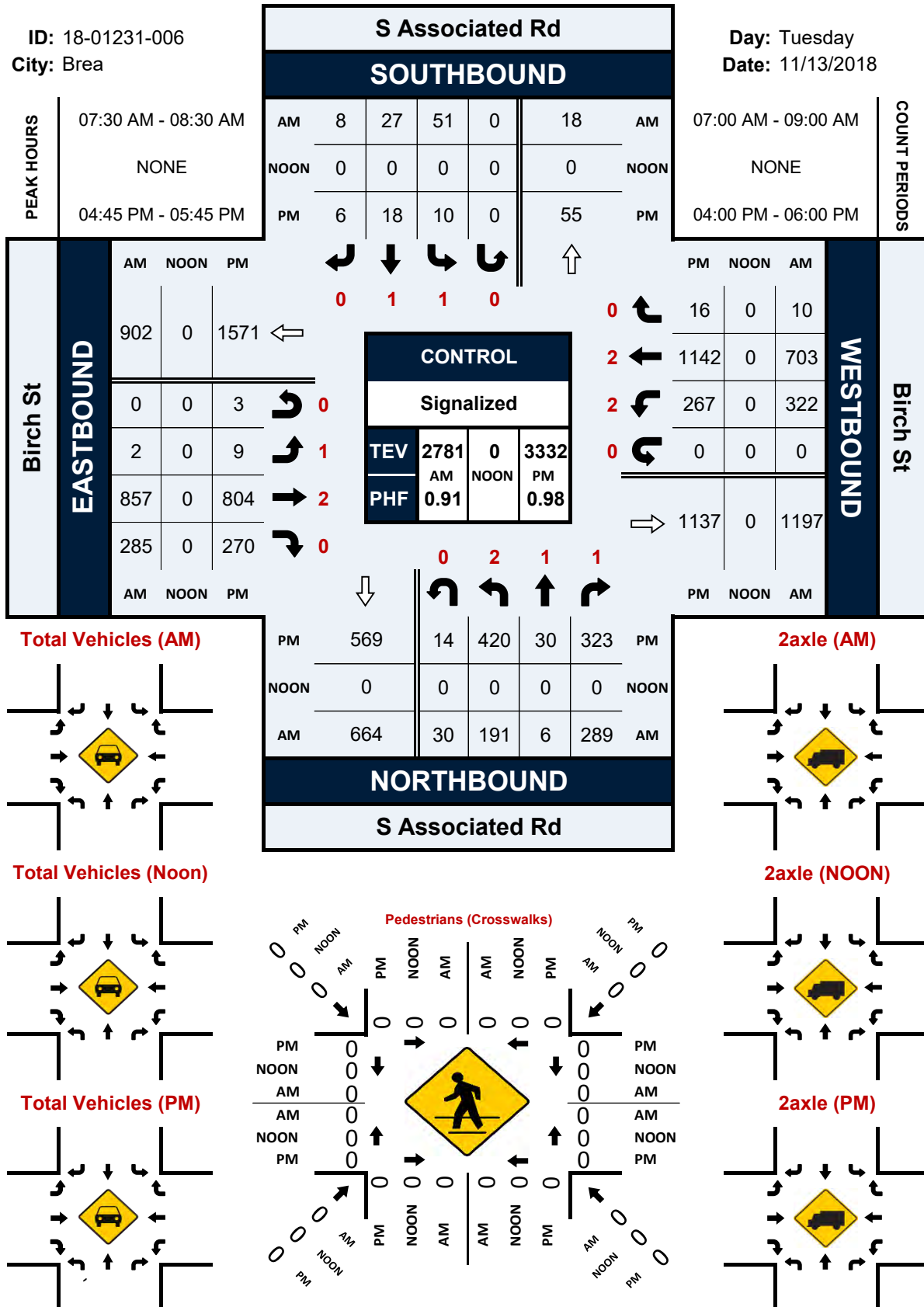
NS/EW Streets:		S Associated Rd				S Associated Rd				Birch St				Birch St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	2 WL	2 WT	0 WR	0 WU	
	7:00 AM	20	0	51	4	5	4	0	0	0	155	71	0	74	88	1	0	473
	7:15 AM	23	0	45	0	10	4	5	0	0	157	73	0	66	104	0	0	487
	7:30 AM	40	1	58	7	9	13	3	0	1	220	86	0	80	134	4	0	656
	7:45 AM	50	1	66	6	14	6	1	0	0	249	85	0	77	206	0	0	761
	8:00 AM	47	3	69	10	6	3	2	0	0	228	68	0	84	194	1	0	715
	8:15 AM	54	1	96	7	22	5	2	0	1	160	46	0	81	169	5	0	649
	8:30 AM	53	1	47	8	5	3	2	0	3	99	52	0	75	120	3	0	471
	8:45 AM	43	0	41	6	5	5	2	0	1	101	60	0	45	138	2	0	449
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		330	7	473	48	76	43	17	0	6	1369	541	0	582	1153	16	0	4661
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		191	6	289	30	51	27	8	0	2	857	285	0	322	703	10	0	2781
PEAK HR FACTOR :		0.884	0.500	0.753	0.750	0.580	0.519	0.667	0.000	0.500	0.860	0.828	0.000	0.958	0.853	0.500	0.000	0.914
		0.816				0.741				0.856				0.914				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	1 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	2 WL	2 WT	0 WR	0 WU	
	4:00 PM	81	4	56	2	2	2	2	0	0	167	58	1	66	199	6	0	646
	4:15 PM	86	2	68	2	1	2	2	0	0	186	62	0	59	194	3	0	667
	4:30 PM	99	4	67	3	3	1	1	0	0	200	60	0	60	260	5	0	763
	4:45 PM	124	7	74	5	3	3	1	0	5	196	66	0	60	276	5	0	825
	5:00 PM	120	9	77	4	2	6	2	0	1	196	76	1	76	279	5	0	854
	5:15 PM	95	7	87	2	3	5	2	0	1	209	61	2	77	299	2	0	852
	5:30 PM	81	7	85	3	2	4	1	0	2	203	67	0	54	288	4	0	801
	5:45 PM	80	5	74	3	5	4	2	0	3	181	53	0	57	217	6	0	690
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		766	45	588	24	21	27	13	0	12	1538	503	4	509	2012	36	0	6098
PEAK HR :		04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :		420	30	323	14	10	18	6	0	9	804	270	3	267	1142	16	0	3332
PEAK HR FACTOR :		0.847	0.833	0.928	0.700	0.833	0.750	0.750	0.000	0.450	0.962	0.888	0.375	0.867	0.955	0.800	0.000	0.975
		0.937				0.850				0.991				0.942				

S Associated Rd & Birch St

Peak Hour Turning Movement Count

ID: 18-01231-006
City: Brea

Day: Tuesday
Date: 11/13/2018



INTERSECTION TURNING MOVEMENT COUNTS

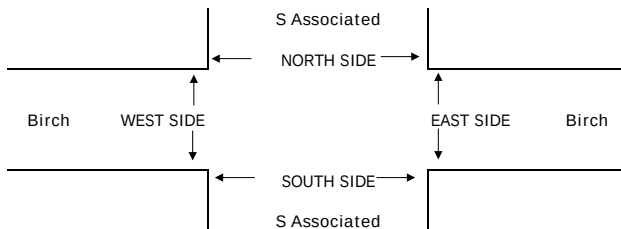
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Sat, May 18, 19	LOCATION: NORTH & SOUTH: EAST & WEST:	Brea S Associated Birch	PROJECT #: LOCATION #: CONTROL:	SC2213 2 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

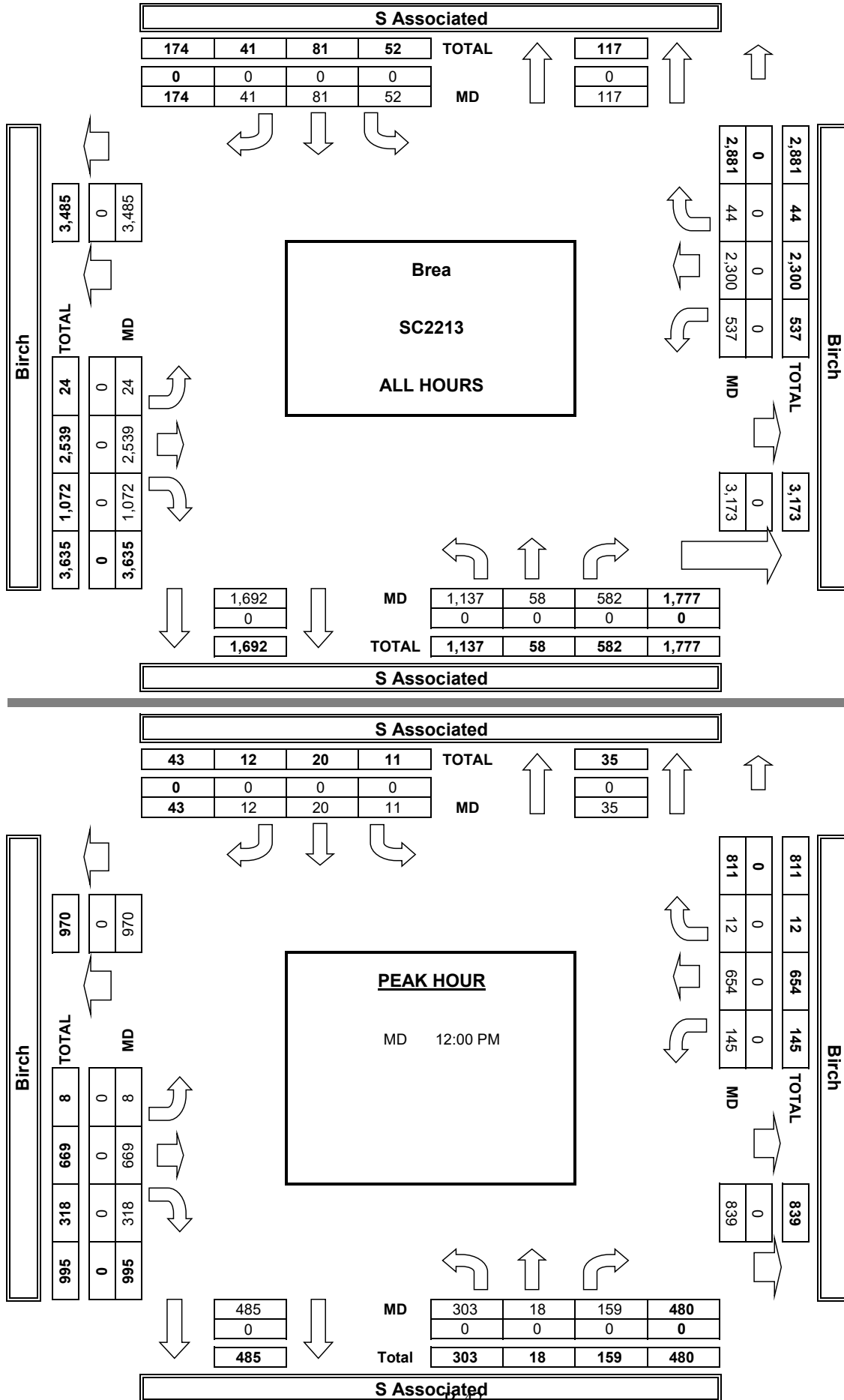
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
	S Associated			S Associated			Birch			Birch				NB	SB	EB	WB	TTL
LANES:	NL 2	NT 1	NR 1	SL 1	ST 1	SR 0	EL 1	ET 2	ER 0	WL 2	WT 2	WR 0	TOTAL	0	0	0	0	0
11:00 AM	66	2	32	1	5	3	1	107	45	34	146	4	446	0	0	0	0	0
11:15 AM	62	3	27	7	5	5	1	130	49	35	141	2	467	0	0	0	0	0
11:30 AM	59	2	33	5	9	5	2	129	67	33	156	5	505	0	0	1	0	1
11:45 AM	88	6	31	6	4	4	1	152	71	32	157	4	556	0	0	1	0	1
12:00 PM	80	6	38	3	7	5	2	154	74	48	156	1	574	1	0	1	0	2
12:15 PM	71	3	37	0	7	2	3	164	85	27	155	4	558	1	0	2	0	3
12:30 PM	83	2	40	3	6	4	3	169	75	29	170	2	586	0	0	0	0	0
12:45 PM	69	7	44	5	0	1	0	182	84	41	173	5	611	0	0	0	0	0
1:00 PM	85	5	41	3	2	0	1	197	64	23	135	1	557	0	0	1	0	1
1:15 PM	75	2	33	5	11	0	0	165	75	36	120	3	525	0	0	0	0	0
1:30 PM	73	3	36	1	6	1	0	163	77	41	119	1	521	0	0	0	0	0
1:45 PM	65	6	49	4	0	2	3	190	72	41	145	4	581	0	0	1	0	1
2:00 PM	57	4	32	1	3	4	1	145	70	17	123	2	459	0	0	0	0	0
2:15 PM	75	1	39	2	6	2	2	169	46	35	121	3	501	0	0	1	0	1
2:30 PM	64	0	39	4	8	3	2	158	58	29	129	1	495	0	0	1	0	1
2:45 PM	65	6	31	2	2	0	2	165	60	36	154	2	525	0	0	0	0	0
VOLUMES	1,137	58	582	52	81	41	24	2,539	1,072	537	2,300	44	8,467	2	0	9	0	11
APPROACH %	64%	3%	33%	30%	47%	24%	1%	70%	29%	19%	80%	2%						
APP/DEPART	1,777	/	117	174	/	1,692	3,635	/	3,173	2,881	/	3,485	0					
BEGIN PEAK HR	12:00 PM																	
VOLUMES	303	18	159	11	20	12	8	669	318	145	654	12	2,329					
APPROACH %	63%	4%	33%	26%	47%	28%	1%	67%	32%	18%	81%	1%						
PEAK HR FACTOR	0.960			0.717			0.935			0.926			0.953					
APP/DEPART	480	/	35	43	/	485	995	/	839	811	/	970	0					



MD	11:00 AM
	11:15 AM
	11:30 AM
	11:45 AM
	12:00 PM
	12:15 PM
	12:30 PM
	12:45 PM
	1:00 PM
	1:15 PM
	1:30 PM
	1:45 PM
	2:00 PM
	2:15 PM
	2:30 PM
2:45 PM	
	TOTAL
	AM BEGIN PEAK HR

[illegible][illegible][illegible]

AimTD LLC
TURNING MOVEMENT COUNTS



National Data & Surveying Services

Intersection Turning Movement Count

Location: N Associated Rd & Birch St
City: Brea
Control: Signalized

Project ID: 18-01231-007
Date: 11/13/2018

Total

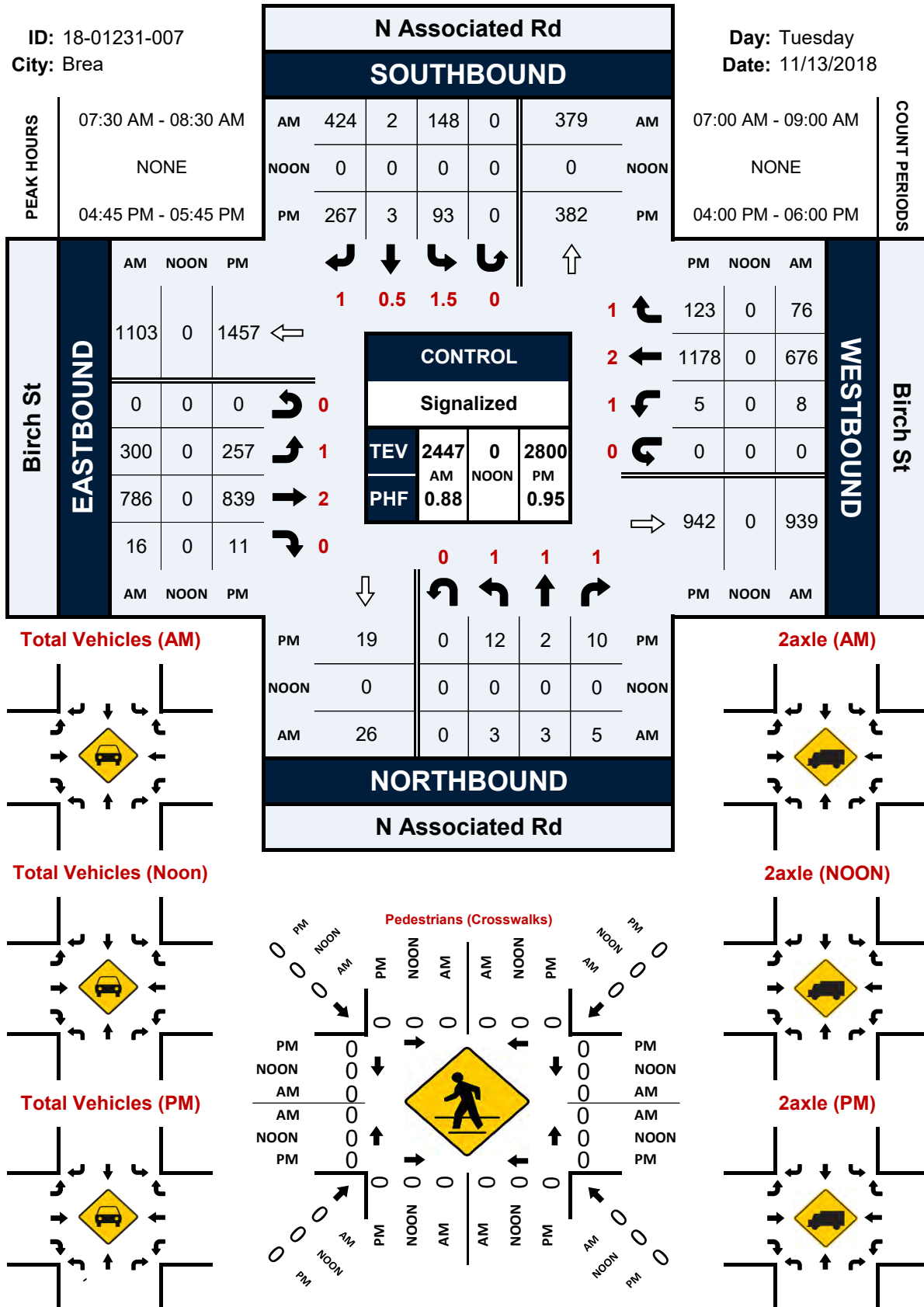
NS/EW Streets:		N Associated Rd				N Associated Rd				Birch St				Birch St				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
	1	1	1	0	1.5	0.5	1	0	1	2	0	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	7:00 AM	3	0	0	0	23	2	72	0	22	183	3	0	1	92	11	0	412
	7:15 AM	0	0	0	0	15	1	60	0	44	167	0	0	4	117	9	1	418
	7:30 AM	1	1	0	0	22	0	108	0	85	201	1	0	1	140	28	0	588
	7:45 AM	1	0	0	0	55	0	114	0	79	225	6	0	3	190	23	0	696
	8:00 AM	1	2	2	0	31	2	101	0	55	203	3	0	3	181	13	0	597
	8:15 AM	0	0	3	0	40	0	101	0	81	157	6	0	1	165	12	0	566
8:30 AM	0	0	1	0	19	0	67	0	15	123	5	0	1	132	14	0	377	
8:45 AM	0	1	1	0	16	2	52	0	25	108	2	0	0	143	6	0	356	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		6	4	7	0	221	7	675	0	406	1367	26	0	14	1160	116	1	4010
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		3	3	5	0	148	2	424	0	300	786	16	0	8	676	76	0	2447
PEAK HR FACTOR :		0.750	0.375	0.417	0.000	0.673	0.250	0.930	0.000	0.882	0.873	0.667	0.000	0.667	0.889	0.679	0.000	0.879
		0.550				0.849				0.889				0.880				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND					
	1	1	1	0	1.5	0.5	1	0	1	2	0	0	0	1	2	1	0	
	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL	
	4:00 PM	3	0	4	0	20	1	61	0	51	174	0	0	1	202	22	0	539
	4:15 PM	4	1	1	0	22	2	58	0	41	206	2	0	1	204	34	0	576
	4:30 PM	1	2	5	0	24	1	66	0	54	190	5	0	2	271	38	0	659
	4:45 PM	1	1	2	0	22	0	50	0	61	189	1	0	1	287	34	0	649
	5:00 PM	5	0	3	0	25	1	67	0	63	204	2	0	2	329	30	0	731
	5:15 PM	3	0	4	0	22	1	89	0	63	230	5	0	2	291	27	0	737
5:30 PM	3	1	1	0	24	1	61	0	70	216	3	0	0	271	32	0	683	
5:45 PM	0	0	1	0	18	2	59	0	56	195	0	0	0	225	24	0	580	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		20	5	21	0	177	9	511	0	459	1604	18	0	9	2080	241	0	5154
PEAK HR :		04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :		12	2	10	0	93	3	267	0	257	839	11	0	5	1178	123	0	2800
PEAK HR FACTOR :		0.600	0.500	0.625	0.000	0.930	0.750	0.750	0.000	0.918	0.912	0.550	0.000	0.625	0.895	0.904	0.000	0.950
		0.750				0.810				0.929				0.904				

N Associated Rd & Birch St**Peak Hour Turning Movement Count**

ID: 18-01231-007
City: Brea

Day: Tuesday
Date: 11/13/2018



INTERSECTION TURNING MOVEMENT COUNTS

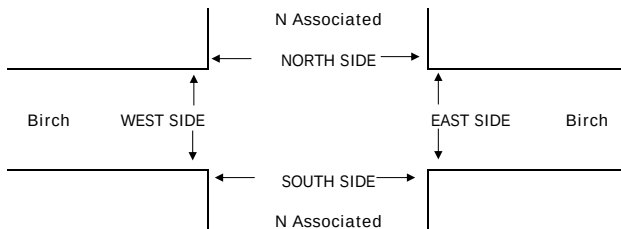
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Sat, May 18, 19	LOCATION: NORTH & SOUTH: EAST & WEST:	Brea N Associated Birch	PROJECT #: LOCATION #: CONTROL:	SC2213 3 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

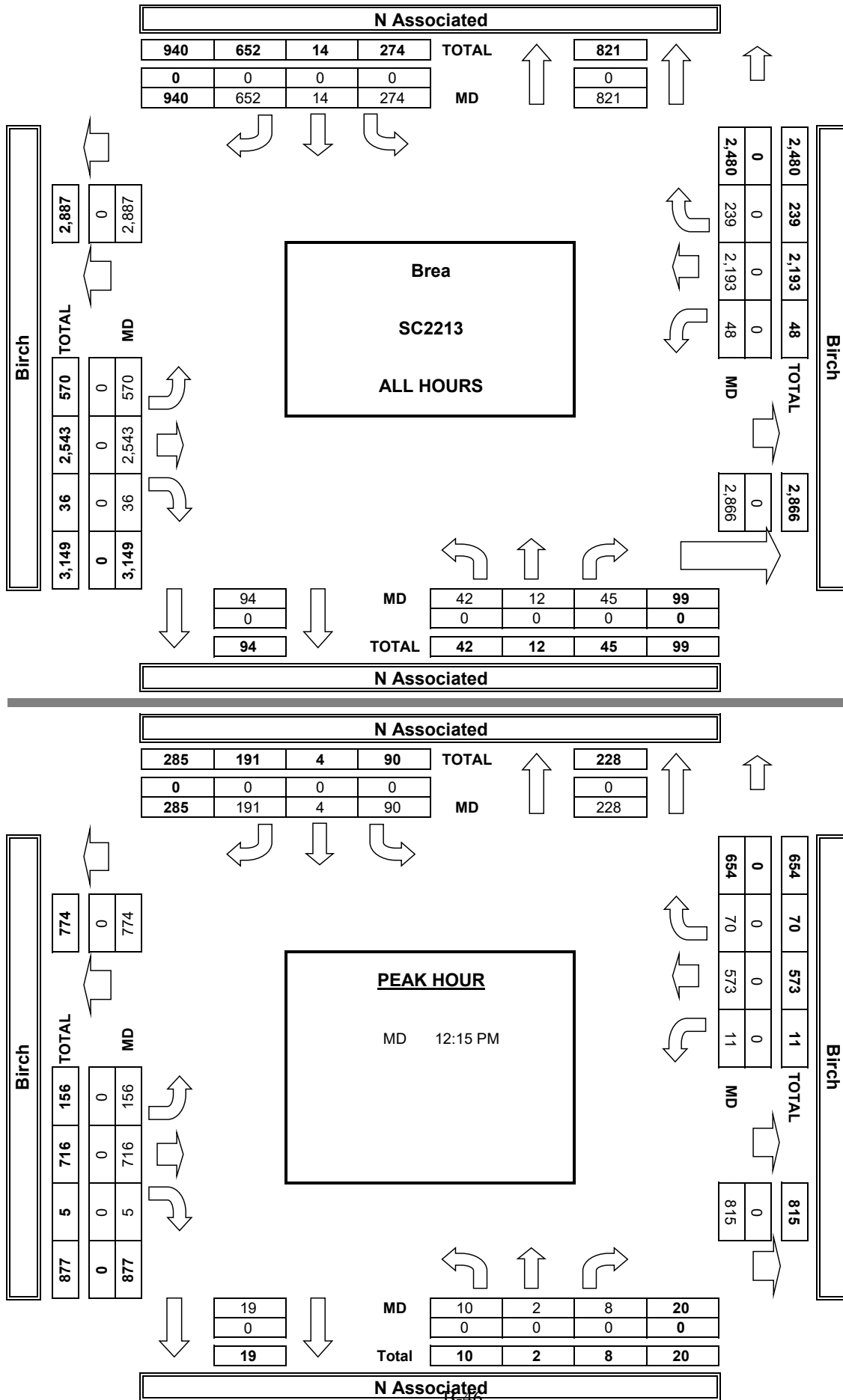
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
	N Associated			N Associated			Birch			Birch								
LANES:	NL 1	NT 1	NR 1	SL 1.5	ST 0.5	SR 1	EL 1	ET 2	ER 0	WL 1	WT 2	WR 1	TOTAL	NB 0	SB 0	EB 0	WB 0	TTL
11:00 AM	2	1	2	14	2	40	34	120	0	3	140	11	369	0	0	0	0	0
11:15 AM	3	1	2	12	0	39	37	119	2	3	139	19	376	0	0	0	0	0
11:30 AM	5	0	6	16	0	32	27	134	0	6	156	15	397	0	0	0	0	0
11:45 AM	5	0	0	12	1	39	41	141	5	1	148	13	406	0	0	0	0	0
12:00 PM	4	1	8	17	1	58	25	167	2	2	141	15	441	0	0	0	0	0
12:15 PM	2	1	2	22	1	55	30	170	0	1	132	15	431	0	0	0	0	0
12:30 PM	3	1	3	34	1	41	37	172	3	3	161	17	476	0	0	0	0	0
12:45 PM	2	0	2	15	0	54	41	185	1	4	155	17	476	0	0	0	1	1
1:00 PM	3	0	1	19	2	41	48	189	1	3	125	21	453	0	0	0	0	0
1:15 PM	1	1	7	13	1	45	33	170	4	6	126	13	420	0	0	0	1	1
1:30 PM	3	1	4	11	2	36	35	171	1	2	123	17	406	0	0	0	0	0
1:45 PM	2	2	2	18	1	39	41	180	4	5	150	15	459	0	0	0	0	0
2:00 PM	1	0	1	19	0	28	32	146	4	2	116	15	364	0	0	0	0	0
2:15 PM	1	3	3	13	1	36	40	158	3	3	119	10	390	0	0	0	1	1
2:30 PM	2	0	1	17	0	30	32	172	4	2	121	10	391	0	0	0	1	1
2:45 PM	3	0	1	22	1	39	37	149	2	2	141	16	413	0	0	0	0	0
VOLUMES	42	12	45	274	14	652	570	2,543	36	48	2,193	239	6,668	0	0	0	4	4
APPROACH %	42%	12%	45%	29%	1%	69%	18%	81%	1%	2%	88%	10%						
APP/DEPART	99	/	821	940	/	94	3,149	/	2,866	2,480	/	2,887	0					
BEGIN PEAK HR	12:15 PM																	
VOLUMES	10	2	8	90	4	191	156	716	5	11	573	70	1,836					
APPROACH %	50%	10%	40%	32%	1%	67%	18%	82%	1%	2%	88%	11%						
PEAK HR FACTOR	0.714			0.913			0.921			0.903			0.964					
APP/DEPART	20	/	228	285	/	19	877	/	815	654	/	774	0					



MD	11:00 AM
	11:15 AM
	11:30 AM
	11:45 AM
	12:00 PM
	12:15 PM
	12:30 PM
	12:45 PM
	1:00 PM
	1:15 PM
	1:30 PM
	1:45 PM
	2:00 PM
	2:15 PM
	2:30 PM
2:45 PM	
	TOTAL
	AM BEGIN PEAK HR

[illegible][illegible][illegible]

AimTD LLC
TURNING MOVEMENT COUNTS



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Kraemer Blvd & E Birch St
City: Brea
Control: Signalized

Project ID: 19-01101-009
Date: 5/22/2019

Total

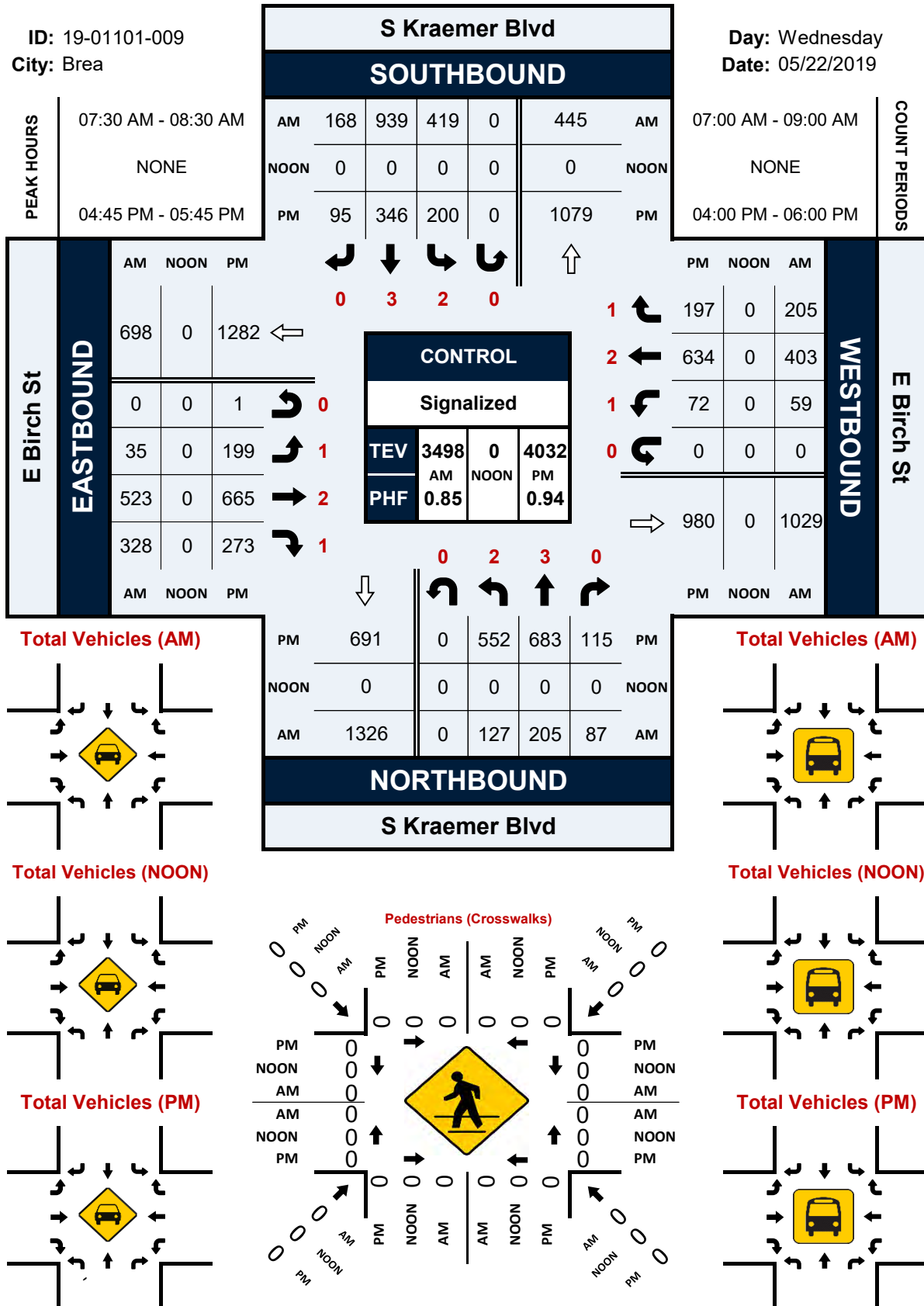
NS/EW Streets:		S Kraemer Blvd				S Kraemer Blvd				E Birch St				E Birch St				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	3 NT	0 NR	0 NU	2 SL	3 ST	0 SR	0 SU	1 EL	2 ET	1 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
	7:00 AM	8	25	10	0	66	238	30	0	3	121	52	0	5	44	22	0	624
	7:15 AM	11	37	17	0	82	226	30	0	6	109	68	0	16	68	20	0	690
	7:30 AM	28	34	20	0	118	252	41	0	6	152	87	0	9	74	31	0	852
	7:45 AM	33	59	31	0	138	264	44	0	6	143	82	0	28	122	80	0	1030
	8:00 AM	35	60	20	0	94	202	42	0	9	133	67	0	16	121	66	0	865
	8:15 AM	31	52	16	0	69	221	41	0	14	95	92	0	6	86	28	0	751
	8:30 AM	17	51	26	0	70	225	47	0	10	87	83	0	8	73	33	0	730
	8:45 AM	19	47	14	0	66	203	37	0	13	96	70	0	14	59	32	0	670
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		182	365	154	0	703	1831	312	0	67	936	601	0	102	647	312	0	6212
PEAK HR :		07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :		127	205	87	0	419	939	168	0	35	523	328	0	59	403	205	0	3498
PEAK HR FACTOR :		0.907	0.854	0.702	0.000	0.759	0.889	0.955	0.000	0.625	0.860	0.891	0.000	0.527	0.826	0.641	0.000	0.849
		0.852				0.855				0.904				0.725				
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	3 NT	0 NR	0 NU	2 SL	3 ST	0 SR	0 SU	1 EL	2 ET	1 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
	4:00 PM	77	143	19	0	45	113	20	0	34	139	52	0	15	197	63	0	917
	4:15 PM	75	141	19	0	58	124	20	0	32	108	58	0	13	135	39	1	823
	4:30 PM	144	172	37	0	56	90	15	0	34	117	62	0	16	196	58	0	997
	4:45 PM	109	165	27	0	43	69	29	0	41	167	59	1	13	138	62	0	923
	5:00 PM	150	145	29	0	50	61	12	0	53	164	60	0	24	198	57	0	1003
	5:15 PM	139	189	26	0	58	102	25	0	60	173	87	0	23	148	46	0	1076
	5:30 PM	154	184	33	0	49	114	29	0	45	161	67	0	12	150	32	0	1030
	5:45 PM	122	182	33	0	53	76	24	0	32	146	55	0	11	111	38	0	883
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		970	1321	223	0	412	749	174	0	331	1175	500	1	127	1273	395	1	7652
PEAK HR :		04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :		552	683	115	0	200	346	95	0	199	665	273	1	72	634	197	0	4032
PEAK HR FACTOR :		0.896	0.903	0.871	0.000	0.862	0.759	0.819	0.000	0.829	0.961	0.784	0.250	0.750	0.801	0.794	0.000	0.937
		0.910				0.835				0.889				0.809				

S Kraemer Blvd & E Birch St

Peak Hour Turning Movement Count

ID: 19-01101-009
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Kraemer Blvd & E Birch St
City: Brea
Control: Signalized

Project ID: 19-01101-009
Date: 5/18/2019

Total

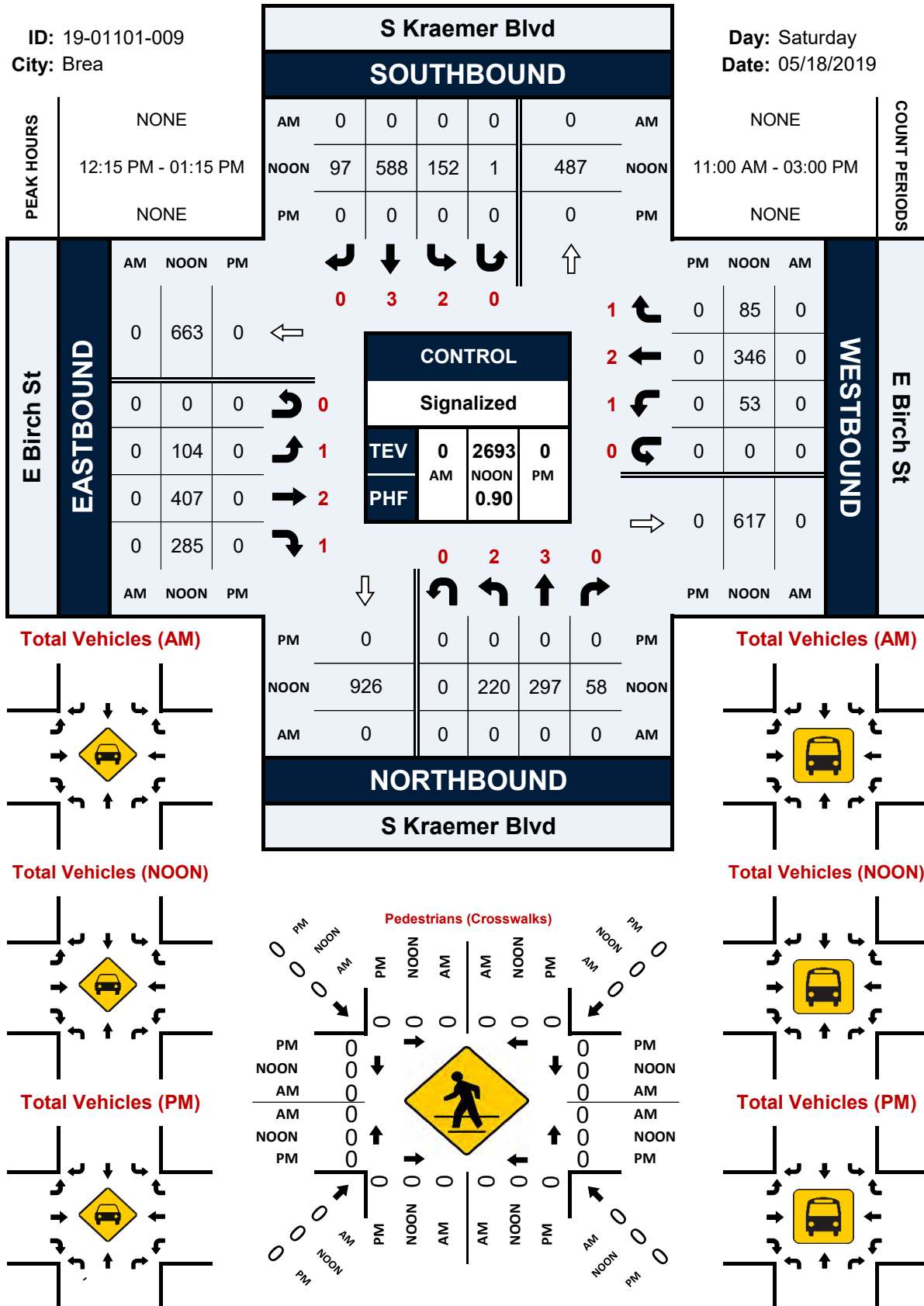
NS/EW Streets:		S Kraemer Blvd				S Kraemer Blvd				E Birch St				E Birch St				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	3 NT	0 NR	0 NU	2 SL	3 ST	0 SR	0 SU	1 EL	2 ET	1 ER	0 EU	1 WL	2 WT	1 WR	0 WU	
11:00 AM		32	77	16	0	27	102	27	1	21	52	41	0	23	85	33	0	537
11:15 AM		42	71	18	0	16	113	26	1	24	58	45	0	8	95	21	0	538
11:30 AM		46	64	9	0	24	89	24	0	17	65	58	0	12	108	14	0	530
11:45 AM		38	65	16	0	31	115	29	1	17	84	51	0	9	94	23	0	573
12:00 PM		35	81	11	0	35	127	27	0	19	96	73	0	10	87	15	0	616
12:15 PM		50	61	16	0	36	145	22	0	24	80	75	0	13	77	25	0	624
12:30 PM		52	96	15	0	29	190	26	1	29	94	69	0	17	103	25	0	746
12:45 PM		63	69	17	0	47	148	29	0	27	118	64	0	12	87	17	0	698
1:00 PM		55	71	10	0	40	105	20	0	24	115	77	0	11	79	18	0	625
1:15 PM		42	82	15	0	17	118	18	0	31	77	72	1	14	53	24	0	564
1:30 PM		41	98	14	0	26	126	22	0	16	94	70	0	9	92	24	0	632
1:45 PM		38	77	13	0	33	130	23	0	20	88	76	0	9	94	19	0	620
2:00 PM		44	78	12	0	21	121	19	1	29	80	57	0	12	69	20	0	563
2:15 PM		40	81	10	0	26	106	23	0	27	85	51	2	7	67	31	0	556
2:30 PM		33	74	13	0	28	121	20	0	18	102	60	0	14	80	32	0	595
2:45 PM		29	71	18	0	23	119	22	1	27	83	71	0	15	105	16	0	600
TOTAL VOLUMES :		680	1216	223	0	459	1975	377	6	370	1371	1010	3	195	1375	357	0	9617
APPROACH %'s :		32.09%	57.39%	10.52%	0.00%	16.29%	70.11%	13.38%	0.21%	13.44%	49.78%	36.67%	0.11%	10.12%	71.35%	18.53%	0.00%	
PEAK HR :		12:15 PM - 01:15 PM																TOTAL
PEAK HR VOL :		220	297	58	0	152	588	97	1	104	407	285	0	53	346	85	0	2693
PEAK HR FACTOR :		0.873	0.773	0.853	0.000	0.809	0.774	0.836	0.250	0.897	0.862	0.925	0.000	0.779	0.840	0.850	0.000	0.902
		0.882				0.852				0.921				0.834				

S Kraemer Blvd & E Birch St

Peak Hour Turning Movement Count

ID: 19-01101-009
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

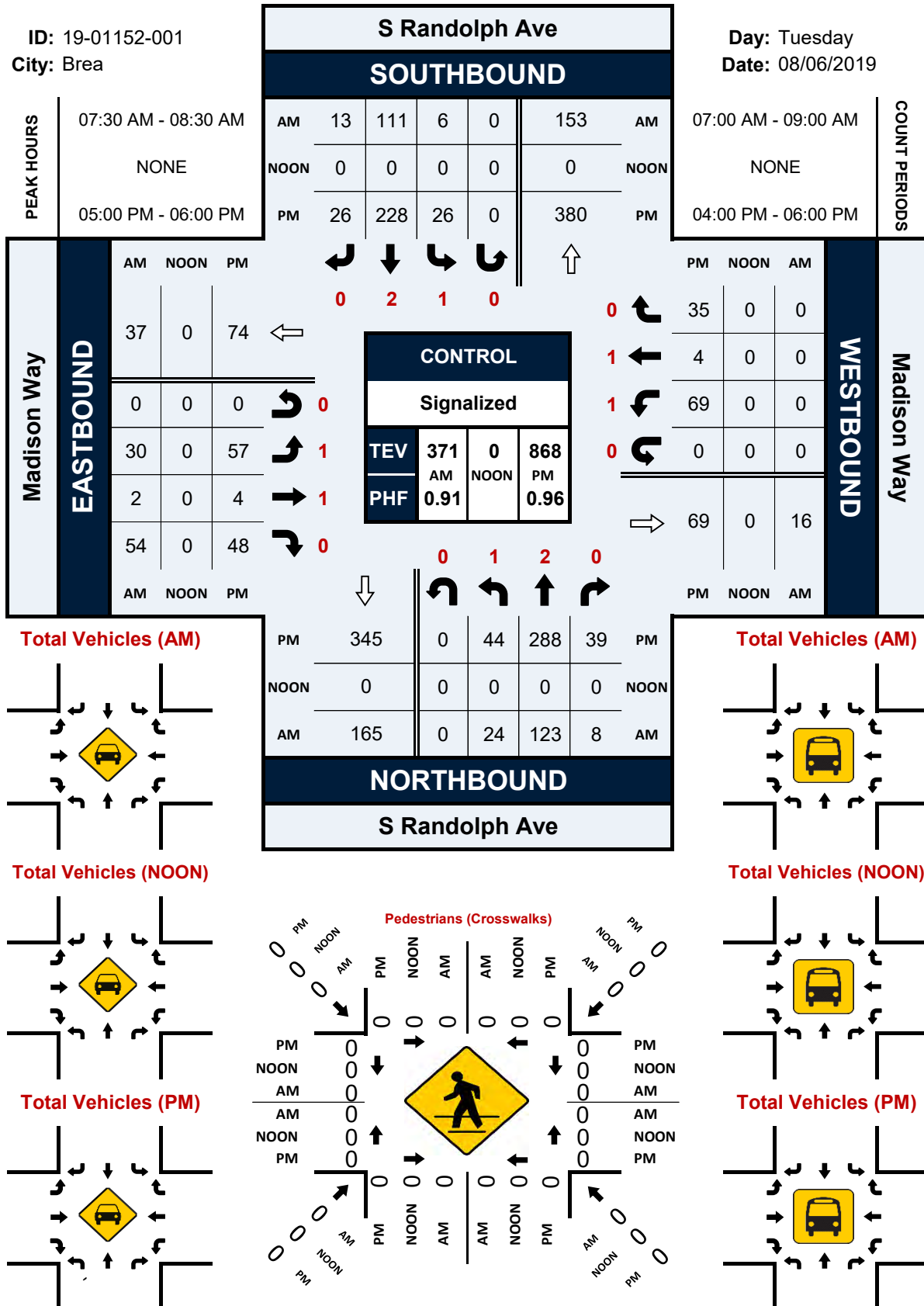
Location: S Randolph Ave & Madison Way
City: Brea
Control: Signalized

Project ID: 19-01152-001
Date: 8/6/2019

Total

NS/EW Streets:	S Randolph Ave				S Randolph Ave				Madison Way				Madison Way				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
7:00 AM	1	21	0	0	1	22	1	0	5	0	7	0	0	0	0	0	58
7:15 AM	1	26	2	0	1	34	1	0	5	0	17	0	0	0	0	0	87
7:30 AM	6	28	1	0	1	22	5	0	5	0	19	0	0	0	0	0	87
7:45 AM	11	29	3	0	1	22	0	0	11	2	23	0	0	0	0	0	102
8:00 AM	5	29	3	0	3	24	2	0	7	0	9	0	0	0	0	0	82
8:15 AM	2	37	1	0	1	43	6	0	7	0	3	0	0	0	0	0	100
8:30 AM	4	15	3	0	0	29	2	0	4	0	14	0	0	0	0	0	71
8:45 AM	10	30	2	0	0	31	5	0	8	1	11	0	0	0	0	0	98
TOTAL VOLUMES :	NL 40	NT 215	NR 15	NU 0	SL 8	ST 227	SR 22	SU 0	EL 52	ET 3	ER 103	EU 0	WL 0	WT 0	WR 0	WU 0	TOTAL 685
APPROACH %'s :	14.81%	79.63%	5.56%	0.00%	3.11%	88.33%	8.56%	0.00%	32.91%	1.90%	65.19%	0.00%					
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	24	123	8	0	6	111	13	0	30	2	54	0	0	0	0	0	371
PEAK HR FACTOR :	0.545	0.831	0.667	0.000	0.500	0.645	0.542	0.000	0.682	0.250	0.587	0.000	0.000	0.000	0.000	0.000	0.909
	0.901				0.650				0.597								
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
4:00 PM	14	66	11	0	7	45	3	0	10	1	8	0	16	2	17	0	200
4:15 PM	8	66	9	0	10	42	8	0	9	1	6	0	18	1	18	0	196
4:30 PM	10	67	10	0	8	44	6	0	8	1	7	0	11	0	18	0	190
4:45 PM	5	67	10	0	1	57	3	2	5	0	10	0	12	2	9	0	183
5:00 PM	7	76	14	0	5	61	7	0	11	1	10	0	19	0	12	0	223
5:15 PM	6	77	11	0	8	53	4	0	11	1	14	0	19	2	6	0	212
5:30 PM	15	63	9	0	7	58	6	0	22	1	16	0	20	2	8	0	227
5:45 PM	16	72	5	0	6	56	9	0	13	1	8	0	11	0	9	0	206
TOTAL VOLUMES :	NL 81	NT 554	NR 79	NU 0	SL 52	ST 416	SR 46	SU 2	EL 89	ET 7	ER 79	EU 0	WL 126	WT 9	WR 97	WU 0	TOTAL 1637
APPROACH %'s :	11.34%	77.59%	11.06%	0.00%	10.08%	80.62%	8.91%	0.39%	50.86%	4.00%	45.14%	0.00%	54.31%	3.88%	41.81%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	44	288	39	0	26	228	26	0	57	4	48	0	69	4	35	0	868
PEAK HR FACTOR :	0.688	0.935	0.696	0.000	0.813	0.934	0.722	0.000	0.648	1.000	0.750	0.000	0.863	0.500	0.729	0.000	0.956
	0.956				0.959				0.699				0.871				

Day: Tuesday
Date: 08/06/2019



National Data & Surveying Services

Intersection Turning Movement Count

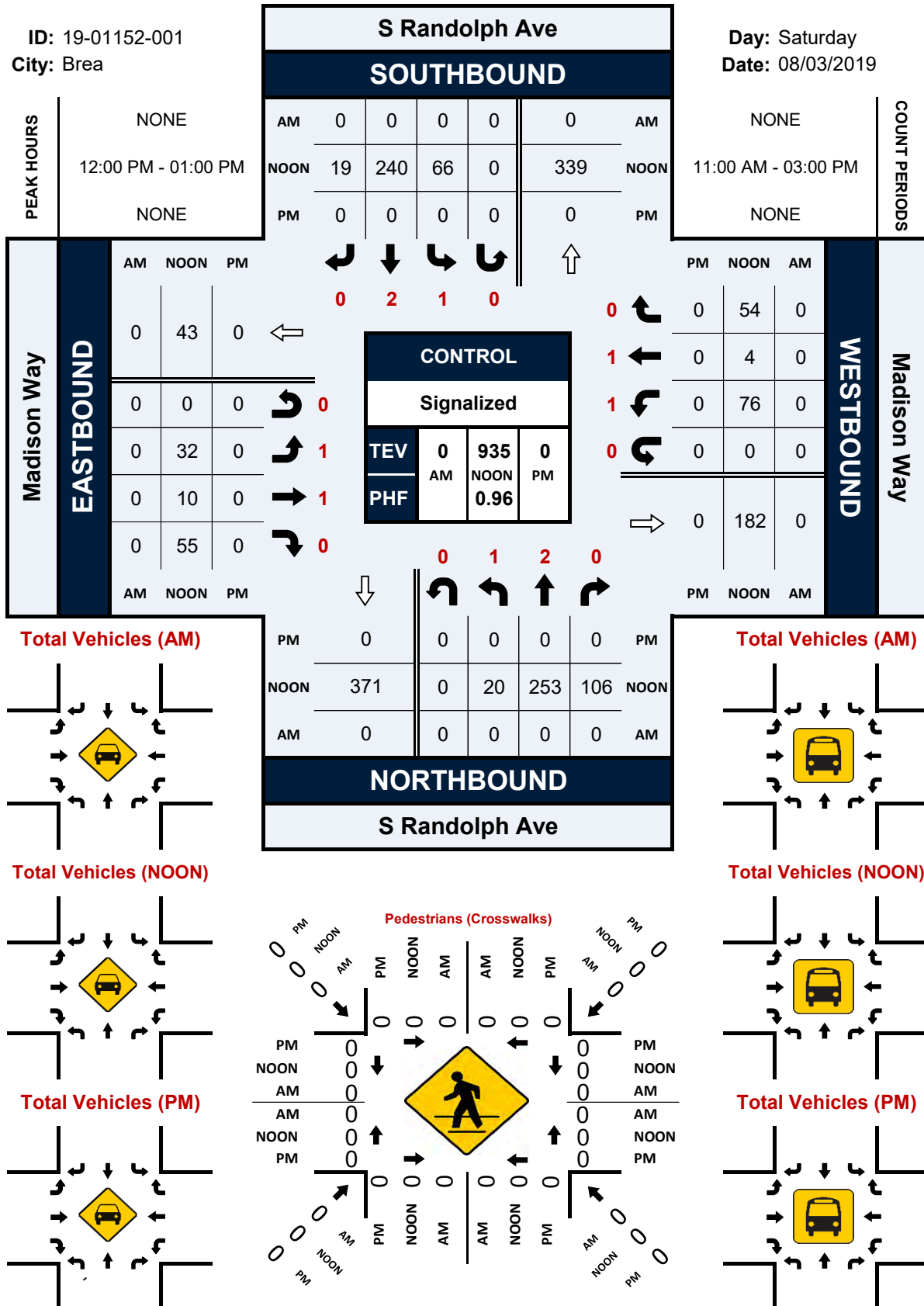
Location: S Randolph Ave & Madison Way
City: Brea
Control: Signalized

Project ID: 19-01152-001
Date: 8/3/2019

Total

NS/EW Streets:	S Randolph Ave				S Randolph Ave				Madison Way				Madison Way				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	1 ET	0 ER	0 EU	1 WL	1 WT	0 WR	0 WU	
11:00 AM	6	47	21	0	9	50	1	0	7	3	11	0	9	2	7	0	173
11:15 AM	5	53	21	0	11	55	4	0	3	2	5	0	7	0	8	0	174
11:30 AM	4	54	33	0	13	60	5	0	7	1	10	0	13	0	14	0	214
11:45 AM	10	65	30	0	14	60	5	0	9	3	11	0	14	1	7	0	229
12:00 PM	8	67	28	0	10	67	4	0	13	1	12	0	17	1	15	0	243
12:15 PM	5	68	23	0	17	69	4	0	6	1	13	0	20	1	11	0	238
12:30 PM	4	63	30	0	21	51	6	0	1	3	9	0	20	0	13	0	221
12:45 PM	3	55	25	0	18	53	5	0	12	5	21	0	19	2	15	0	233
1:00 PM	5	48	37	0	11	54	6	0	6	3	14	0	28	1	10	0	223
1:15 PM	2	69	27	0	13	47	4	0	3	0	5	0	20	4	21	0	215
1:30 PM	3	70	24	0	17	52	3	0	4	2	5	0	20	1	17	0	218
1:45 PM	1	74	36	0	14	45	1	0	12	3	16	0	22	0	19	0	243
2:00 PM	1	53	33	1	14	51	5	0	9	2	15	0	19	2	15	0	220
2:15 PM	4	53	27	0	12	39	4	1	4	3	11	0	27	0	20	0	205
2:30 PM	2	51	19	0	16	52	4	0	5	1	5	0	26	2	20	0	203
2:45 PM	5	64	30	0	9	63	6	0	2	1	6	0	17	1	18	0	222
TOTAL VOLUMES :	NL 68	NT 954	NR 444	NU 1	SL 219	ST 868	SR 67	SU 1	EL 103	ET 34	ER 169	EU 0	WL 298	WT 18	WR 230	WU 0	TOTAL 3474
APPROACH %'s :	4.64%	65.03%	30.27%	0.07%	18.96%	75.15%	5.80%	0.09%	33.66%	11.11%	55.23%	0.00%	54.58%	3.30%	42.12%	0.00%	
PEAK HR :	12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :	20	253	106	0	66	240	19	0	32	10	55	0	76	4	54	0	935
PEAK HR FACTOR :	0.625	0.930	0.883	0.000	0.786	0.870	0.792	0.000	0.615	0.500	0.655	0.000	0.950	0.500	0.900	0.000	0.962
	0.920				0.903				0.638				0.931				

Day: Saturday
Date: 08/03/2019



National Data & Surveying Services

Intersection Turning Movement Count

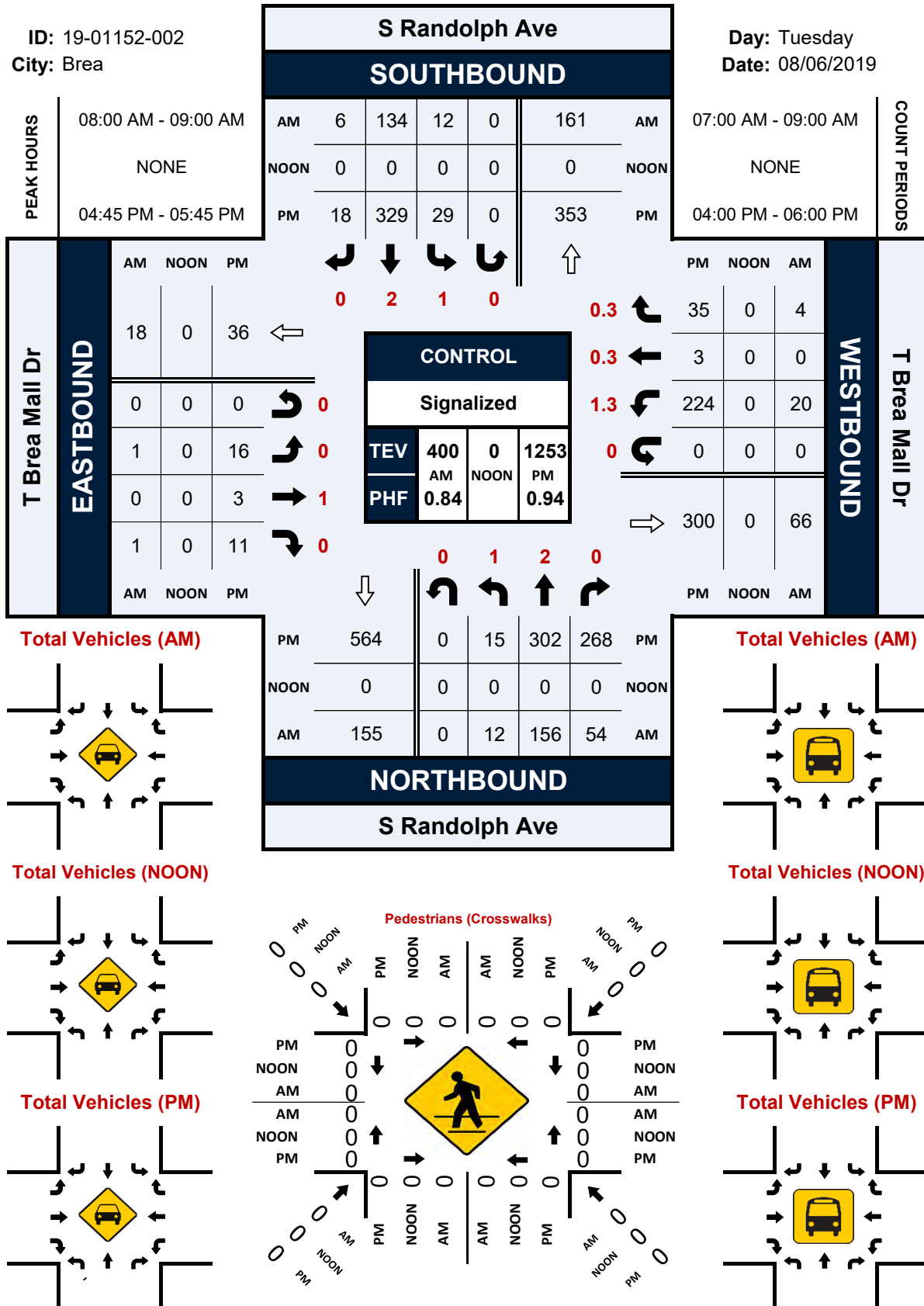
Location: S Randolph Ave & T Brea Mall Dr
City: Brea
Control: Signalized

Project ID: 19-01152-002
Date: 8/6/2019

Total

NS/EW Streets:	S Randolph Ave				S Randolph Ave				T Brea Mall Dr				T Brea Mall Dr				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	1.3 WL	0.3 WT	0.3 WR	0 WU	
7:00 AM	0	23	14	0	1	25	3	0	0	0	3	0	2	0	0	0	71
7:15 AM	0	28	7	0	0	46	1	0	0	0	0	0	1	0	0	0	83
7:30 AM	0	35	11	0	1	37	3	0	1	0	0	0	3	0	0	0	91
7:45 AM	2	45	12	0	2	40	0	0	2	2	1	0	0	0	1	0	107
8:00 AM	3	43	4	0	4	25	2	0	0	0	0	0	3	0	0	0	84
8:15 AM	1	42	15	0	0	36	3	0	0	0	0	0	1	0	2	0	100
8:30 AM	2	29	16	0	3	38	1	0	0	0	0	0	8	0	0	0	97
8:45 AM	6	42	19	0	5	35	0	0	1	0	1	0	8	0	2	0	119
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	14	287	98	0	16	282	13	0	4	2	5	0	26	0	5	0	752
	3.51%	71.93%	24.56%	0.00%	5.14%	90.68%	4.18%	0.00%	36.36%	18.18%	45.45%	0.00%	83.87%	0.00%	16.13%	0.00%	
PEAK HR :	08:00 AM - 09:00 AM				12	134	6	0	1	0	1	0	20	0	4	0	TOTAL
PEAK HR VOL :	12	156	54	0	12	134	6	0	1	0	1	0	20	0	4	0	400
PEAK HR FACTOR :	0.500	0.907	0.711	0.000	0.600	0.882	0.500	0.000	0.250	0.000	0.250	0.000	0.625	0.000	0.500	0.000	0.840
			0.828				0.905				0.250				0.600		
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	1.3 WL	0.3 WT	0.3 WR	0 WU	
4:00 PM	0	77	41	0	6	63	4	0	2	0	1	0	67	1	13	0	275
4:15 PM	7	67	63	0	3	56	1	0	3	1	1	0	45	0	15	0	262
4:30 PM	1	73	45	0	3	53	6	0	1	2	4	0	53	0	12	0	253
4:45 PM	3	64	76	0	8	75	4	0	4	2	2	0	55	1	8	0	302
5:00 PM	5	81	55	0	7	85	6	0	4	1	1	0	52	0	9	0	306
5:15 PM	1	82	70	0	5	83	2	0	3	0	5	0	53	0	8	0	312
5:30 PM	6	75	67	0	9	86	6	0	5	0	3	0	64	2	10	0	333
5:45 PM	4	75	66	0	4	65	2	0	1	0	7	0	42	1	14	0	281
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	27	594	483	0	45	566	31	0	23	6	24	0	431	5	89	0	2324
	2.45%	53.80%	43.75%	0.00%	7.01%	88.16%	4.83%	0.00%	43.40%	11.32%	45.28%	0.00%	82.10%	0.95%	16.95%	0.00%	
PEAK HR :	04:45 PM - 05:45 PM				29	329	18	0	16	3	11	0	224	3	35	0	TOTAL
PEAK HR VOL :	15	302	268	0	29	329	18	0	16	3	11	0	224	3	35	0	1253
PEAK HR FACTOR :	0.625	0.921	0.882	0.000	0.806	0.956	0.750	0.000	0.800	0.375	0.550	0.000	0.875	0.375	0.875	0.000	0.941
			0.956				0.931				0.938				0.862		

Day: Tuesday
Date: 08/06/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Randolph Ave & T Brea Mall Dr
City: Brea
Control: Signalized

Project ID: 19-01152-002
Date: 8/3/2019

Total

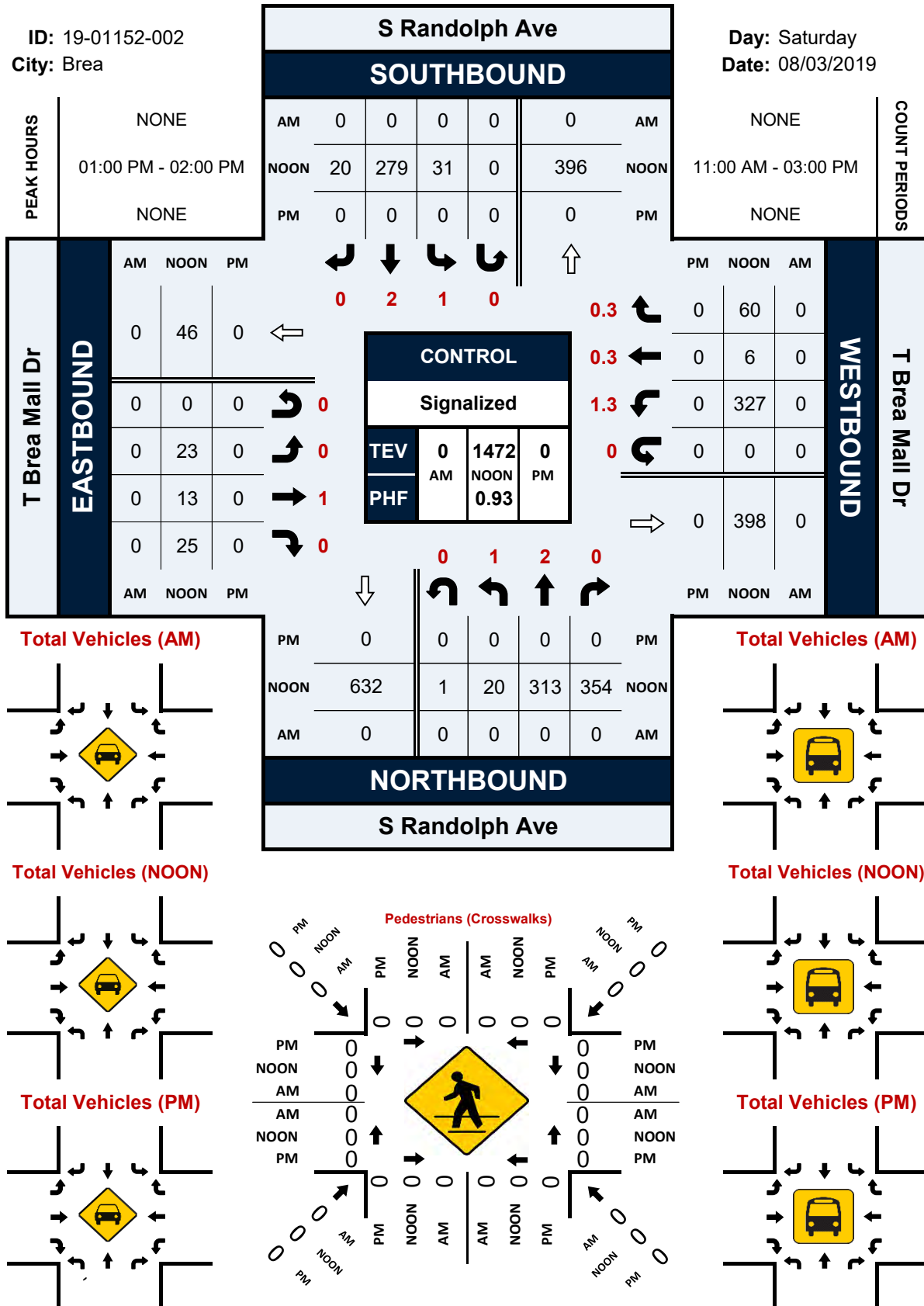
NS/EW Streets:	S Randolph Ave				S Randolph Ave				T Brea Mall Dr				T Brea Mall Dr				
NOON	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	0 EL	1 ET	0 ER	0 EU	1.3 WL	0.3 WT	0.3 WR	0 WU	
11:00 AM	11	61	71	0	4	60	6	0	5	1	3	0	42	0	7	0	271
11:15 AM	8	67	67	0	6	56	9	0	4	3	4	0	36	0	10	1	271
11:30 AM	16	78	84	1	8	66	7	0	8	1	6	0	43	0	10	0	328
11:45 AM	5	88	84	1	9	75	3	0	9	3	9	0	46	2	9	1	344
12:00 PM	7	90	80	0	13	78	6	0	4	3	6	0	50	0	12	0	349
12:15 PM	9	84	69	0	14	76	12	0	4	6	4	0	40	0	11	0	329
12:30 PM	3	82	97	1	6	76	4	0	7	3	7	0	62	4	11	0	363
12:45 PM	5	64	97	0	13	78	3	0	5	1	2	0	71	0	12	0	351
1:00 PM	6	74	88	0	17	76	4	0	6	4	7	0	80	2	12	0	376
1:15 PM	6	78	86	0	4	67	5	0	6	5	4	0	73	3	13	0	350
1:30 PM	1	83	86	0	6	64	1	0	5	2	6	0	84	0	13	0	351
1:45 PM	7	78	94	1	4	72	10	0	6	2	8	0	90	1	22	0	395
2:00 PM	8	73	77	0	8	75	5	0	5	1	4	0	80	1	13	0	350
2:15 PM	3	65	69	0	9	56	8	0	2	3	2	0	84	2	15	0	318
2:30 PM	11	66	66	0	11	72	6	0	4	2	3	0	86	0	5	0	332
2:45 PM	12	74	79	0	10	69	7	0	4	1	5	0	77	4	25	0	367
TOTAL VOLUMES :	NL 118	NT 1205	NR 1294	NU 4	SL 142	ST 1116	SR 96	SU 0	EL 84	ET 41	ER 80	EU 0	WL 1044	WT 19	WR 200	WU 2	TOTAL 5445
APPROACH %'s :	4.50%	45.97%	49.37%	0.15%	10.49%	82.42%	7.09%	0.00%	40.98%	20.00%	39.02%	0.00%	82.53%	1.50%	15.81%	0.16%	
PEAK HR :	01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :	20	313	354	1	31	279	20	0	23	13	25	0	327	6	60	0	1472
PEAK HR FACTOR :	0.714	0.943	0.941	0.250	0.456	0.918	0.500	0.000	0.958	0.650	0.781	0.000	0.908	0.500	0.682	0.000	0.932
	0.956				0.851				0.897				0.869				

S Randolph Ave & T Brea Mall Dr

Peak Hour Turning Movement Count

ID: 19-01152-002
City: Brea

Day: Saturday
Date: 08/03/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brea Mall S Dwy & S State College Blvd
City: Brea
Control: Signalized

Project ID: 19-01152-003
Date: 8/6/2019

Total

NS/EW Streets:		Brea Mall S Dwy				Brea Mall S Dwy				S State College Blvd				S State College Blvd				
AM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1.5 NL	0.5 NT	1 NR	0 NU	0.5 SL	1.5 ST	1 SR	0 SU	2 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU		
	7:00 AM	4	0	3	0	0	0	1	0	4	35	0	1	3	80	1	0	132
	7:15 AM	6	0	3	0	0	0	0	0	10	35	0	0	6	109	0	0	169
	7:30 AM	9	0	5	0	0	0	4	0	6	51	1	0	3	74	0	0	153
	7:45 AM	5	0	1	0	0	0	0	0	10	69	0	1	1	95	1	0	183
	8:00 AM	8	0	0	0	1	0	9	0	14	58	1	0	4	68	1	0	164
	8:15 AM	5	1	3	0	0	0	2	0	10	58	4	0	5	81	2	0	171
	8:30 AM	6	2	3	0	1	1	5	0	16	43	5	0	9	76	3	0	170
	8:45 AM	11	2	8	0	0	1	2	0	18	69	4	0	8	79	3	0	205
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		54	5	26	0	2	2	23	0	88	418	15	2	39	662	11	0	1347
		63.53%	5.88%	30.59%	0.00%	7.41%	7.41%	85.19%	0.00%	16.83%	79.92%	2.87%	0.38%	5.48%	92.98%	1.54%	0.00%	
PEAK HR :		08:00 AM - 09:00 AM																TOTAL
PEAK HR VOL :		30	5	14	0	2	2	18	0	58	228	14	0	26	304	9	0	710
PEAK HR FACTOR :		0.682	0.625	0.438	0.000	0.500	0.500	0.500	0.000	0.806	0.826	0.700	0.000	0.722	0.938	0.750	0.000	0.866
		0.583				0.550				0.824				0.942				

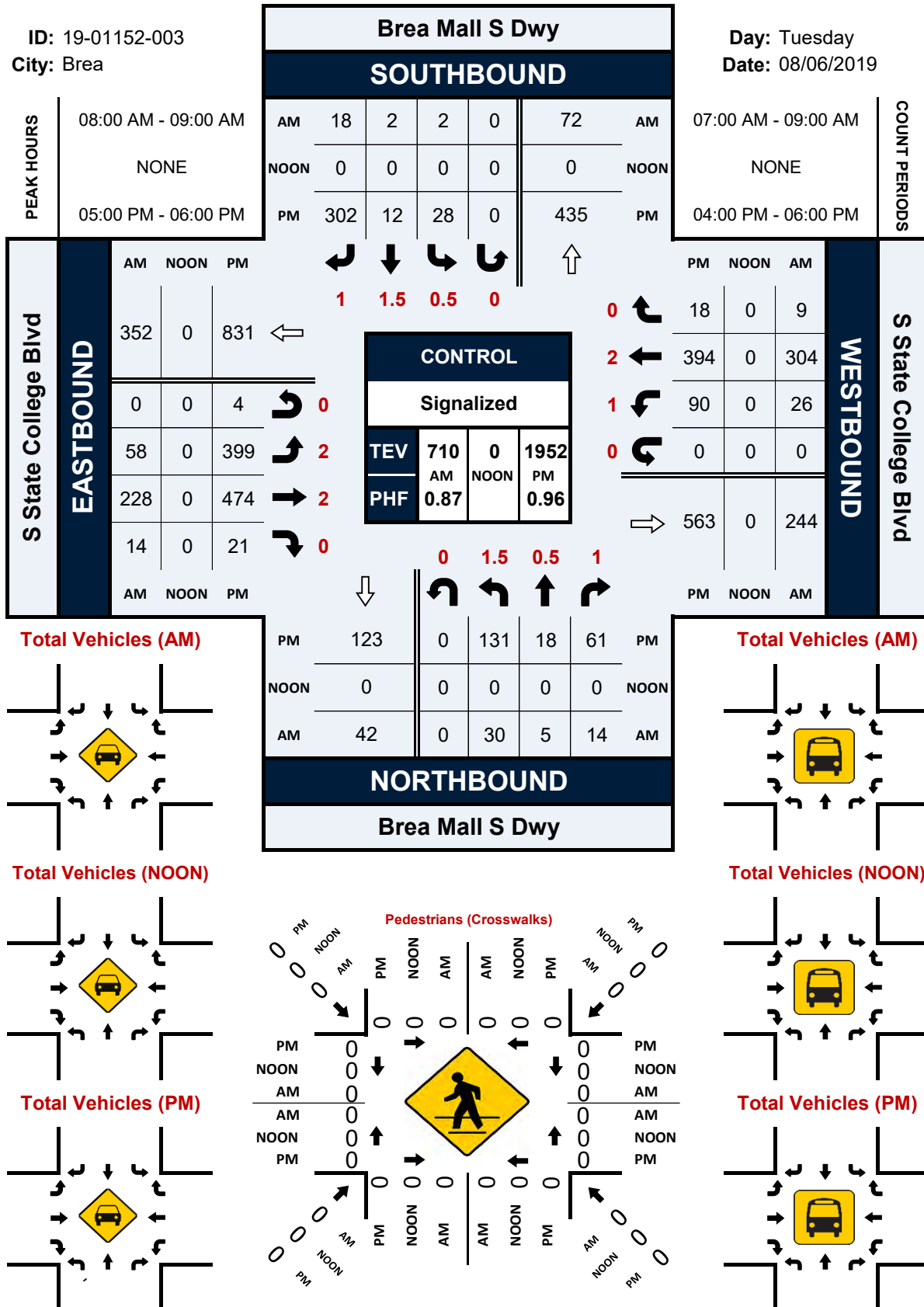
PM		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1.5 NL	0.5 NT	1 NR	0 NU	0.5 SL	1.5 ST	1 SR	0 SU	2 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU		
	4:00 PM	23	0	15	0	6	3	65	0	77	90	4	2	19	84	0	2	390
	4:15 PM	35	1	24	0	5	2	76	0	79	90	5	0	18	107	6	1	449
	4:30 PM	26	7	18	0	9	4	78	0	80	105	3	1	16	106	5	0	458
	4:45 PM	33	1	24	0	10	4	60	0	96	99	1	1	17	89	4	2	441
	5:00 PM	35	3	14	0	9	4	82	0	94	100	5	0	25	96	3	0	470
	5:15 PM	36	3	16	0	3	3	68	0	88	126	7	0	21	112	5	0	488
	5:30 PM	36	7	20	0	7	3	74	0	96	117	4	3	21	94	3	0	485
	5:45 PM	24	5	11	0	9	2	78	0	121	131	5	1	23	92	7	0	509
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		248	27	142	0	58	25	581	0	731	858	34	8	160	780	33	5	3690
		59.47%	6.47%	34.05%	0.00%	8.73%	3.77%	87.50%	0.00%	44.82%	52.61%	2.08%	0.49%	16.36%	79.75%	3.37%	0.51%	
PEAK HR :		05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :		131	18	61	0	28	12	302	0	399	474	21	4	90	394	18	0	1952
PEAK HR FACTOR :		0.910	0.643	0.763	0.000	0.778	0.750	0.921	0.000	0.824	0.905	0.750	0.333	0.900	0.879	0.643	0.000	0.959
		0.833				0.900				0.870				0.909				

Brea Mall S Dwy & S State College Blvd

Peak Hour Turning Movement Count

ID: 19-01152-003
City: Brea

Day: Tuesday
Date: 08/06/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brea Mall S Dwy & S State College Blvd
City: Brea
Control: Signalized

Project ID: 19-01152-003
Date: 8/3/2019

Total

NS/EW Streets:		Brea Mall S Dwy				Brea Mall S Dwy				S State College Blvd				S State College Blvd				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1.5 NL	0.5 NT	1 NR	0 NU	0.5 SL	1.5 ST	1 SR	0 SU	2 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
11:00 AM		30	5	22	0	4	7	51	1	107	92	10	1	25	81	6	0	442
11:15 AM		30	6	9	0	5	1	46	1	110	80	4	2	17	87	6	0	404
11:30 AM		34	5	18	0	3	7	65	0	126	80	5	1	31	84	7	0	466
11:45 AM		37	6	18	0	4	4	63	0	148	96	11	1	25	87	5	0	505
12:00 PM		37	10	22	0	4	8	60	0	137	96	11	0	24	112	9	0	530
12:15 PM		59	9	17	0	4	4	76	0	109	88	15	1	25	113	7	1	528
12:30 PM		35	12	21	0	8	6	70	0	143	92	6	1	23	143	6	0	566
12:45 PM		42	9	26	0	8	4	92	0	122	80	6	1	27	98	6	1	522
1:00 PM		44	9	20	0	9	3	84	0	133	79	7	0	20	125	6	0	539
1:15 PM		33	6	15	0	3	4	83	0	115	97	6	0	18	100	5	0	485
1:30 PM		37	6	24	0	11	5	95	0	133	79	11	1	19	138	6	0	565
1:45 PM		54	8	19	0	15	7	110	0	148	90	4	0	16	115	7	1	594
2:00 PM		38	8	21	0	9	7	93	0	134	87	9	0	24	124	2	0	556
2:15 PM		38	2	16	0	8	3	123	0	136	84	5	4	19	161	5	1	605
2:30 PM		30	5	30	0	9	1	96	0	124	79	10	0	20	156	7	1	568
2:45 PM		43	2	9	0	12	4	99	0	128	85	3	1	21	119	8	0	534
TOTAL VOLUMES :		NL 621	NT 108	NR 307	NU 0	SL 116	ST 75	SR 1306	SU 2	EL 2053	ET 1384	ER 123	EU 14	WL 354	WT 1843	WR 98	WU 5	TOTAL 8409
APPROACH %'s :		59.94%	10.42%	29.63%	0.00%	7.74%	5.00%	87.12%	0.13%	57.44%	38.72%	3.44%	0.39%	15.39%	80.13%	4.26%	0.22%	
PEAK HR :		01:45 PM - 02:45 PM																TOTAL
PEAK HR VOL :		160	23	86	0	41	18	422	0	542	340	28	4	79	556	21	3	2323
PEAK HR FACTOR :		0.741	0.719	0.717	0.000	0.683	0.643	0.858	0.000	0.916	0.944	0.700	0.250	0.823	0.863	0.750	0.750	0.960
		0.830				0.897				0.944				0.886				

Date: 08/03/2019

B-62
F-276

National Data & Surveying Services

Intersection Turning Movement Count

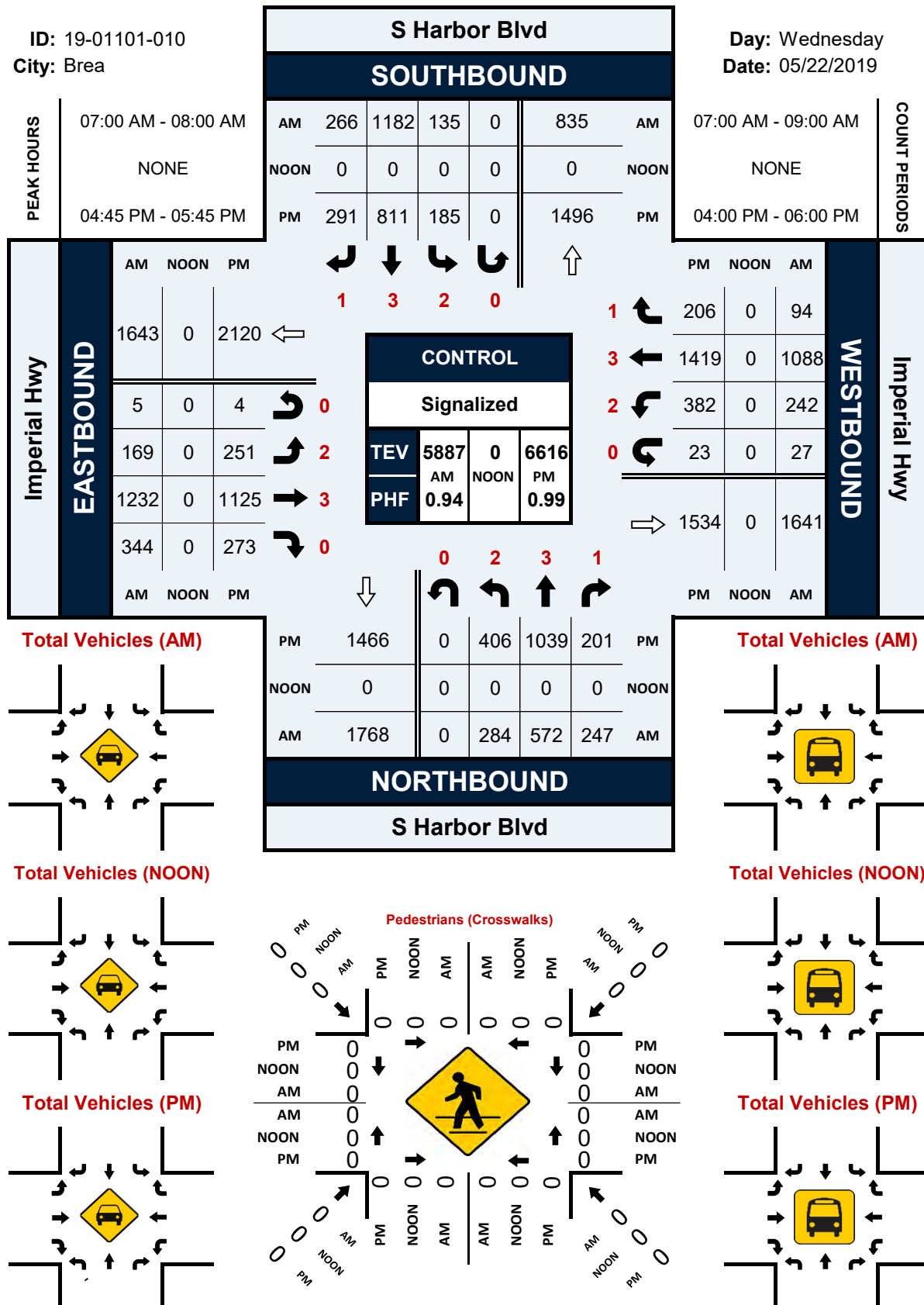
Location: S Harbor Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-010
Date: 5/22/2019

Total

NS/EW Streets:	S Harbor Blvd				S Harbor Blvd				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
7:00 AM	61	148	49	0	37	293	56	0	34	277	79	0	52	273	22	4	1385
7:15 AM	56	120	41	0	26	331	54	0	40	295	84	0	64	283	18	5	1417
7:30 AM	76	145	72	0	31	300	65	0	49	352	103	3	62	271	25	11	1565
7:45 AM	91	159	85	0	41	258	91	0	46	308	78	2	64	261	29	7	1520
8:00 AM	69	163	49	0	43	234	72	0	50	273	80	1	61	262	21	6	1384
8:15 AM	61	141	47	0	52	277	71	0	52	248	86	4	62	208	26	6	1341
8:30 AM	75	130	38	0	34	259	49	0	43	251	82	0	64	222	23	8	1278
8:45 AM	73	137	62	0	52	262	71	0	29	236	84	0	43	188	26	3	1266
TOTAL VOLUMES :	NL 562	NT 1143	NR 443	NU 0	SL 316	ST 2214	SR 529	SU 0	EL 343	ET 2240	ER 676	EU 10	WL 472	WT 1968	WR 190	WU 50	TOTAL 11156
APPROACH %'s :	26.16%	53.21%	20.62%	0.00%	10.33%	72.38%	17.29%	0.00%	10.49%	68.52%	20.68%	0.31%	17.61%	73.43%	7.09%	1.87%	
PEAK HR :	07:00 AM - 08:00 AM																TOTAL
PEAK HR VOL :	284	572	247	0	135	1182	266	0	169	1232	344	5	242	1088	94	27	5887
PEAK HR FACTOR :	0.780	0.899	0.726	0.000	0.823	0.893	0.731	0.000	0.862	0.875	0.835	0.417	0.945	0.961	0.810	0.614	0.940
	0.823				0.963				0.863				0.980				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
4:00 PM	76	248	50	0	36	183	31	0	65	270	69	0	94	341	54	5	1522
4:15 PM	97	285	44	0	43	200	67	0	58	282	49	0	58	299	57	4	1543
4:30 PM	102	253	59	0	29	217	50	0	70	259	75	3	111	347	56	5	1636
4:45 PM	93	273	54	0	40	212	57	0	67	289	71	1	83	361	45	4	1650
5:00 PM	92	266	48	0	48	201	76	0	60	266	72	0	89	352	63	4	1637
5:15 PM	103	284	44	0	45	190	78	0	63	263	64	0	108	369	53	7	1671
5:30 PM	118	216	55	0	52	208	80	0	61	307	66	3	102	337	45	8	1658
5:45 PM	99	210	70	0	49	199	50	0	44	279	76	1	64	363	47	5	1556
TOTAL VOLUMES :	NL 780	NT 2035	NR 424	NU 0	SL 342	ST 1610	SR 489	SU 0	EL 488	ET 2215	ER 542	EU 8	WL 709	WT 2769	WR 420	WU 42	TOTAL 12873
APPROACH %'s :	24.08%	62.83%	13.09%	0.00%	14.01%	65.96%	20.03%	0.00%	15.00%	68.09%	16.66%	0.25%	17.99%	70.28%	10.66%	1.07%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	406	1039	201	0	185	811	291	0	251	1125	273	4	382	1419	206	23	6616
PEAK HR FACTOR :	0.860	0.915	0.914	0.000	0.889	0.956	0.909	0.000	0.937	0.916	0.948	0.333	0.884	0.961	0.817	0.719	0.990
	0.955				0.946				0.946				0.945				

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Harbor Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-010
Date: 5/18/2019

Total

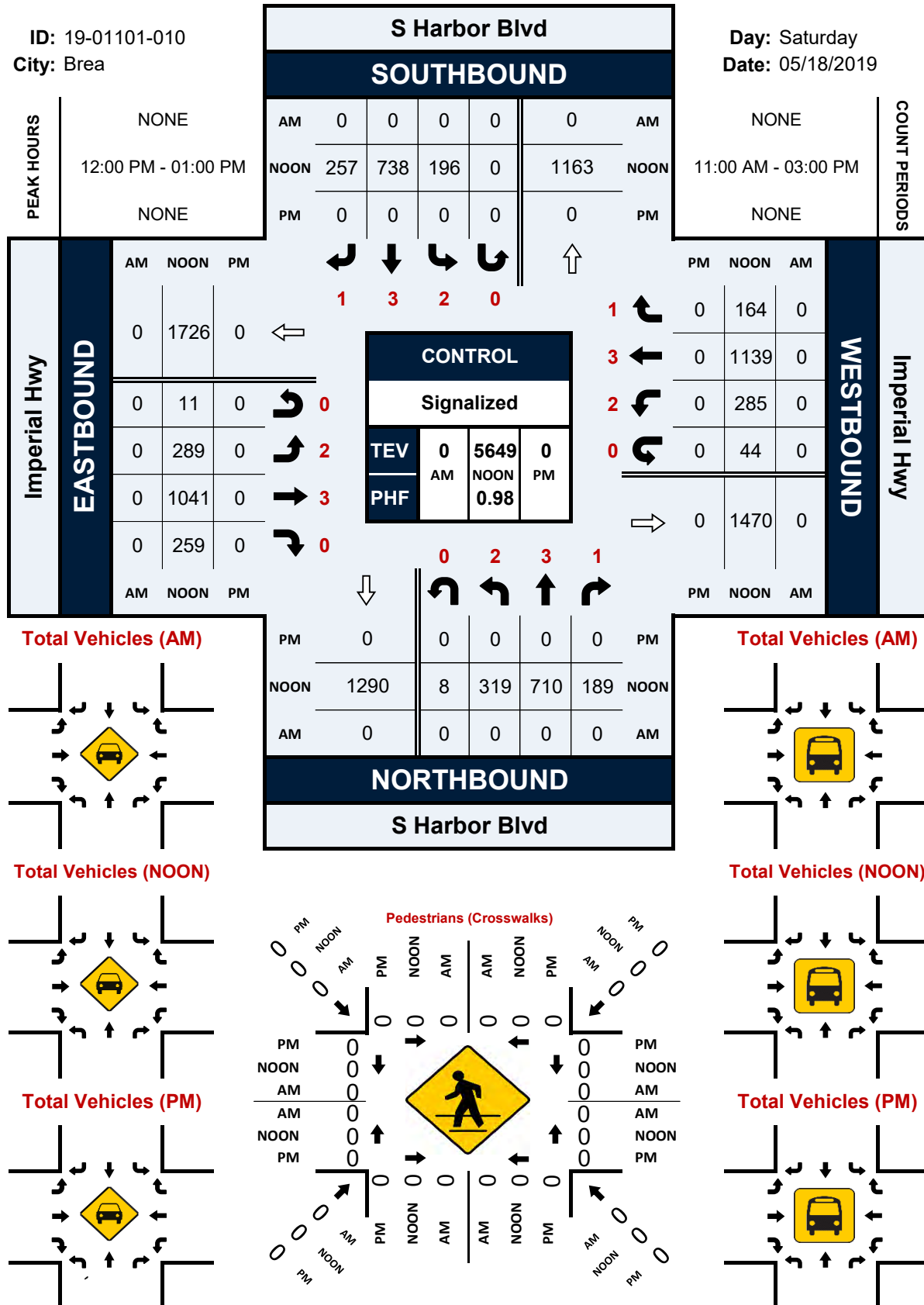
NS/EW Streets:		S Harbor Blvd				S Harbor Blvd				Imperial Hwy				Imperial Hwy				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		2 NL	3 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	3 WT	1 WR	0 WU	TOTAL
	11:00 AM	63	159	29	0	46	148	61	0	80	247	55	1	62	193	29	1	1174
	11:15 AM	96	133	57	0	40	146	66	0	64	250	70	5	76	187	36	9	1235
	11:30 AM	78	132	41	0	52	179	60	0	58	223	60	3	43	192	39	6	1166
	11:45 AM	74	154	50	0	49	170	63	1	68	271	63	1	62	220	46	9	1301
	12:00 PM	72	173	53	1	46	176	66	0	81	259	66	6	71	288	49	17	1424
	12:15 PM	83	193	55	7	52	170	72	0	72	251	68	2	67	296	31	18	1437
	12:30 PM	87	162	42	0	47	205	57	0	68	278	64	1	80	287	38	3	1419
	12:45 PM	77	182	39	0	51	187	62	0	68	253	61	2	67	268	46	6	1369
	1:00 PM	85	181	43	1	47	184	55	0	59	225	51	2	62	227	43	9	1274
	1:15 PM	60	150	55	0	47	220	48	1	66	266	55	2	59	239	42	6	1316
	1:30 PM	74	146	33	0	51	207	66	2	68	223	58	3	79	247	41	8	1306
	1:45 PM	76	160	45	0	45	187	75	0	75	240	65	1	76	285	50	3	1383
	2:00 PM	61	169	34	1	49	206	57	0	72	254	55	1	52	258	39	7	1315
	2:15 PM	77	175	49	0	45	177	52	1	65	221	71	1	60	262	48	6	1310
	2:30 PM	79	181	46	0	47	217	51	0	65	253	67	0	50	267	35	6	1364
	2:45 PM	71	152	42	0	53	174	56	0	46	231	62	3	49	314	37	8	1298
TOTAL VOLUMES :		1213	2602	713	10	767	2953	967	5	1075	3945	991	34	1015	4030	649	122	TOTAL
APPROACH %'s :		26.73%	57.34%	15.71%	0.22%	16.35%	62.94%	20.61%	0.11%	17.78%	65.26%	16.39%	0.56%	17.45%	69.29%	11.16%	2.10%	21091
PEAK HR :		12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :		319	710	189	8	196	738	257	0	289	1041	259	11	285	1139	164	44	5649
PEAK HR FACTOR :		0.917	0.920	0.859	0.286	0.942	0.900	0.892	0.000	0.892	0.936	0.952	0.458	0.891	0.962	0.837	0.611	0.983
		0.907				0.964				0.971				0.960				

S Harbor Blvd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-010
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Puente St & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-011
Date: 5/22/2019

Total

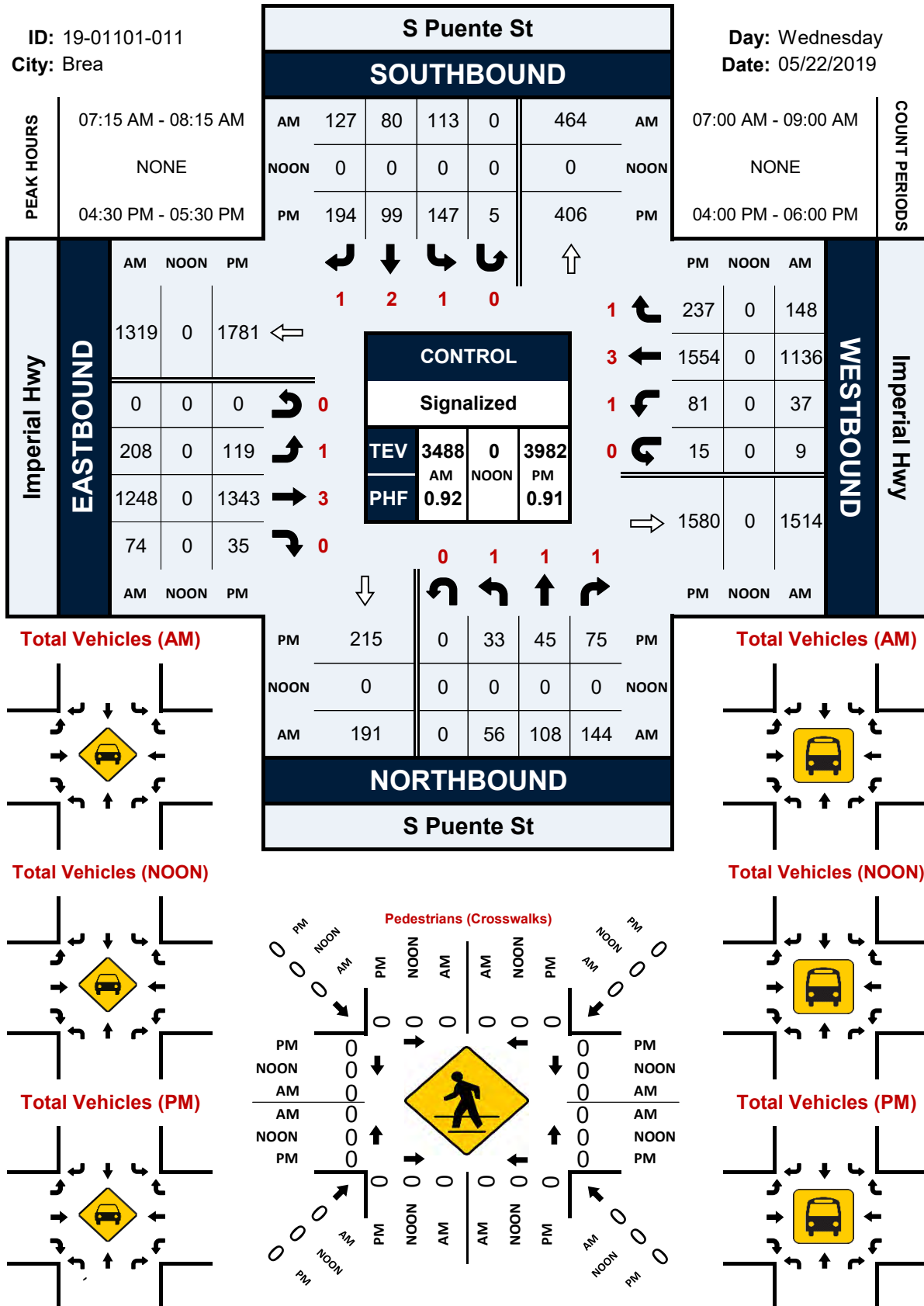
NS/EW Streets:	S Puente St				S Puente St				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	3 WT	1 WR	0 WU	
7:00 AM	7	13	24	0	23	7	36	2	39	274	1	0	12	238	32	3	711
7:15 AM	8	21	33	0	24	13	34	0	36	298	12	0	3	294	34	3	813
7:30 AM	14	20	50	0	24	25	36	0	43	350	13	0	17	264	31	0	887
7:45 AM	13	34	29	0	34	30	30	0	81	324	34	0	13	289	42	0	953
8:00 AM	21	33	32	0	31	12	27	0	48	276	15	0	4	289	41	6	835
8:15 AM	16	16	16	0	36	9	25	1	40	305	6	0	17	246	32	2	767
8:30 AM	10	18	19	0	21	9	27	0	14	297	2	0	12	242	29	2	702
8:45 AM	10	7	17	0	32	10	30	0	24	266	6	0	12	215	33	1	663
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	99	162	220	0	225	115	245	3	325	2390	89	0	90	2077	274	17	6331
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	56	108	144	0	113	80	127	0	208	1248	74	0	37	1136	148	9	3488
PEAK HR FACTOR :	0.667	0.794	0.720	0.000	0.831	0.667	0.882	0.000	0.642	0.891	0.544	0.000	0.544	0.966	0.881	0.375	0.915
	0.895				0.851				0.871				0.967				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	1 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	3 WT	1 WR	0 WU	
4:00 PM	9	10	15	0	40	20	52	1	29	335	6	0	20	403	48	7	995
4:15 PM	6	13	20	0	25	13	34	0	23	334	4	0	31	394	70	3	970
4:30 PM	7	9	15	0	26	33	45	2	39	339	8	0	18	375	51	2	969
4:45 PM	9	13	20	0	38	17	40	0	22	329	5	0	24	368	52	8	945
5:00 PM	8	8	16	0	51	30	83	2	25	343	14	0	29	429	54	3	1095
5:15 PM	9	15	24	0	32	19	26	1	33	332	8	0	10	382	80	2	973
5:30 PM	5	7	19	0	21	22	35	0	37	316	10	0	8	355	79	1	915
5:45 PM	6	13	18	0	24	14	29	0	28	313	6	0	18	407	74	0	950
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	59	88	147	0	257	168	344	6	236	2641	61	0	158	3113	508	26	7812
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	33	45	75	0	147	99	194	5	119	1343	35	0	81	1554	237	15	3982
PEAK HR FACTOR :	0.917	0.750	0.781	0.000	0.721	0.750	0.584	0.625	0.763	0.979	0.625	0.000	0.698	0.906	0.741	0.469	0.909
	0.797				0.670				0.970				0.916				

S Puente St & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-011
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

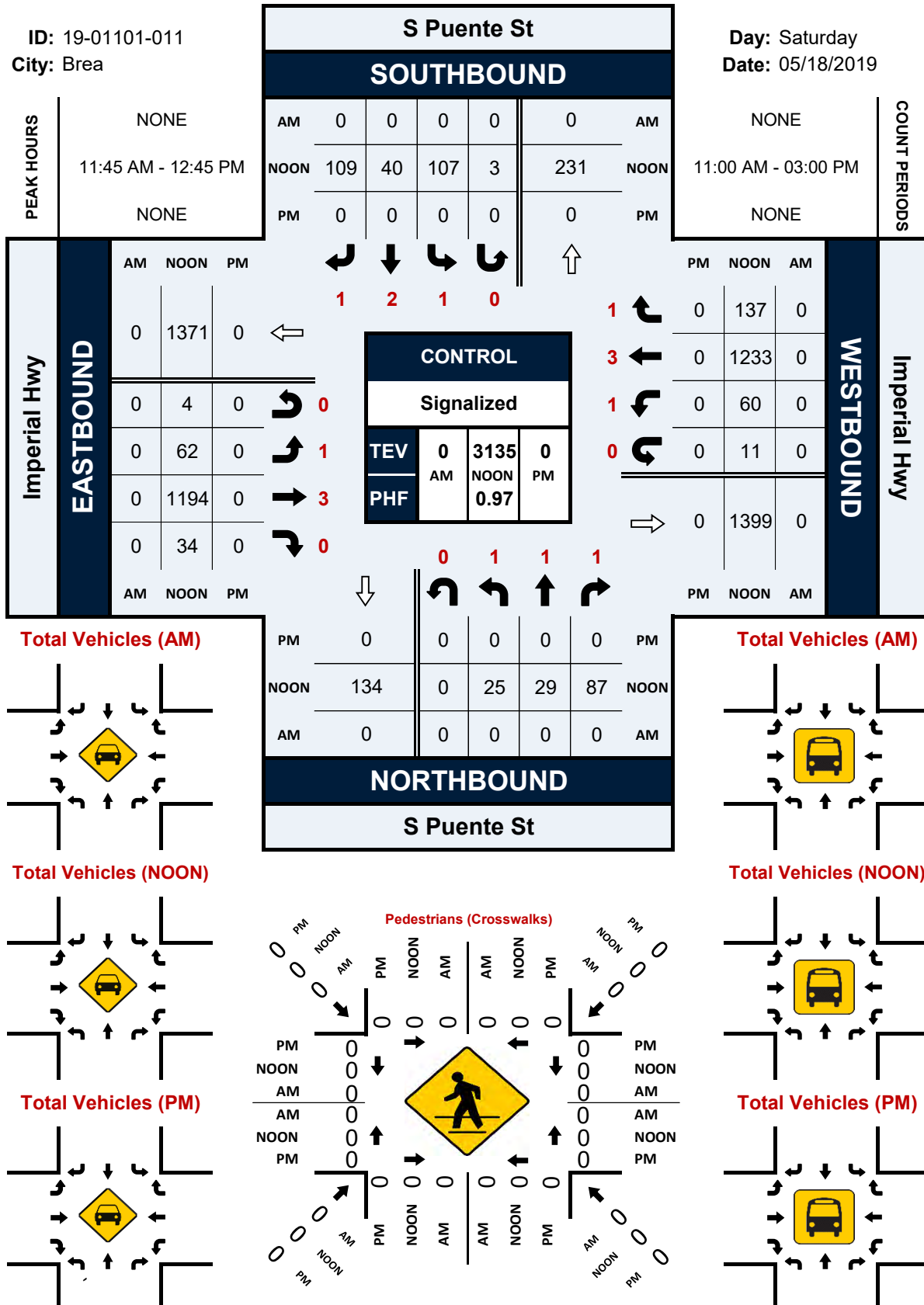
Location: S Puente St & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-011
Date: 5/18/2019

Total

NS/EW Streets:		S Puente St				S Puente St				Imperial Hwy				Imperial Hwy				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	1 NT	1 NR	0 NU	1 SL	2 ST	1 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	3 WT	1 WR	0 WU	
11:00 AM		10	11	34	0	19	11	13	1	10	243	9	1	18	210	19	1	610
11:15 AM		7	9	37	0	32	13	17	0	15	271	8	0	13	240	24	2	688
11:30 AM		6	9	18	0	24	8	27	0	30	247	9	0	22	190	27	1	618
11:45 AM		11	5	27	0	18	13	26	1	17	298	10	2	13	277	29	1	748
12:00 PM		5	7	15	0	34	13	36	1	17	296	11	0	12	309	25	2	783
12:15 PM		4	10	26	0	25	6	18	0	17	295	6	2	20	328	43	4	804
12:30 PM		5	7	19	0	30	8	29	1	11	305	7	0	15	319	40	4	800
12:45 PM		7	7	22	0	17	11	25	0	16	296	6	1	11	273	23	2	717
1:00 PM		6	7	19	0	29	10	20	0	14	271	6	0	11	303	23	2	721
1:15 PM		5	4	24	0	14	6	11	0	27	294	2	0	11	300	21	3	722
1:30 PM		4	6	11	0	29	8	29	0	18	293	3	1	6	296	24	2	730
1:45 PM		10	12	22	0	22	10	19	0	14	273	5	0	14	319	17	2	739
2:00 PM		6	11	28	0	14	18	26	0	11	274	13	1	22	303	27	2	756
2:15 PM		11	6	18	0	27	8	22	0	19	259	10	1	12	288	31	0	712
2:30 PM		7	9	17	0	22	13	30	0	16	289	9	2	19	300	24	2	759
2:45 PM		11	11	21	0	24	13	24	0	8	259	4	2	13	281	15	2	688
TOTAL VOLUMES :		NL 115	NT 131	NR 358	NU 0	SL 380	ST 169	SR 372	SU 4	EL 260	ET 4463	ER 118	EU 13	WL 232	WT 4536	WR 412	WU 32	TOTAL 11595
APPROACH %'s :		19.04%	21.69%	59.27%	0.00%	41.08%	18.27%	40.22%	0.43%	5.36%	91.94%	2.43%	0.27%	4.45%	87.03%	7.90%	0.61%	
PEAK HR :		11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :		25	29	87	0	107	40	109	3	62	1194	34	4	60	1233	137	11	3135
PEAK HR FACTOR :		0.568	0.725	0.806	0.000	0.787	0.769	0.757	0.750	0.912	0.979	0.773	0.500	0.750	0.940	0.797	0.688	0.975
		0.820				0.771				0.989				0.912				

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Brea Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-012
Date: 5/22/2019

Total

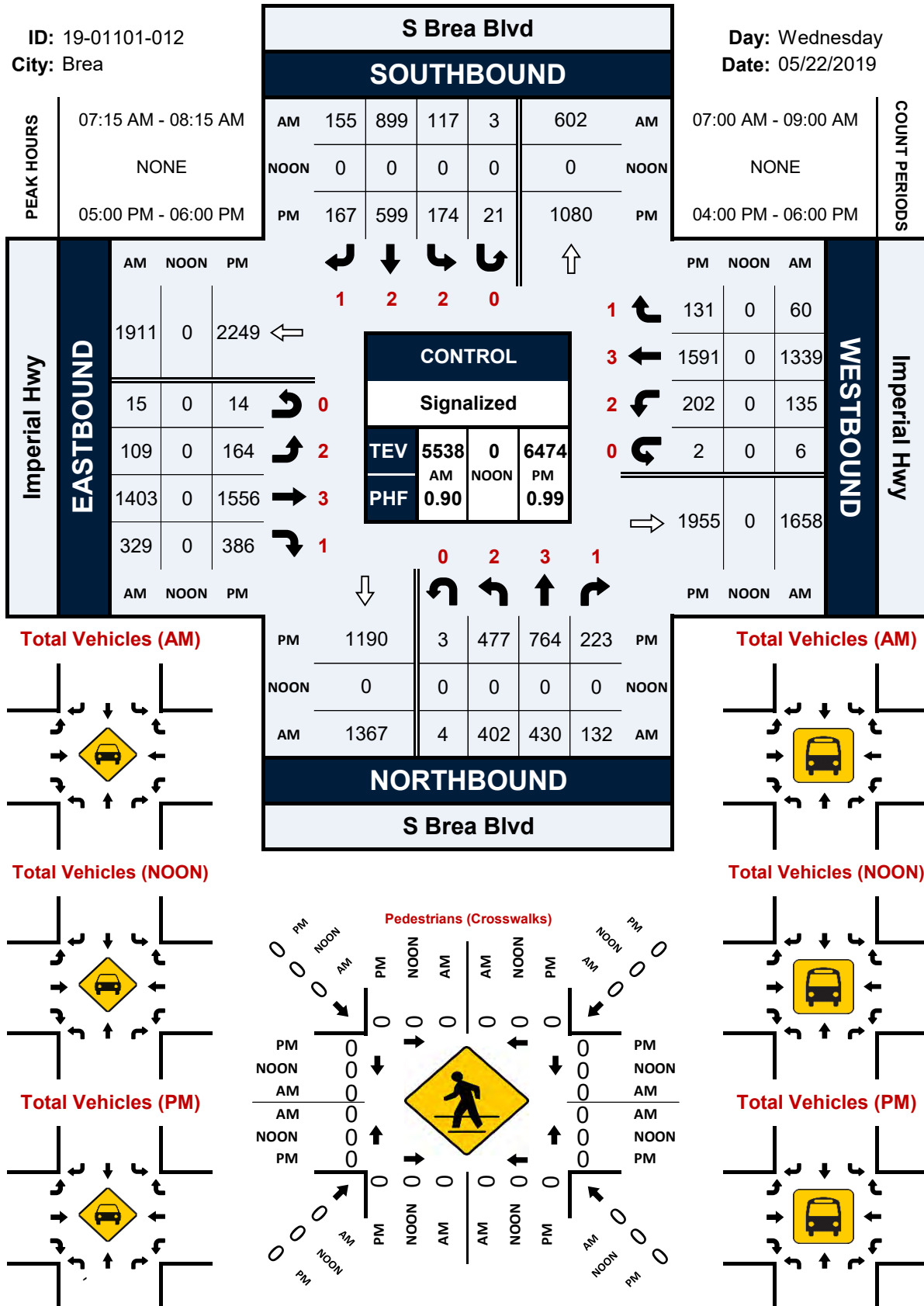
NS/EW Streets:	S Brea Blvd				S Brea Blvd				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	3 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
7:00 AM	60	60	33	0	25	214	27	1	6	309	64	1	29	280	10	0	1119
7:15 AM	89	70	21	1	17	237	36	0	17	342	46	5	37	333	10	1	1262
7:30 AM	106	99	39	3	28	222	32	1	28	388	84	4	25	331	12	0	1402
7:45 AM	122	145	37	0	34	206	50	2	31	359	102	2	42	380	19	2	1533
8:00 AM	85	116	35	0	38	234	37	0	33	314	97	4	31	295	19	3	1341
8:15 AM	81	94	34	1	31	228	41	5	20	340	66	2	30	272	15	0	1260
8:30 AM	74	110	38	1	33	234	37	1	16	330	61	1	39	248	16	0	1239
8:45 AM	84	96	57	1	36	216	30	2	25	244	89	3	42	279	15	1	1220
TOTAL VOLUMES :	NL 701	NT 790	NR 294	NU 7	SL 242	ST 1791	SR 290	SU 12	EL 176	ET 2626	ER 609	EU 22	WL 275	WT 2418	WR 116	WU 7	TOTAL 10376
APPROACH %'s :	39.12%	44.08%	16.41%	0.39%	10.36%	76.70%	12.42%	0.51%	5.13%	76.49%	17.74%	0.64%	9.77%	85.87%	4.12%	0.25%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	402	430	132	4	117	899	155	3	109	1403	329	15	135	1339	60	6	5538
PEAK HR FACTOR :	0.824	0.741	0.846	0.333	0.770	0.948	0.775	0.375	0.826	0.904	0.806	0.750	0.804	0.881	0.789	0.500	0.903
	0.796				0.950				0.921				0.869				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	3 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
4:00 PM	103	154	44	4	25	125	37	2	34	334	77	2	54	362	17	0	1374
4:15 PM	88	180	56	2	29	142	53	4	38	354	88	0	51	404	26	2	1517
4:30 PM	99	191	51	0	38	130	41	3	48	348	96	2	44	367	31	1	1490
4:45 PM	99	167	47	1	53	123	35	4	57	359	95	3	51	375	24	1	1494
5:00 PM	120	184	56	1	49	146	46	5	48	383	100	3	64	399	35	0	1639
5:15 PM	108	197	45	1	44	172	33	7	36	400	99	2	53	386	36	0	1619
5:30 PM	113	195	65	1	34	143	47	1	38	379	85	1	55	395	26	1	1579
5:45 PM	136	188	57	0	47	138	41	8	42	394	102	8	30	411	34	1	1637
TOTAL VOLUMES :	NL 866	NT 1456	NR 421	NU 10	SL 319	ST 1119	SR 333	SU 34	EL 341	ET 2951	ER 742	EU 21	WL 402	WT 3099	WR 229	WU 6	TOTAL 12349
APPROACH %'s :	31.46%	52.89%	15.29%	0.36%	17.67%	61.99%	18.45%	1.88%	8.41%	72.77%	18.30%	0.52%	10.76%	82.95%	6.13%	0.16%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	477	764	223	3	174	599	167	21	164	1556	386	14	202	1591	131	2	6474
PEAK HR FACTOR :	0.877	0.970	0.858	0.750	0.888	0.871	0.888	0.656	0.854	0.973	0.946	0.438	0.789	0.968	0.910	0.500	0.987
	0.963				0.938				0.971				0.967				

S Brea Blvd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-012
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Brea Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01133-012
Date: 6/29/2019

Total

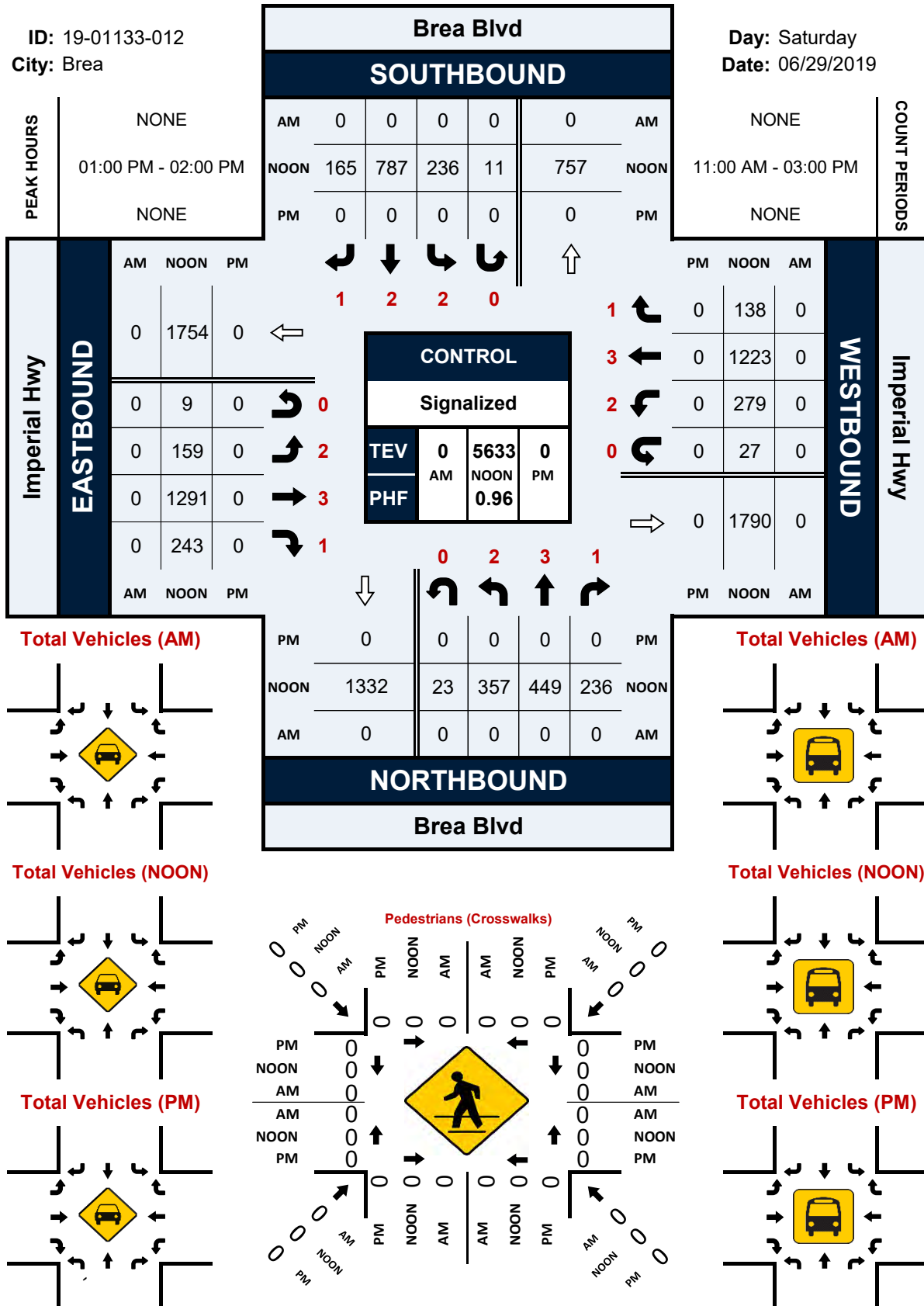
NS/EW Streets:		Brea Blvd				Brea Blvd				Imperial Hwy				Imperial Hwy				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		2	3	1	0	2	2	1	0	2	3	1	0	2	3	1	0	
		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
11:00 AM	65	112	80	3	42	109	34	0	22	302	58	2	74	200	31	3	1137	
11:15 AM	82	109	78	1	50	103	37	2	33	237	49	5	60	235	32	3	1116	
11:30 AM	115	96	69	3	42	110	35	3	32	321	73	2	59	274	34	4	1272	
11:45 AM	82	108	60	3	66	117	29	1	19	263	73	4	68	251	37	3	1184	
12:00 PM	93	114	84	1	56	105	50	3	26	310	91	4	83	270	36	6	1332	
12:15 PM	99	86	63	4	46	119	45	2	48	296	65	3	57	240	32	12	1217	
12:30 PM	77	127	64	3	60	122	40	2	25	359	100	1	66	299	31	7	1383	
12:45 PM	83	104	58	2	47	129	43	3	31	280	83	3	91	233	24	5	1219	
1:00 PM	92	123	65	8	49	210	35	4	44	299	70	2	93	329	39	7	1469	
1:15 PM	92	121	57	6	58	225	42	2	45	333	58	3	57	282	38	9	1428	
1:30 PM	86	109	62	4	69	201	47	3	46	348	71	1	64	310	30	6	1457	
1:45 PM	87	96	52	5	60	151	41	2	24	311	44	3	65	302	31	5	1279	
2:00 PM	80	87	51	3	57	129	43	3	39	264	67	0	58	260	26	8	1175	
2:15 PM	76	99	69	4	78	131	41	4	34	284	64	2	58	305	29	11	1289	
2:30 PM	88	91	45	4	53	143	50	2	26	290	64	2	57	290	27	3	1235	
2:45 PM	88	86	55	2	49	103	33	2	34	278	65	1	71	304	40	4	1215	
TOTAL VOLUMES :		NL 1385	NT 1668	NR 1012	NU 56	SL 882	ST 2207	SR 645	SU 38	EL 528	ET 4775	ER 1095	EU 38	WL 1081	WT 4384	WR 517	WU 96	TOTAL 20407
APPROACH %'s :		33.61%	40.48%	24.56%	1.36%	23.38%	58.51%	17.10%	1.01%	8.20%	74.19%	17.01%	0.59%	17.79%	72.13%	8.51%	1.58%	
PEAK HR :		01:00 PM - 02:00 PM																TOTAL
PEAK HR VOL :		357	449	236	23	236	787	165	11	159	1291	243	9	279	1223	138	27	5633
PEAK HR FACTOR :		0.970	0.913	0.908	0.719	0.855	0.874	0.878	0.688	0.864	0.927	0.856	0.750	0.750	0.929	0.885	0.750	0.959
		0.924				0.917				0.913				0.890				

Brea Blvd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01133-012
City: Brea

Day: Saturday
Date: 06/29/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: S Randolph Ave & Imperial Hwy
City: Brea
Control: Signalized

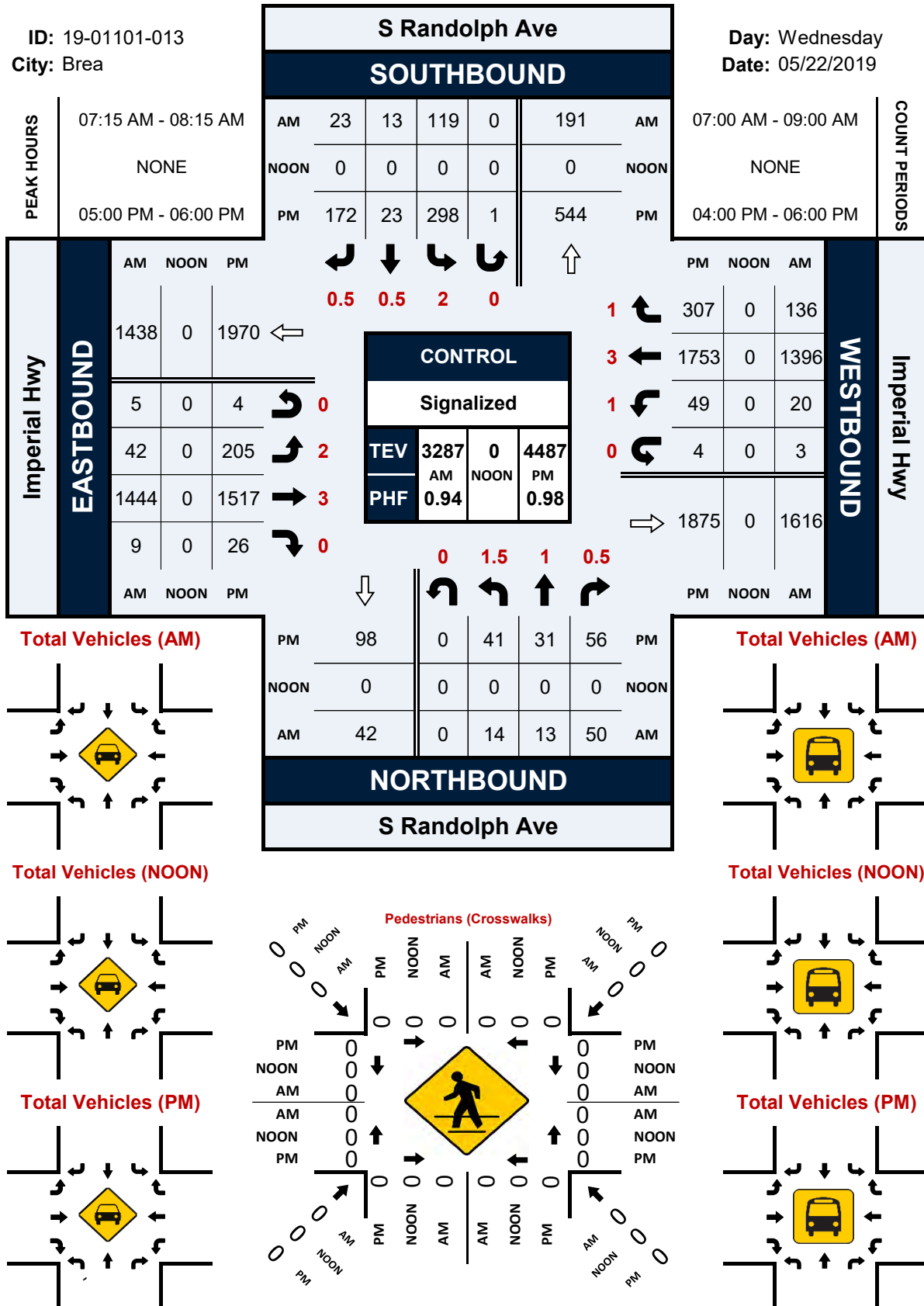
Project ID: 19-01101-013
Date: 5/22/2019

Total

NS/EW Streets:	S Randolph Ave				S Randolph Ave				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1.5 NL	1 NT	0.5 NR	0 NU	2 SL	0.5 ST	0.5 SR	0 SU	2 EL	3 ET	0 ER	0 EU	1 WL	3 WT	1 WR	0 WU	
7:00 AM	2	2	5	0	27	5	9	0	7	350	1	1	2	267	25	0	703
7:15 AM	3	3	11	0	36	4	8	0	8	350	1	0	5	339	18	1	787
7:30 AM	2	3	15	0	22	4	3	0	10	406	2	1	5	355	35	1	864
7:45 AM	2	2	11	0	28	2	3	0	12	356	3	2	6	402	48	1	878
8:00 AM	7	5	13	0	33	3	9	0	12	332	3	2	4	300	35	0	758
8:15 AM	10	4	7	0	34	4	9	0	10	374	1	0	4	283	34	1	775
8:30 AM	6	4	10	0	20	5	10	0	21	348	2	4	7	279	46	0	762
8:45 AM	5	2	9	0	22	3	18	0	15	290	5	2	8	332	61	2	774
TOTAL VOLUMES :	NL 37	NT 25	NR 81	NU 0	SL 222	ST 30	SR 69	SU 0	EL 95	ET 2806	ER 18	EU 12	WL 41	WT 2557	WR 302	WU 6	TOTAL 6301
APPROACH %'s :	25.87%	17.48%	56.64%	0.00%	69.16%	9.35%	21.50%	0.00%	3.24%	95.74%	0.61%	0.41%	1.41%	87.99%	10.39%	0.21%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	14	13	50	0	119	13	23	0	42	1444	9	5	20	1396	136	3	3287
PEAK HR FACTOR :	0.500	0.650	0.833	0.000	0.826	0.813	0.639	0.000	0.875	0.889	0.750	0.625	0.833	0.868	0.708	0.750	0.936
	0.770				0.807				0.895				0.851				

PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1.5 NL	1 NT	0.5 NR	0 NU	2 SL	0.5 ST	0.5 SR	0 SU	2 EL	3 ET	0 ER	0 EU	1 WL	3 WT	1 WR	0 WU	
4:00 PM	12	4	14	0	55	1	41	0	29	337	2	1	11	383	59	0	949
4:15 PM	7	3	9	0	59	3	37	0	37	355	2	4	8	395	66	1	986
4:30 PM	3	4	9	0	76	5	25	0	43	335	5	2	7	413	75	0	1002
4:45 PM	9	6	17	0	50	8	31	0	41	360	7	2	11	430	70	0	1042
5:00 PM	8	7	9	0	81	4	55	0	38	384	7	1	8	457	71	2	1132
5:15 PM	10	10	13	0	70	7	34	1	45	382	5	0	13	479	66	1	1136
5:30 PM	13	6	16	0	78	7	46	0	63	358	8	2	9	468	70	1	1145
5:45 PM	10	8	18	0	69	5	37	0	59	393	6	1	19	349	100	0	1074
TOTAL VOLUMES :	NL 72	NT 48	NR 105	NU 0	SL 538	ST 40	SR 306	SU 1	EL 355	ET 2904	ER 42	EU 13	WL 86	WT 3374	WR 577	WU 5	TOTAL 8466
APPROACH %'s :	32.00%	21.33%	46.67%	0.00%	60.79%	4.52%	34.58%	0.11%	10.71%	87.63%	1.27%	0.39%	2.13%	83.47%	14.28%	0.12%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	41	31	56	0	298	23	172	1	205	1517	26	4	49	1753	307	4	4487
PEAK HR FACTOR :	0.788	0.775	0.778	0.000	0.920	0.821	0.782	0.250	0.813	0.965	0.813	0.500	0.645	0.915	0.768	0.500	0.980
	0.889				0.882				0.954				0.945				

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

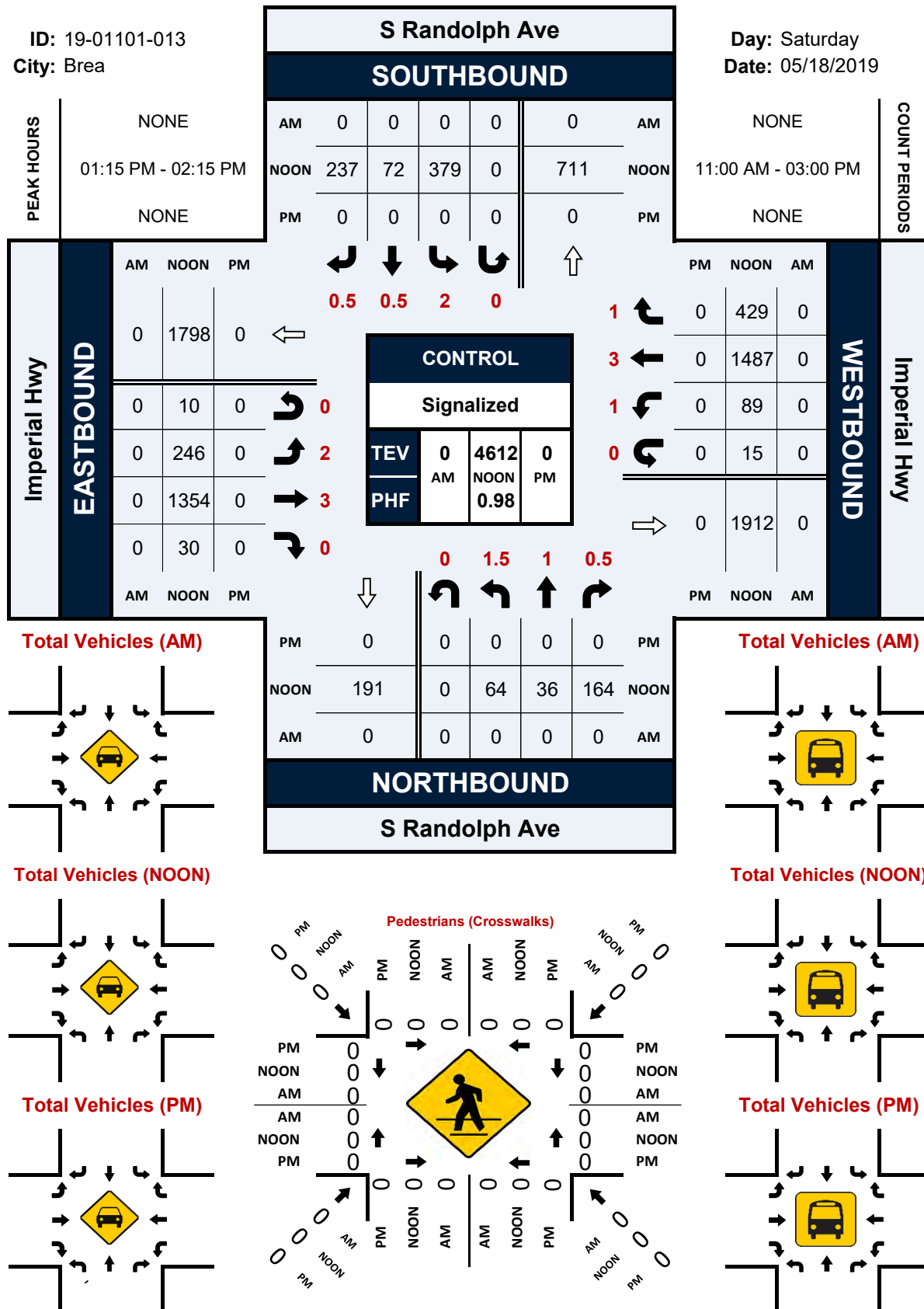
Location: S Randolph Ave & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-013
Date: 5/18/2019

Total

NS/EW Streets:		S Randolph Ave				S Randolph Ave				Imperial Hwy				Imperial Hwy				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1.5 NL	1 NT	0.5 NR	0 NU	2 SL	0.5 ST	0.5 SR	0 SU	2 EL	3 ET	0 ER	0 EU	1 WL	3 WT	1 WR	0 WU	
11:00 AM	12	9	18	0	67	11	33	0	55	315	8	9	29	324	105	1	996	
11:15 AM	11	16	30	0	59	10	38	0	59	353	6	5	28	281	116	3	1015	
11:30 AM	13	13	30	0	71	15	24	0	60	331	7	14	29	361	124	2	1094	
11:45 AM	16	5	25	0	76	10	46	0	68	299	3	4	34	378	117	2	1083	
12:00 PM	14	9	27	0	72	14	49	2	64	332	8	1	17	356	118	3	1086	
12:15 PM	18	5	38	0	72	5	40	0	53	336	11	5	45	351	108	4	1091	
12:30 PM	17	15	33	0	70	10	52	0	70	353	5	8	32	362	115	3	1145	
12:45 PM	13	9	41	0	79	12	43	0	62	324	13	4	26	370	105	0	1101	
1:00 PM	17	13	31	0	103	17	55	0	75	307	3	4	27	350	118	2	1122	
1:15 PM	16	10	40	0	88	16	50	0	47	332	7	4	26	378	101	3	1118	
1:30 PM	16	11	38	0	105	22	64	0	63	326	5	1	21	357	115	2	1146	
1:45 PM	18	7	55	0	83	17	58	0	78	346	8	4	26	368	101	8	1177	
2:00 PM	14	8	31	0	103	17	65	0	58	350	10	1	16	384	112	2	1171	
2:15 PM	15	6	39	0	86	27	63	0	69	324	6	0	16	330	95	1	1077	
2:30 PM	16	4	30	0	83	10	60	0	63	331	2	4	22	378	94	4	1101	
2:45 PM	11	13	27	0	74	12	72	0	58	321	9	3	23	348	112	3	1086	
TOTAL VOLUMES :	NL 237	NT 153	NR 533	NU 0	SL 1291	ST 225	SR 812	SU 2	EL 1002	ET 5280	ER 111	EU 71	WL 417	WT 5676	WR 1756	WU 43	TOTAL 17609	
APPROACH %'s :	25.68%	16.58%	57.75%	0.00%	55.41%	9.66%	34.85%	0.09%	15.50%	81.68%	1.72%	1.10%	5.28%	71.92%	22.25%	0.54%		
PEAK HR :	01:15 PM - 02:15 PM																TOTAL	
PEAK HR VOL :	64	36	164	0	379	72	237	0	246	1354	30	10	89	1487	429	15	4612	
PEAK HR FACTOR :	0.889	0.818	0.745	0.000	0.902	0.818	0.912	0.000	0.788	0.967	0.750	0.625	0.856	0.968	0.933	0.469	0.980	
	0.825				0.901				0.940				0.982					

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: S State College Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-014
Date: 5/22/2019

Total

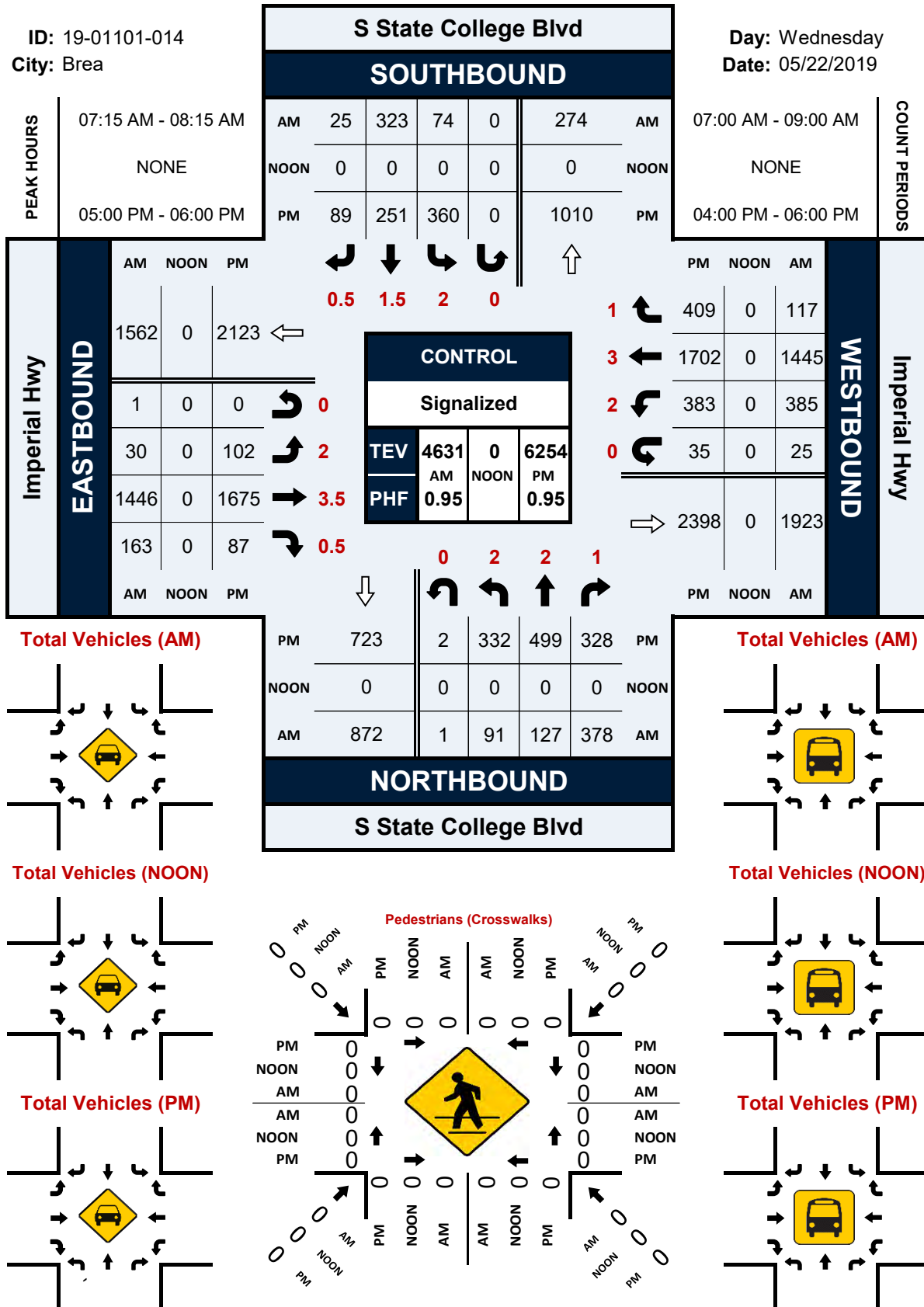
NS/EW Streets:	S State College Blvd				S State College Blvd				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	1 NR	0 NU	2 SL	1.5 ST	0.5 SR	0 SU	2 EL	3.5 ET	0.5 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
7:00 AM	16	30	84	1	13	85	7	0	3	348	39	0	90	264	32	7	1019
7:15 AM	11	31	99	0	12	90	5	0	6	352	31	1	74	353	24	9	1098
7:30 AM	20	16	90	0	17	81	7	0	7	402	42	0	93	380	22	5	1182
7:45 AM	33	34	98	0	17	76	5	0	7	347	48	0	111	397	34	6	1213
8:00 AM	27	46	91	1	28	76	8	0	10	345	42	0	107	315	37	5	1138
8:15 AM	21	32	89	3	23	62	11	0	7	375	26	0	75	292	35	5	1056
8:30 AM	40	47	98	0	36	69	6	0	17	334	38	0	64	284	62	8	1103
8:45 AM	39	34	84	0	20	67	8	0	8	259	29	1	78	362	48	7	1044
TOTAL VOLUMES :	NL 207	NT 270	NR 733	NU 5	SL 166	ST 606	SR 57	SU 0	EL 65	ET 2762	ER 295	EU 2	WL 692	WT 2647	WR 294	WU 52	TOTAL 8853
APPROACH %'s :	17.04%	22.22%	60.33%	0.41%	20.02%	73.10%	6.88%	0.00%	2.08%	88.41%	9.44%	0.06%	18.78%	71.83%	7.98%	1.41%	
PEAK HR :	07:15 AM - 08:15 AM				74	323	25	0	30	1446	163	1	385	1445	117	25	TOTAL 4631
PEAK HR VOL :	91	127	378	1	0.661	0.897	0.781	0.000	0.750	0.899	0.849	0.250	0.867	0.910	0.791	0.694	0.954
PEAK HR FACTOR :	0.689	0.690	0.955	0.250	0.661	0.897	0.781	0.000	0.750	0.899	0.849	0.250	0.867	0.910	0.791	0.694	0.954
	0.905				0.942				0.909				0.900				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	1 NR	0 NU	2 SL	1.5 ST	0.5 SR	0 SU	2 EL	3.5 ET	0.5 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
4:00 PM	41	69	45	3	71	68	19	0	13	378	24	0	92	398	125	11	1357
4:15 PM	44	96	73	3	65	50	18	0	16	365	34	0	86	403	101	5	1359
4:30 PM	65	105	58	1	74	60	16	0	22	380	40	1	83	401	82	8	1396
4:45 PM	60	114	65	0	86	71	24	0	26	346	32	0	95	443	87	4	1453
5:00 PM	60	109	77	0	65	53	25	0	25	415	26	0	102	449	102	9	1517
5:15 PM	99	133	89	2	104	63	23	0	22	454	11	0	85	428	120	9	1642
5:30 PM	91	129	75	0	91	69	12	0	23	397	22	0	78	454	66	6	1513
5:45 PM	82	128	87	0	100	66	29	0	32	409	28	0	118	371	121	11	1582
TOTAL VOLUMES :	NL 542	NT 883	NR 569	NU 9	SL 656	ST 500	SR 166	SU 0	EL 179	ET 3144	ER 217	EU 1	WL 739	WT 3347	WR 804	WU 63	TOTAL 11819
APPROACH %'s :	27.06%	44.08%	28.41%	0.45%	49.62%	37.82%	12.56%	0.00%	5.06%	88.79%	6.13%	0.03%	14.92%	67.58%	16.23%	1.27%	
PEAK HR :	05:00 PM - 06:00 PM				360	251	89	0	102	1675	87	0	383	1702	409	35	TOTAL 6254
PEAK HR VOL :	332	499	328	2	0.865	0.909	0.767	0.000	0.797	0.922	0.777	0.000	0.811	0.937	0.845	0.795	0.952
PEAK HR FACTOR :	0.838	0.938	0.921	0.250	0.865	0.909	0.767	0.000	0.797	0.922	0.777	0.000	0.811	0.937	0.845	0.795	0.952
	0.899				0.897				0.957				0.955				

S State College Blvd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-014
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: S State College Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-014
Date: 5/18/2019

Total

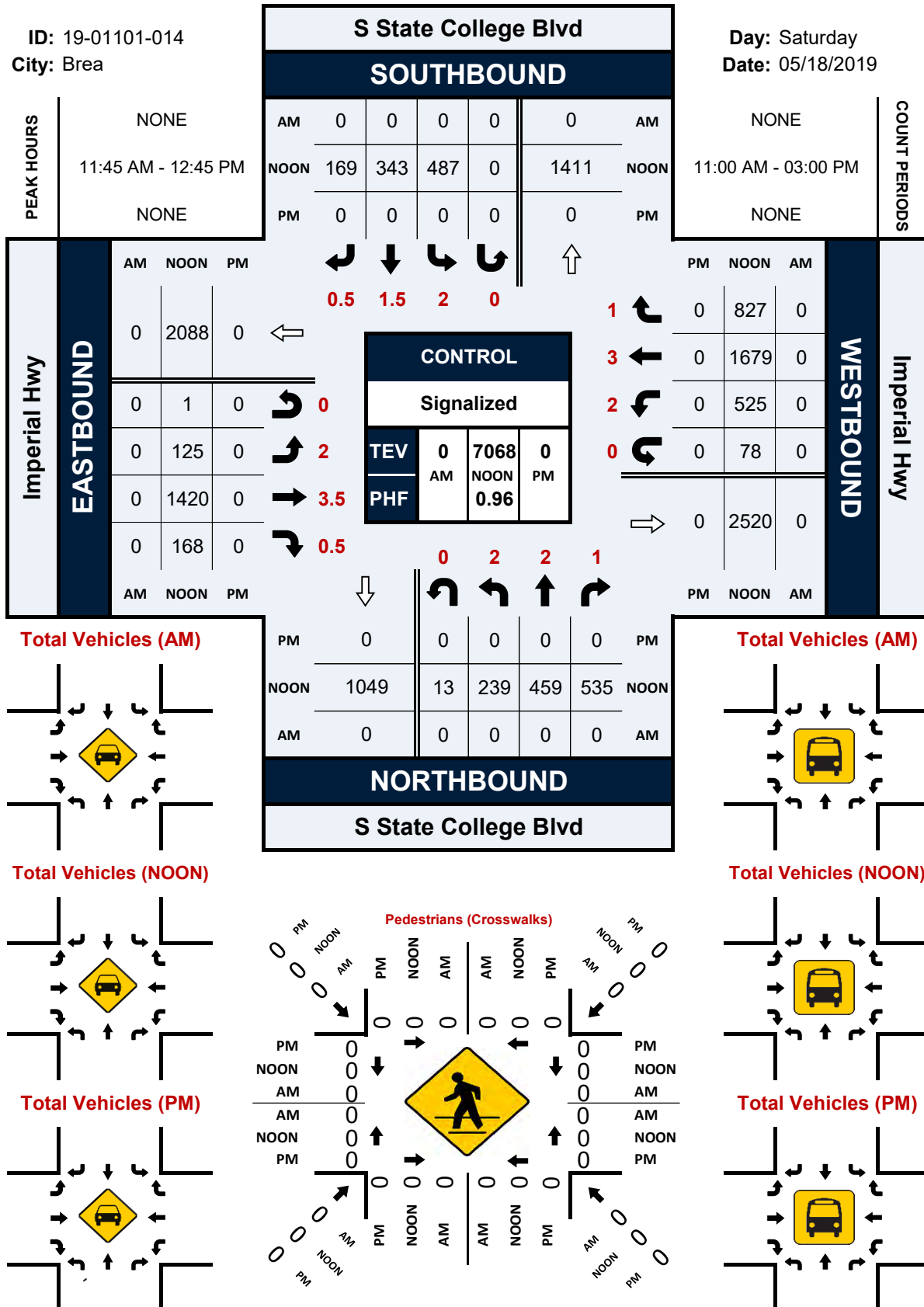
NS/EW Streets:		S State College Blvd				S State College Blvd				Imperial Hwy				Imperial Hwy				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	2 NT	1 NR	0 NU	2 SL	1.5 ST	0.5 SR	0 SU	2 EL	3.5 ET	0.5 ER	0 EU	2 WL	3 WT	1 WR	0 WU	
11:00 AM		48	68	94	1	86	39	32	0	29	362	27	1	97	368	178	10	1440
11:15 AM		53	89	119	3	79	63	24	0	21	375	32	2	94	365	212	16	1547
11:30 AM		64	105	128	3	88	44	44	0	40	368	37	2	98	385	165	13	1584
11:45 AM		59	110	146	3	105	65	31	0	22	330	31	0	137	440	241	24	1744
12:00 PM		70	106	137	1	120	78	45	0	29	349	50	1	129	399	183	24	1721
12:15 PM		54	110	138	4	124	93	38	0	41	359	39	0	124	414	200	17	1755
12:30 PM		56	133	114	5	138	107	55	0	33	382	48	0	135	426	203	13	1848
12:45 PM		55	94	99	1	129	111	41	0	37	340	44	1	108	382	185	19	1646
1:00 PM		47	84	93	4	123	78	38	0	29	396	36	0	139	432	198	17	1714
1:15 PM		47	67	88	1	138	99	40	0	36	394	42	1	125	403	217	13	1711
1:30 PM		58	82	99	3	147	90	46	0	32	403	39	0	129	392	189	13	1722
1:45 PM		55	77	101	1	150	94	42	0	36	420	43	1	145	423	188	17	1793
2:00 PM		39	76	92	1	155	110	37	0	32	416	41	3	112	414	188	23	1739
2:15 PM		43	73	86	0	118	89	53	0	34	373	34	0	115	368	168	18	1572
2:30 PM		43	77	83	2	156	99	46	0	23	375	40	0	117	392	179	14	1646
2:45 PM		37	68	79	2	145	108	41	0	33	375	34	0	112	388	188	19	1629
TOTAL VOLUMES :		828	1419	1696	35	2001	1367	653	0	507	6017	617	12	1916	6391	3082	270	26811
APPROACH %'s :		20.81%	35.67%	42.63%	0.88%	49.76%	34.00%	16.24%	0.00%	7.09%	84.12%	8.63%	0.17%	16.43%	54.82%	26.43%	2.32%	
PEAK HR :		11:45 AM - 12:45 PM																TOTAL
PEAK HR VOL :		239	459	535	13	487	343	169	0	125	1420	168	1	525	1679	827	78	7068
PEAK HR FACTOR :		0.854	0.863	0.916	0.650	0.882	0.801	0.768	0.000	0.762	0.929	0.840	0.250	0.958	0.954	0.858	0.813	0.956
		0.980				0.833				0.925				0.923				

S State College Blvd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-014
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-57 SB Ramps & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-015
Date: 5/22/2019

Total

NS/EW Streets:	SR-57 SB Ramps				SR-57 SB Ramps				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	1.5 SL	0 ST	1.5 SR	0 SU	0 EL	3 ET	1 ER	0 EU	0 WL	3 WT	1 WR	0 WU	
7:00 AM	0	0	0	0	145	0	89	0	0	316	142	0	0	305	30	0	1027
7:15 AM	0	0	0	0	145	0	107	0	0	343	138	0	0	363	35	0	1131
7:30 AM	0	0	0	0	164	0	115	0	0	367	158	0	0	417	43	0	1264
7:45 AM	0	0	0	0	123	0	128	0	0	312	155	0	0	391	35	0	1144
8:00 AM	0	0	0	0	115	0	86	0	0	317	156	0	0	387	58	0	1119
8:15 AM	0	0	0	0	102	0	83	0	0	328	162	0	0	328	47	0	1050
8:30 AM	0	0	0	0	89	0	80	0	0	326	130	0	0	332	64	0	1021
8:45 AM	0	0	0	0	102	0	99	0	0	284	105	0	0	394	61	0	1045
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	985	0	787	0	0	2593	1146	0	0	2917	373	0	8801
PEAK HR :	07:15 AM - 08:15 AM				547	0	436	0	0	1339	607	0	0	1558	171	0	TOTAL
PEAK HR VOL :	0	0	0	0	0.834	0.000	0.852	0.000	0.000	0.912	0.960	0.000	0.000	0.934	0.737	0.000	4658
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.881				0.927				0.940				0.921

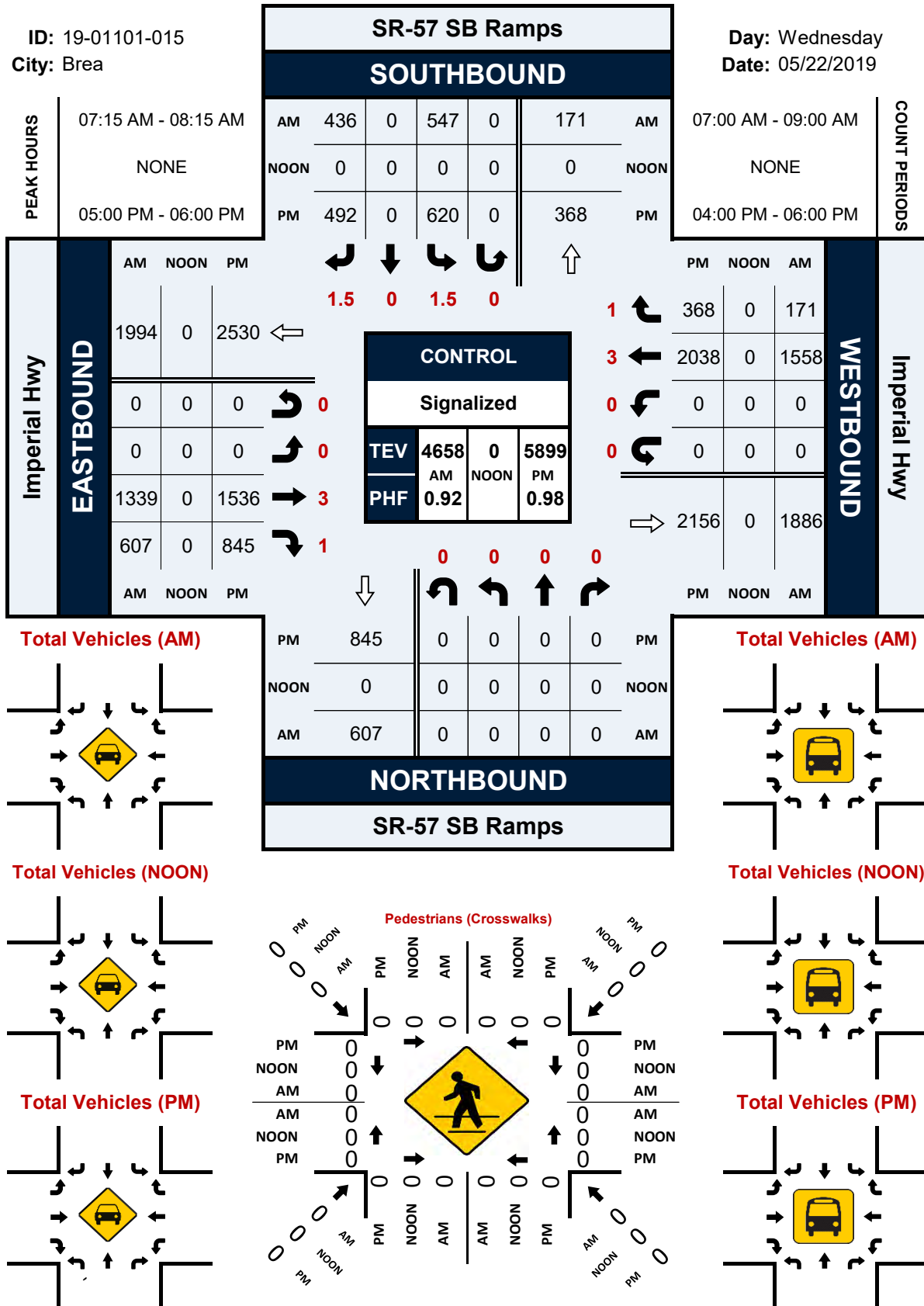
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	0 NL	0 NT	0 NR	0 NU	1.5 SL	0 ST	1.5 SR	0 SU	0 EL	3 ET	1 ER	0 EU	0 WL	3 WT	1 WR	0 WU	
4:00 PM	0	0	0	0	131	0	102	0	0	340	161	0	0	527	111	0	1372
4:15 PM	0	0	0	0	142	0	108	0	0	385	134	0	0	459	104	0	1332
4:30 PM	0	0	0	0	102	0	97	0	0	343	169	0	0	502	101	0	1314
4:45 PM	0	0	0	0	129	0	117	0	0	327	175	0	0	522	137	0	1407
5:00 PM	0	0	0	0	150	0	135	0	0	345	248	0	0	517	100	0	1495
5:15 PM	0	0	0	0	169	0	127	0	0	411	213	0	0	496	86	0	1502
5:30 PM	0	0	0	0	161	0	120	0	0	396	194	0	0	507	82	0	1460
5:45 PM	0	0	0	0	140	0	110	0	0	384	190	0	0	518	100	0	1442
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	0	0	0	0	1124	0	916	0	0	2931	1484	0	0	4048	821	0	11324
PEAK HR :	05:00 PM - 06:00 PM				620	0	492	0	0	1536	845	0	0	2038	368	0	TOTAL
PEAK HR VOL :	0	0	0	0	0.917	0.000	0.911	0.000	0.000	0.934	0.852	0.000	0.000	0.984	0.920	0.000	5899
PEAK HR FACTOR :	0.000	0.000	0.000	0.000	0.939				0.954				0.973				0.982

SR-57 SB Ramps & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-015
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: SR-57 SB Ramps & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-015
Date: 5/18/2019

Total

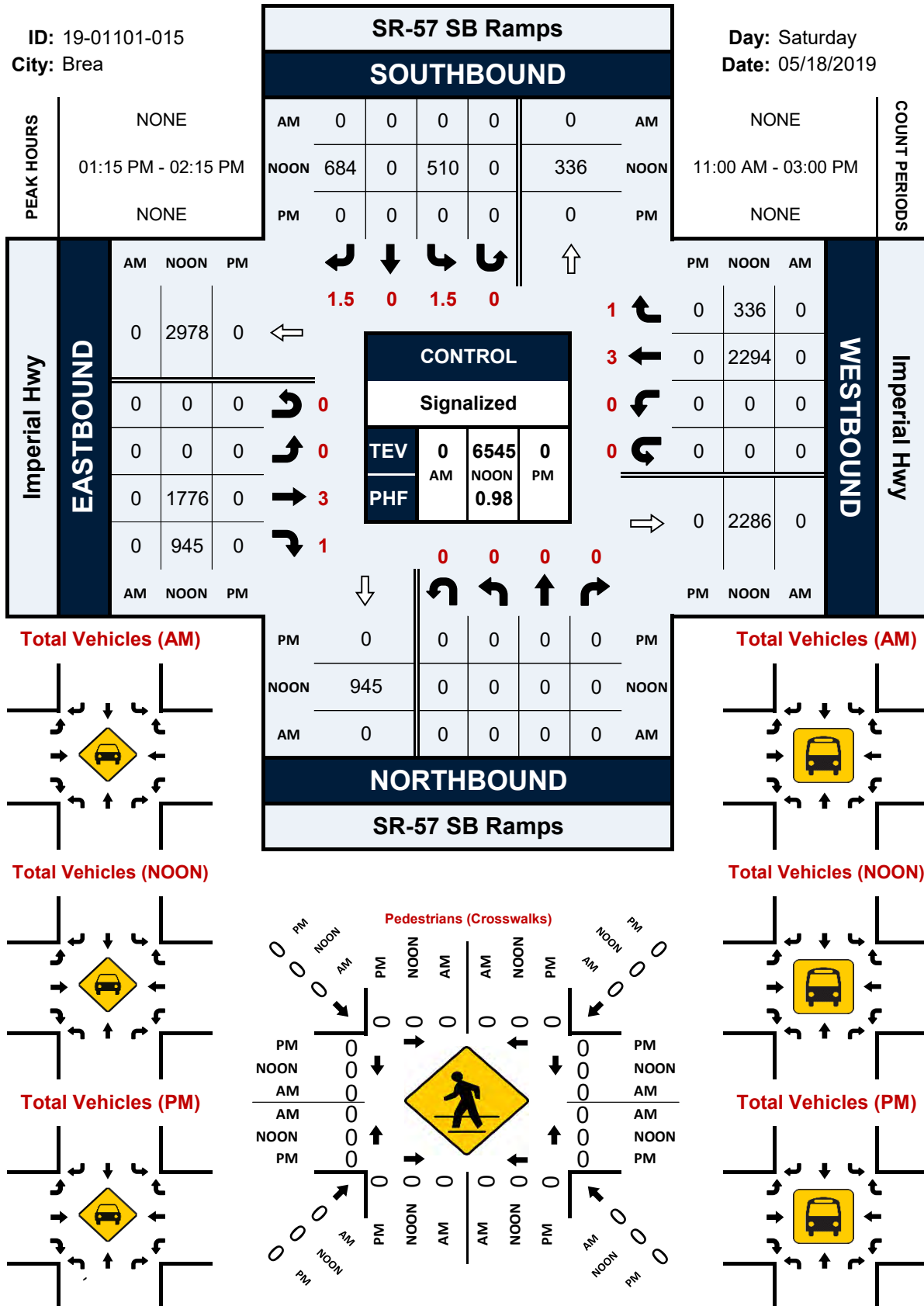
NS/EW Streets:		SR-57 SB Ramps				SR-57 SB Ramps				Imperial Hwy				Imperial Hwy				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		0 NL	0 NT	0 NR	0 NU	1.5 SL	0 ST	1.5 SR	0 SU	0 EL	3 ET	1 ER	0 EU	0 WL	3 WT	1 WR	0 WU	
11:00 AM	0	0	0	0	110	0	137	0	0	364	186	0	0	527	88	0	1412	
11:15 AM	0	0	0	0	125	0	160	0	0	384	201	0	0	517	96	0	1483	
11:30 AM	0	0	0	0	112	0	152	0	0	428	185	0	0	534	94	0	1505	
11:45 AM	0	0	0	0	156	0	202	0	0	427	203	0	0	630	87	0	1705	
12:00 PM	0	0	0	0	110	0	188	0	0	413	200	0	0	552	41	0	1504	
12:15 PM	0	0	0	0	155	0	208	0	0	414	214	0	0	538	73	0	1602	
12:30 PM	0	0	0	0	181	0	165	0	0	460	200	0	0	609	71	0	1686	
12:45 PM	0	0	0	0	166	0	175	0	0	447	185	0	0	544	64	0	1581	
1:00 PM	0	0	0	0	147	0	187	0	0	414	196	0	0	577	83	0	1604	
1:15 PM	0	0	0	0	143	0	180	0	0	435	219	0	0	572	62	0	1611	
1:30 PM	0	0	0	0	133	0	190	0	0	440	211	0	0	565	96	0	1635	
1:45 PM	0	0	0	0	132	0	167	0	0	440	257	0	0	585	91	0	1672	
2:00 PM	0	0	0	0	102	0	147	0	0	461	258	0	0	572	87	0	1627	
2:15 PM	0	0	0	0	99	0	138	0	0	403	211	0	0	557	76	0	1484	
2:30 PM	0	0	0	0	102	0	142	0	0	416	237	0	0	563	97	0	1557	
2:45 PM	0	0	0	0	109	0	145	0	0	417	224	0	0	534	81	0	1510	
TOTAL VOLUMES :		NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :		0	0	0	0	2082	0	2683	0	0	6763	3387	0	0	8976	1287	0	25178
PEAK HR :		01:15 PM - 02:15 PM				43.69%	0.00%	56.31%	0.00%	0.00%	66.63%	33.37%	0.00%	0.00%	87.46%	12.54%	0.00%	
PEAK HR VOL :		0	0	0	0	510	0	684	0	0	1776	945	0	0	2294	336	0	6545
PEAK HR FACTOR :		0.000	0.000	0.000	0.000	0.892	0.000	0.900	0.000	0.000	0.963	0.916	0.000	0.000	0.980	0.875	0.000	0.979
						0.924				0.946				0.973				

SR-57 SB Ramps & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-015
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services
Intersection Turning Movement Count

Location: SR-57 NB Ramps & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-016
Date: 5/22/2019

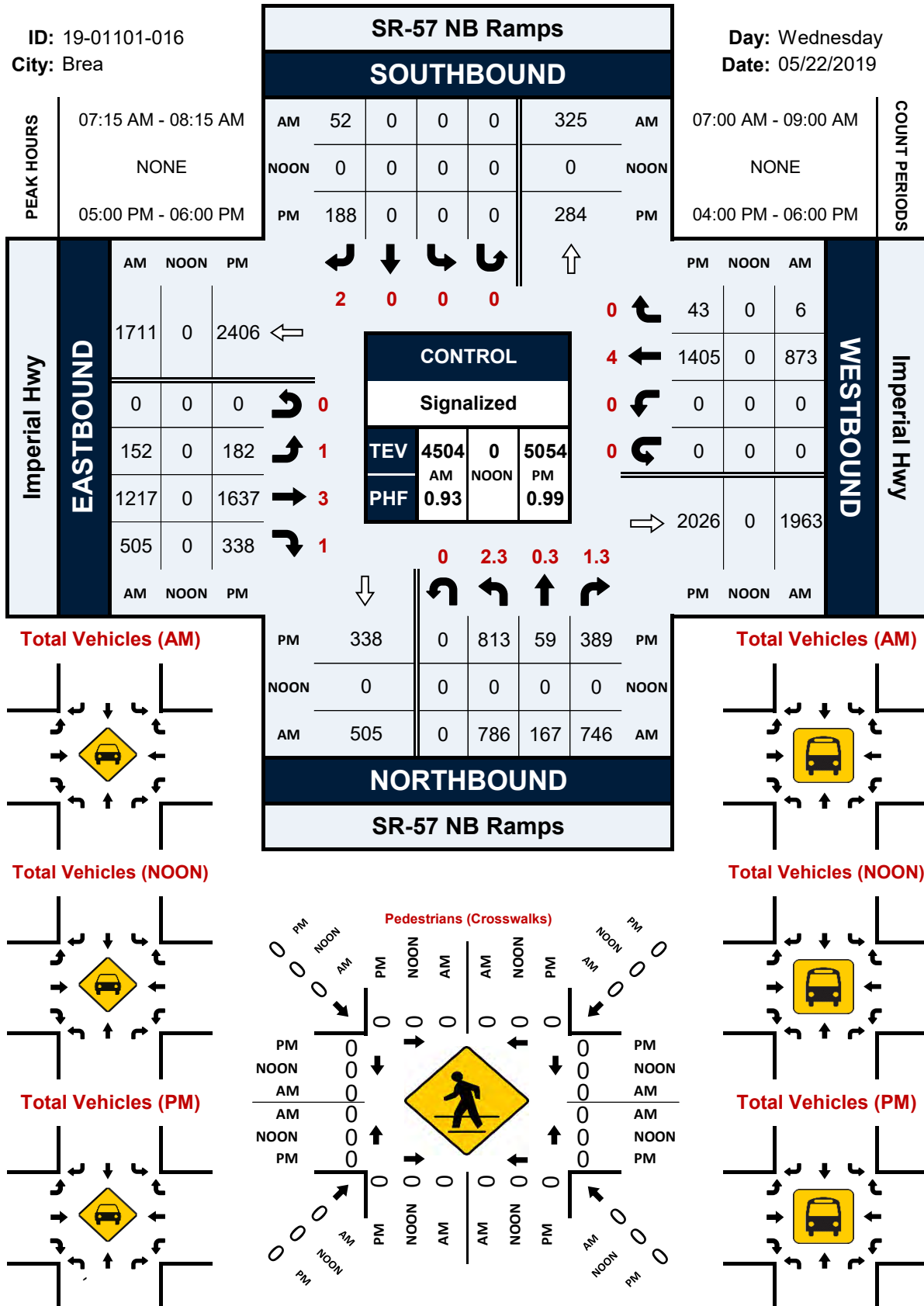
		Total																									
NS/EW Streets		SR-57 NB Ramps					SR-57 NB Ramps					Imperial Hwy					Imperial Hwy										
AM		NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2					
		2.3	0.3	1.3	0	0	0	0	2	0	0	1	3	1	0	0	0	4	0	0	0	0	0	0	0	0	
		NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U	S2L2	S2T2	S2R2	S2U2	
7:00 AM		152	46	165	0	0	0	0	14	0	6	23	318	132	0	0	0	167	3	0	125	0	0	0	0	0	
7:15 AM		207	50	192	0	0	0	0	16	0	17	29	312	133	0	0	0	177	2	0	105	0	0	0	0	0	
7:30 AM		245	50	173	0	0	0	0	12	0	9	34	366	133	0	0	0	203	3	0	119	0	0	0	0	0	
7:45 AM		174	43	204	0	1	0	0	12	0	7	65	264	122	0	0	0	240	1	0	111	0	0	0	0	0	
8:00 AM		160	24	177	0	0	0	0	12	0	5	24	275	117	0	0	0	253	0	0	120	0	0	0	0	0	
8:15 AM		187	24	187	0	1	0	0	12	0	13	15	302	109	0	0	0	200	3	0	124	0	0	0	0	0	
8:30 AM		171	34	212	0	1	0	0	18	0	5	29	274	116	0	0	0	203	3	0	108	0	0	0	0	0	
8:45 AM		223	28	203	0	0	0	0	15	0	9	39	242	97	0	0	0	226	4	0	93	0	0	0	0	0	
TOTAL VOLUMES :		NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U	S2L2	S2T2	S2R2	S2U2	
APPROACH % :		45.56%	8.97%	45.38%	0.00%	0.09%	0.00%	0.00%	60.99%	0.00%	39.01%	7.23%	65.91%	26.86%	0.00%	0.00%	0.00%	64.37%	0.73%	0.00%	34.90%	0.00%	0.00%	0.00%	0.00%	0.00%	
PEAK HR :		07:15 AM - 08:15 AM																									
PEAK HR VOL :		786	167	746	0	1	0	0	52	0	38	152	1217	505	0	0	0	873	6	0	455	0	0	0	0	0	
PEAK HR FACTOR :		0.802	0.835	0.914	0.000	0.250	0.000	0.000	0.813	0.000	0.559	0.585	0.831	0.949	0.000	0.000	0.000	0.863	0.500	0.000	0.948	0.000	0.000	0.000	0.000	0.000	
		0.908					0.682					0.879					0.894										
		TOTAL																									
		9679																									
PM		NORTHBOUND					SOUTHBOUND					EASTBOUND					WESTBOUND					SOUTHBOUND2					
		2.3	0.3	1.3	0	0	0	0	2	0	0	1	3	1	0	0	0	4	0	0	0	0	0	0	0	0	
		NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U	S2L2	S2T2	S2R2	S2U2	
4:00 PM		258	15	120	0	1	0	0	51	0	8	38	392	44	0	0	0	327	9	0	88	0	0	0	0	0	
4:15 PM		195	12	112	0	2	0	0	30	0	14	37	417	70	0	0	0	345	14	0	133	0	0	0	0	0	
4:30 PM		188	21	117	0	1	0	0	39	0	13	48	358	63	0	0	0	371	6	0	149	0	0	0	0	0	
4:45 PM		215	26	120	0	3	0	0	51	0	17	45	327	55	0	0	0	393	11	0	174	0	0	0	0	0	
5:00 PM		200	6	125	0	6	0	0	51	0	15	40	394	79	0	0	0	366	8	0	176	0	0	0	0	0	
5:15 PM		205	15	84	0	6	0	0	37	0	18	43	425	99	0	0	0	332	12	0	201	0	0	0	0	0	
5:30 PM		208	16	82	0	4	0	0	59	0	10	47	422	80	0	0	0	347	8	0	180	0	0	0	0	0	
5:45 PM		200	22	98	0	2	0	0	41	0	13	52	396	80	0	0	0	360	15	0	181	0	0	0	0	0	
TOTAL VOLUMES :		NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EU	EL2	WL	WT	WR	WU	WR2	S2U	S2L2	S2T2	S2R2	S2U2	
APPROACH % :		61.98%	4.94%	32.16%	0.00%	0.93%	0.00%	0.00%	76.87%	0.00%	23.13%	8.64%	77.29%	14.07%	0.00%	0.00%	0.00%	67.55%	1.97%	0.00%	30.48%	0.00%	0.00%	0.00%	0.00%	0.00%	
PEAK HR :		05:00 PM - 06:00 PM																									
PEAK HR VOL :		813	59	389	0	18	0	0	188	0	56	182	1637	338	0	0	0	1405	43	0	738	0	0	0	0	0	
PEAK HR FACTOR :		0.977	0.670	0.778	0.000	0.750	0.000	0.000	0.797	0.000	0.778	0.875	0.963	0.854	0.000	0.000	0.000	0.960	0.717	0.000	0.918	0.000	0.000	0.000	0.000	0.995	
		0.949					0.884					0.951					0.983										
		TOTAL																									
		11417																									

SR-57 NB Ramps & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-016
City: Brea

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Location: SR-57 NB Ramps & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-016
Date: 5/18/2019

		Total																														
NS/EW Streets:		SR-57 NB Ramps						SR-57 NB Ramps						Imperial Hwy						Imperial Hwy												
		NORTHBOUND						SOUTHBOUND						EASTBOUND						WESTBOUND						SOUTHBOUND2						
NOON		2.3	0.3	1.3	0	0	0	0	0	0	1.3	0	0	1	3	0	0	0	0	4	0	0	1	0	0	0	0	0	0	TOTAL		
		NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EJ	EU	EL2	WL	WT	WR	WU	WR2	SZU	SL2	ST2	SR2	SUZ2					
11:00 AM		258	30	110	0	0	0	0	31	0	10	52	60	320	115	0	0	0	314	8	0	125	0	0	0	0	0	0	0	1381		
11:15 AM		287	29	118	0	1	0	0	30	0	11	53	321	140	0	0	0	0	314	6	0	128	0	0	0	0	0	0	0	1404		
11:30 AM		313	33	114	0	1	0	0	31	0	11	60	327	136	0	0	0	0	312	7	0	120	0	0	0	0	0	0	0	1465		
11:45 AM		314	29	130	0	0	0	0	52	0	7	59	350	157	0	0	0	0	340	9	0	121	0	0	0	0	0	0	0	1569		
12:00 PM		285	47	125	0	7	0	0	40	0	1	15	53	350	134	0	0	0	293	7	0	111	0	0	0	0	0	0	0	1468		
12:15 PM		261	31	121	0	0	0	0	49	0	1	9	44	317	147	0	0	0	294	6	0	108	0	0	0	0	0	0	0	1448		
12:30 PM		301	45	133	0	0	0	0	34	0	14	52	461	127	0	0	0	0	330	4	0	111	0	0	0	0	0	0	0	1613		
12:45 PM		322	34	142	0	0	0	0	40	0	8	51	425	148	0	0	0	0	273	11	0	118	0	0	0	0	0	0	0	1572		
1:00 PM		271	30	119	0	0	0	0	58	0	0	19	316	128	0	0	0	0	333	8	0	110	0	0	0	0	0	0	0	1489		
1:15 PM		283	35	132	0	1	0	0	43	0	16	75	361	140	0	0	0	0	270	7	0	102	0	0	0	0	0	0	0	1492		
1:30 PM		245	33	111	0	3	0	0	54	0	27	63	388	138	0	0	0	0	373	10	0	121	0	0	0	0	0	0	0	1566		
1:45 PM		260	26	121	0	0	0	0	47	0	26	52	327	153	0	0	0	0	333	6	0	134	0	0	0	0	0	0	0	1544		
2:00 PM		248	27	126	0	0	0	0	49	0	18	51	377	144	0	0	0	0	333	11	0	102	0	0	0	0	0	0	0	1506		
2:15 PM		260	31	116	0	1	0	0	64	0	18	50	308	128	0	0	0	0	335	7	0	120	0	0	0	0	0	0	0	1438		
2:30 PM		255	30	124	0	0	0	0	48	0	17	56	321	147	0	0	0	0	340	5	0	108	0	0	0	0	0	0	0	1452		
2:45 PM		255	51	109	0	0	0	0	51	0	22	53	342	127	0	0	0	0	305	8	0	121	0	0	0	0	0	0	0	1444		
TOTAL VOLUMES:		NL	NT	NR	NU	NT2	SL	ST	SR	SU	SU2	EL	ET	ER	EJ	EU	EL2	WL	WT	WR	WU	WR2	SZU	SL2	ST2	SR2	SUZ2	TOTAL				
APPROACH %:		63.76%	7.87%	28.03%	0.00%	0.33%	0.00%	0.00%	0.00%	75.18%	0.10%	24.72%	10.18%	65.15%	24.67%	0.00%	0.00%	0.00%	72.07%	1.70%	0.00%	26.23%							23851			
PEAK HR:		12:30 PM - 01:30 PM																														
PEAK HR VOL:		1177	149	526	0	4	0	0	175	0	50	247	1623	521	0	0	0	0	1213	30	0	450	0	0	0	0	0	0	6166			
PEAK HR FACTOR:		0.914	0.828	0.926	0.000	0.517	0.000	0.000	0.781	0.000	0.781	0.823	0.880	0.880	0.000	0.000	0.000	0.000	0.919	0.682	0.000	0.945	0.000	0.000	0.000	0.000	0.000	0.956				

Peak Hour Turning Movement Count

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: Associated Rd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 18-01231-009
Date: 11/13/2018

Total

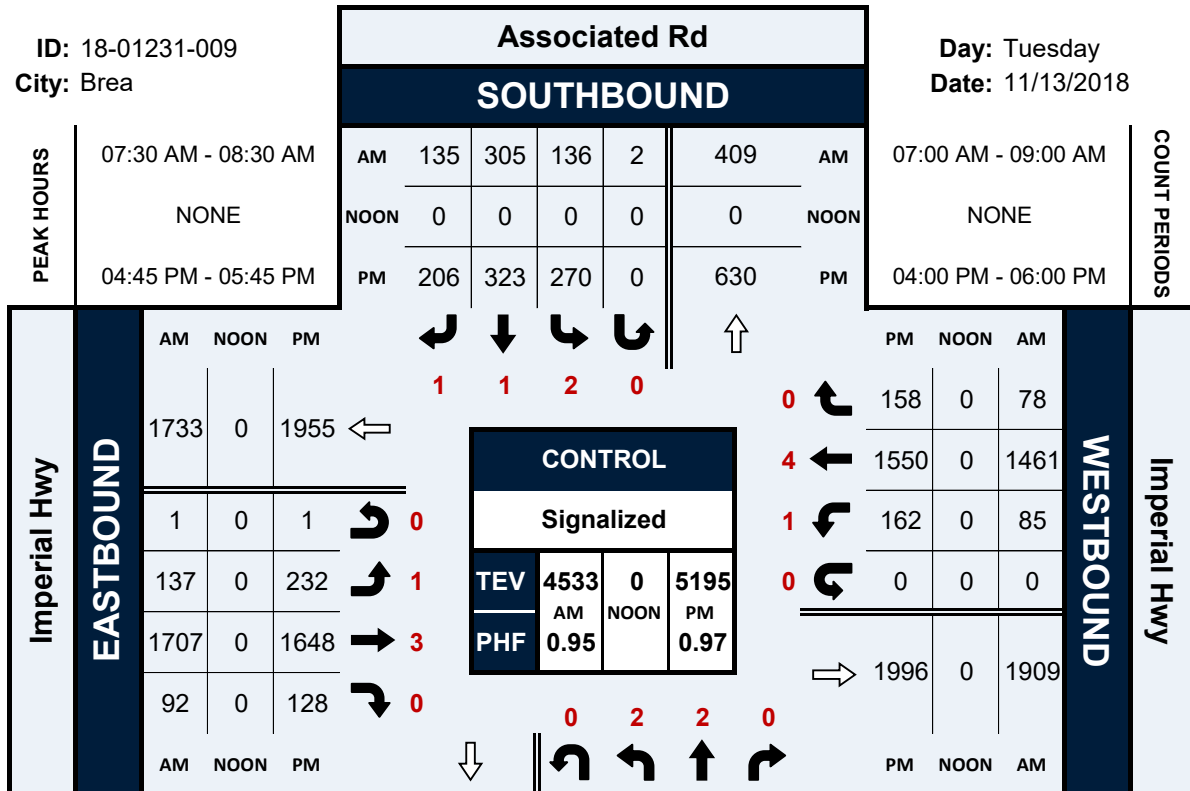
NS/EW Streets:	Associated Rd				Associated Rd				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	0 NR	0 NU	2 SL	1 ST	1 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	4 WT	0 WR	0 WU	
7:00 AM	34	29	10	0	27	78	24	0	35	385	21	0	15	278	10	0	946
7:15 AM	50	32	12	0	32	65	26	0	37	376	32	1	23	297	10	0	993
7:30 AM	33	44	13	0	24	86	37	0	32	386	27	1	20	347	17	0	1067
7:45 AM	28	62	21	0	29	66	31	0	38	464	29	0	12	388	22	0	1190
8:00 AM	43	47	15	0	47	68	34	1	38	422	17	0	23	378	21	0	1154
8:15 AM	32	39	17	0	36	85	33	1	29	435	19	0	30	348	18	0	1122
8:30 AM	38	20	14	0	50	68	30	0	28	464	26	0	21	286	14	0	1059
8:45 AM	40	33	33	0	43	51	17	0	25	418	18	1	21	284	17	0	1001
TOTAL VOLUMES :	NL 298	NT 306	NR 135	NU 0	SL 288	ST 567	SR 232	SU 2	EL 262	ET 3350	ER 189	EU 3	WL 165	WT 2606	WR 129	WU 0	TOTAL 8532
APPROACH %'s :	40.32%	41.41%	18.27%	0.00%	26.45%	52.07%	21.30%	0.18%	6.89%	88.07%	4.97%	0.08%	5.69%	89.86%	4.45%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	136	192	66	0	136	305	135	2	137	1707	92	1	85	1461	78	0	4533
PEAK HR FACTOR :	0.791	0.774	0.786	0.000	0.723	0.887	0.912	0.500	0.901	0.920	0.793	0.250	0.708	0.941	0.886	0.000	0.952
	0.887				0.932				0.912				0.962				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	0 NR	0 NU	2 SL	1 ST	1 SR	0 SU	1 EL	3 ET	0 ER	0 EU	1 WL	4 WT	0 WR	0 WU	
4:00 PM	36	48	23	0	60	60	44	1	47	389	32	1	33	392	29	0	1195
4:15 PM	50	57	24	0	49	76	58	1	49	415	35	0	32	378	39	0	1263
4:30 PM	48	56	16	0	55	67	37	0	45	406	22	0	29	412	46	1	1240
4:45 PM	52	41	17	0	75	97	69	0	55	410	31	0	37	362	55	0	1301
5:00 PM	52	56	21	1	73	87	52	0	56	383	29	1	38	346	36	0	1231
5:15 PM	55	67	20	0	60	63	48	0	65	431	34	0	45	422	33	0	1343
5:30 PM	39	76	20	0	62	76	37	0	56	424	34	0	42	420	34	0	1320
5:45 PM	50	48	21	1	63	62	42	0	62	433	41	1	32	383	41	0	1280
TOTAL VOLUMES :	NL 382	NT 449	NR 162	NU 2	SL 497	ST 588	SR 387	SU 2	EL 435	ET 3291	ER 258	EU 3	WL 288	WT 3115	WR 313	WU 1	TOTAL 10173
APPROACH %'s :	38.39%	45.13%	16.28%	0.20%	33.72%	39.89%	26.26%	0.14%	10.91%	82.54%	6.47%	0.08%	7.75%	83.80%	8.42%	0.03%	
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	198	240	78	1	270	323	206	0	232	1648	128	1	162	1550	158	0	5195
PEAK HR FACTOR :	0.900	0.789	0.929	0.250	0.900	0.832	0.746	0.000	0.892	0.956	0.941	0.250	0.900	0.918	0.718	0.000	0.967
	0.910				0.829				0.948				0.935				

Associated Rd & Imperial Hwy

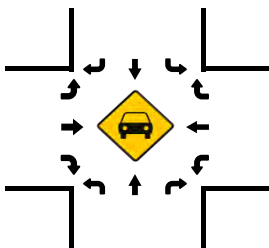
Peak Hour Turning Movement Count

ID: 18-01231-009
City: Brea

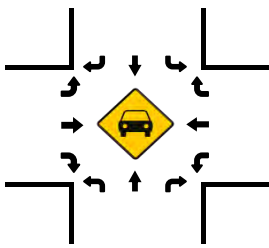
Day: Tuesday
Date: 11/13/2018



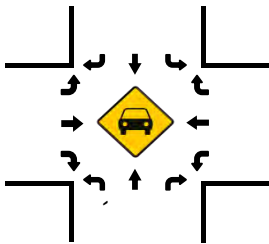
Total Vehicles (AM)



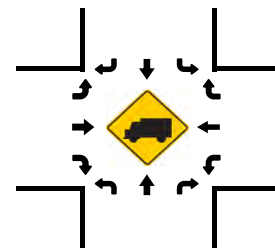
Total Vehicles (Noon)



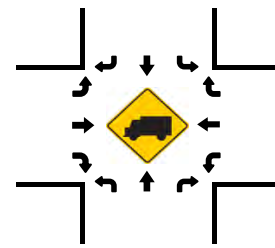
Total Vehicles (PM)



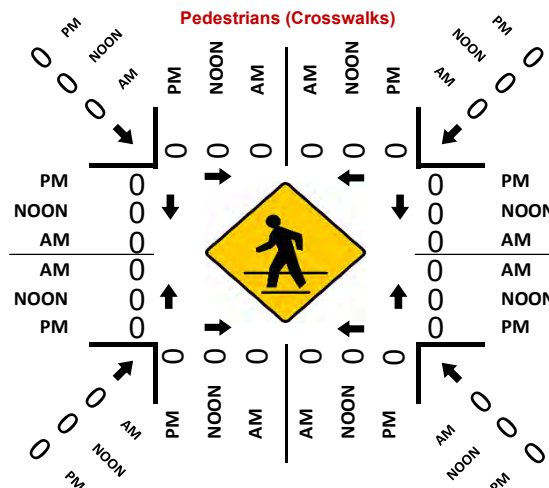
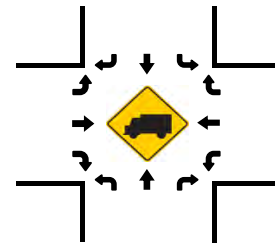
2axle (AM)



2axle (NOON)



2axle (PM)



INTERSECTION TURNING MOVEMENT COUNTS

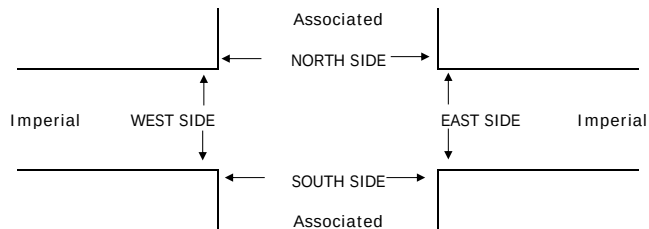
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Sat, May 18, 19	LOCATION: NORTH & SOUTH: EAST & WEST:	Brea Associated Imperial	PROJECT #: LOCATION #: CONTROL:	SC2213 4 SIGNAL
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NOTES:	AM		▲	
	PM		N	
Queue WB	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

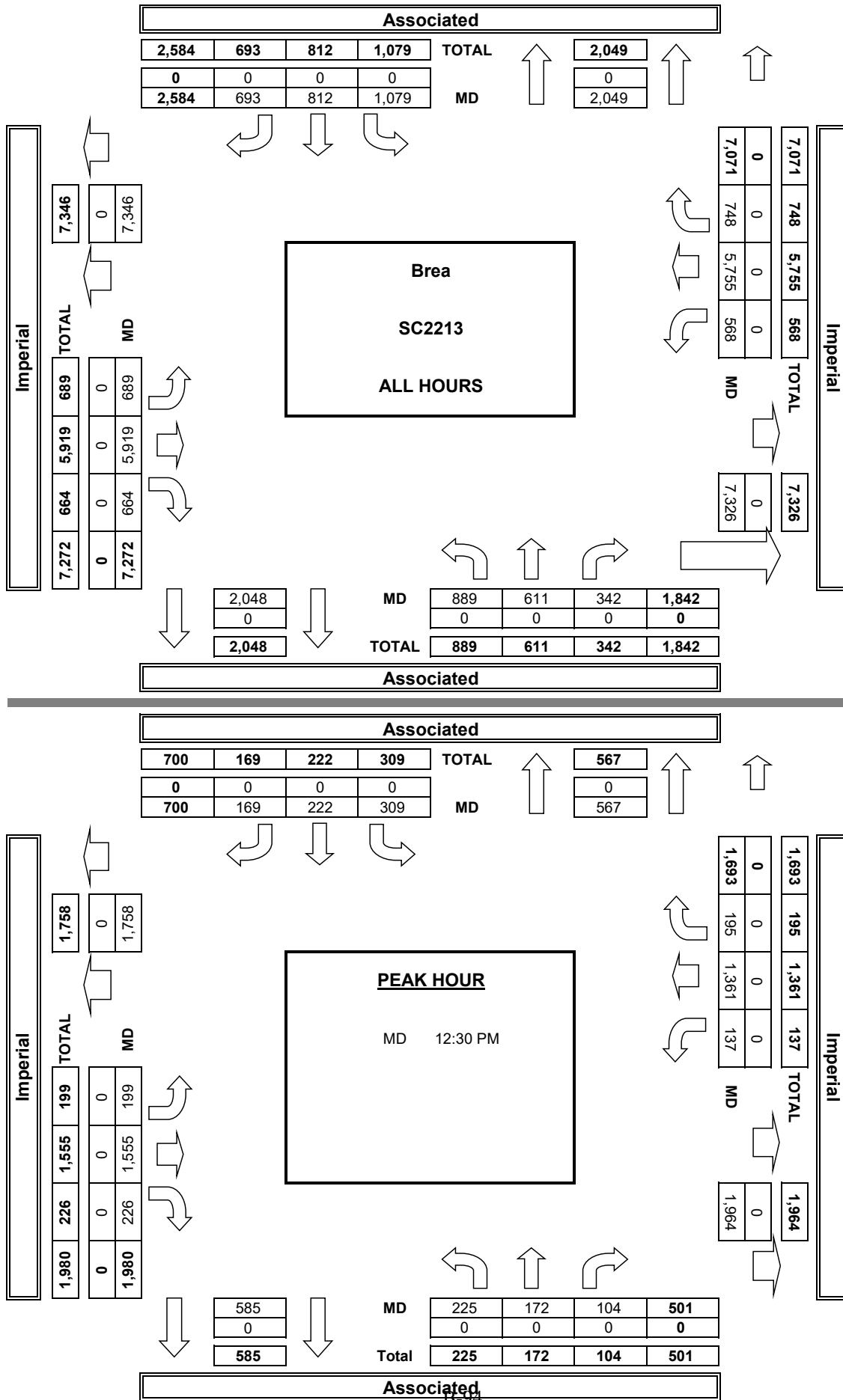
LANES:	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
	Associated			Associated			Imperial			Imperial			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	
	2	2	0	2	1	1	1	3	0	1	4	0	
11:00 AM	50	32	20	51	32	39	35	337	26	32	378	33	1,065
11:15 AM	40	21	17	48	43	31	30	361	33	36	379	61	1,100
11:30 AM	78	33	20	54	37	49	38	348	36	23	366	37	1,119
11:45 AM	69	44	22	65	50	39	57	368	37	35	381	54	1,221
12:00 PM	70	50	19	70	55	47	52	367	26	33	321	49	1,159
12:15 PM	78	42	25	81	53	43	59	360	55	28	302	44	1,170
12:30 PM	60	48	29	69	63	30	57	417	75	33	342	55	1,278
12:45 PM	57	41	20	89	59	47	48	404	68	27	334	49	1,243
1:00 PM	51	40	30	73	47	43	47	361	43	35	324	48	1,142
1:15 PM	57	43	25	78	53	49	47	373	40	42	361	43	1,211
1:30 PM	36	43	17	72	58	64	31	382	32	50	393	41	1,219
1:45 PM	56	38	11	78	49	46	49	393	52	35	379	42	1,228
2:00 PM	47	35	18	65	65	45	41	375	40	33	349	40	1,153
2:15 PM	45	33	21	61	48	42	35	348	35	42	420	66	1,196
2:30 PM	45	33	32	65	51	44	34	358	32	47	375	35	1,151
2:45 PM	50	35	16	60	49	35	29	367	34	37	351	51	1,114
VOLUMES	889	611	342	1,079	812	693	689	5,919	664	568	5,755	748	18,769
APPROACH %	48%	33%	19%	42%	31%	27%	9%	81%	9%	8%	81%	11%	
APP/DEPART	1,842	/	2,049	2,584	/	2,048	7,272	/	7,326	7,071	/	7,346	0
BEGIN PEAK HR	12:30 PM												
VOLUMES	225	172	104	309	222	169	199	1,555	226	137	1,361	195	4,874
APPROACH %	45%	34%	21%	44%	32%	24%	10%	79%	11%	8%	80%	12%	
PEAK HR FACTOR	0.914			0.897			0.902			0.949			0.953
APP/DEPART	501	/	567	700	/	585	1,980	/	1,964	1,693	/	1,758	0



MD		11:00 AM
		11:15 AM
		11:30 AM
		11:45 AM
		12:00 PM
		12:15 PM
		12:30 PM
		12:45 PM
		1:00 PM
		1:15 PM
		1:30 PM
		1:45 PM
		2:00 PM
		2:15 PM
		2:30 PM
		2:45 PM
		TOTAL
	AM BEGIN PEAK HR	

[illegible][illegible][illegible]

AimTD LLC
TURNING MOVEMENT COUNTS



National Data & Surveying Services

Intersection Turning Movement Count

Location: Castlegate Ln/Placentia Ave & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 18-01231-010
Date: 11/13/2018

Total

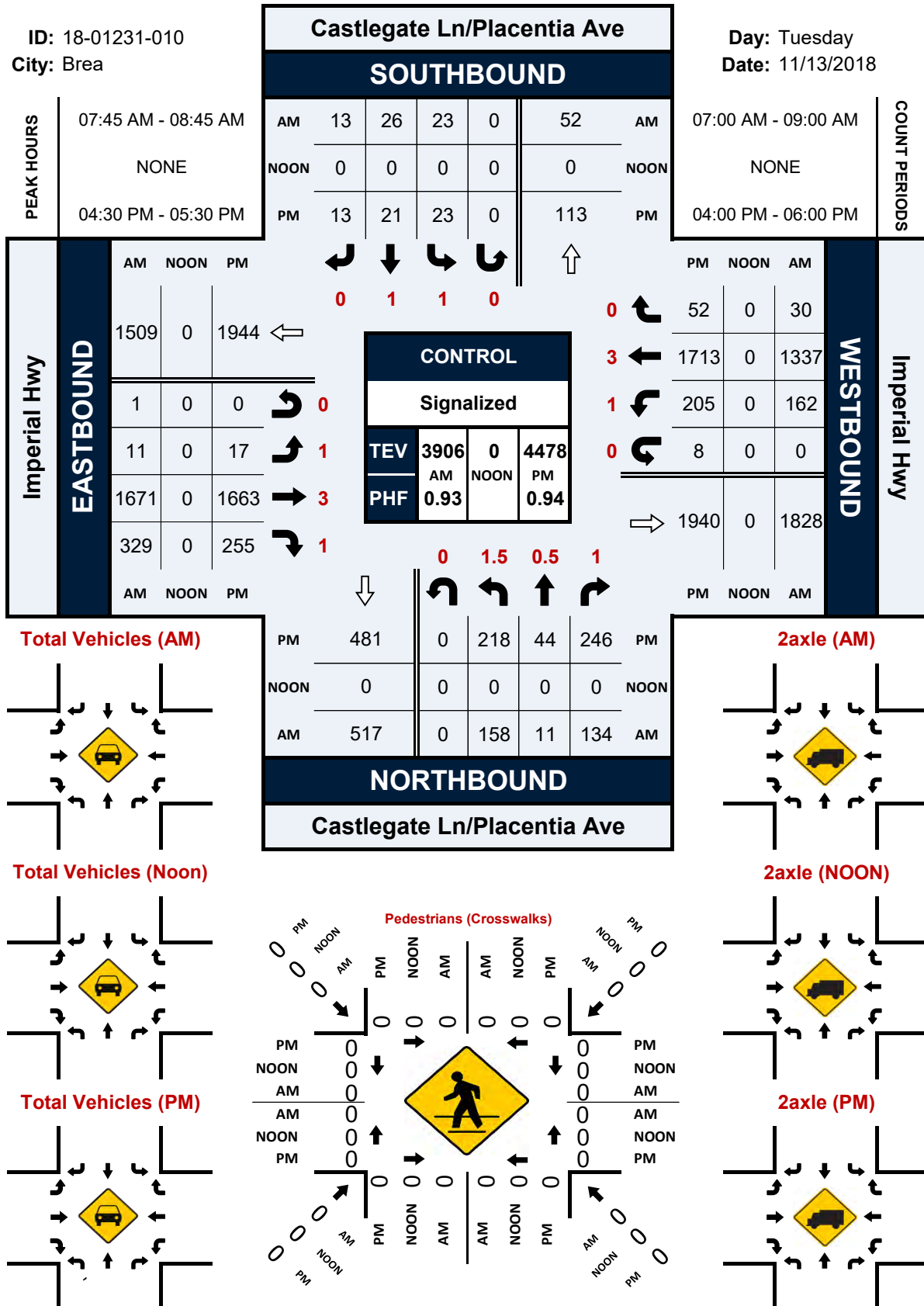
NS/EW Streets:	Castlegate Ln/Placentia Ave				Castlegate Ln/Placentia Ave				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1.5 NL	0.5 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	3 ET	1 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
7:00 AM	27	1	19	0	6	1	0	0	0	363	55	0	21	289	5	0	787
7:15 AM	30	5	27	0	8	6	4	0	0	356	50	0	30	292	5	0	813
7:30 AM	49	5	40	0	4	2	5	0	1	362	85	0	34	312	1	0	900
7:45 AM	54	5	32	0	6	12	5	0	4	429	78	1	42	377	9	0	1054
8:00 AM	25	3	24	0	5	6	2	0	2	415	83	0	46	346	7	0	964
8:15 AM	42	1	30	0	4	5	3	0	2	392	77	0	26	338	9	0	929
8:30 AM	37	2	48	0	8	3	3	0	3	435	91	0	48	276	5	0	959
8:45 AM	34	1	32	0	8	5	3	0	2	424	72	0	32	292	7	1	913
TOTAL VOLUMES :	NL 298	NT 23	NR 252	NU 0	SL 49	ST 40	SR 25	SU 0	EL 14	ET 3176	ER 591	EU 1	WL 279	WT 2522	WR 48	WU 1	TOTAL 7319
APPROACH %'s :	52.01%	4.01%	43.98%	0.00%	42.98%	35.09%	21.93%	0.00%	0.37%	83.98%	15.63%	0.03%	9.79%	88.49%	1.68%	0.04%	
PEAK HR :	07:45 AM - 08:45 AM				23	26	13	0	11	1671	329	1	162	1337	30	0	TOTAL 3906
PEAK HR VOL :	158	11	134	0	0.719	0.542	0.650	0.000	0.688	0.960	0.904	0.250	0.844	0.887	0.833	0.000	0.926
PEAK HR FACTOR :	0.731	0.550	0.698	0.000		0.674				0.951				0.893			
			0.832														
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1.5 NL	0.5 NT	1 NR	0 NU	1 SL	1 ST	0 SR	0 SU	1 EL	3 ET	1 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
4:00 PM	41	6	35	0	8	6	2	0	3	409	61	1	40	425	12	2	1051
4:15 PM	50	8	54	0	6	3	5	0	3	421	47	0	40	433	7	1	1078
4:30 PM	66	9	56	0	2	3	2	0	5	411	54	0	48	447	7	0	1110
4:45 PM	47	4	55	0	8	12	2	0	7	425	59	0	48	405	9	0	1081
5:00 PM	49	11	63	0	7	3	5	0	3	398	65	0	56	417	14	4	1095
5:15 PM	56	20	72	0	6	3	4	0	2	429	77	0	53	444	22	4	1192
5:30 PM	41	7	54	0	5	2	2	0	4	421	77	0	38	414	15	1	1081
5:45 PM	44	10	41	0	7	4	2	0	0	445	56	2	48	404	13	1	1077
TOTAL VOLUMES :	NL 394	NT 75	NR 430	NU 0	SL 49	ST 36	SR 24	SU 0	EL 27	ET 3359	ER 496	EU 3	WL 371	WT 3389	WR 99	WU 13	TOTAL 8765
APPROACH %'s :	43.83%	8.34%	47.83%	0.00%	44.95%	33.03%	22.02%	0.00%	0.69%	86.46%	12.77%	0.08%	9.58%	87.53%	2.56%	0.34%	
PEAK HR :	04:30 PM - 05:30 PM				23	21	13	0	17	1663	255	0	205	1713	52	8	TOTAL 4478
PEAK HR VOL :	218	44	246	0	0.719	0.438	0.650	0.000	0.607	0.969	0.828	0.000	0.915	0.958	0.591	0.500	0.939
PEAK HR FACTOR :	0.826	0.550	0.854	0.000		0.648				0.952				0.946			
			0.858														

Castlegate Ln/Placentia Ave & Imperial Hwy

Peak Hour Turning Movement Count

ID: 18-01231-010
City: Brea

Day: Tuesday
Date: 11/13/2018



INTERSECTION TURNING MOVEMENT COUNTS

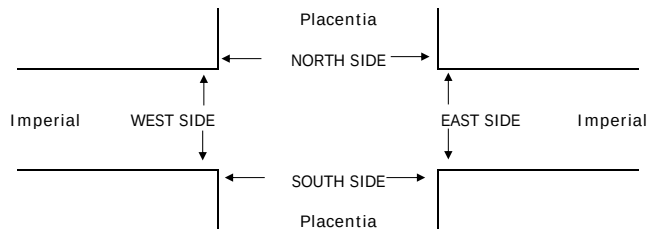
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Sat, May 18, 19	LOCATION: NORTH & SOUTH: EAST & WEST:	Brea Placentia Imperial	PROJECT #: LOCATION #: CONTROL:	SC2213 5 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

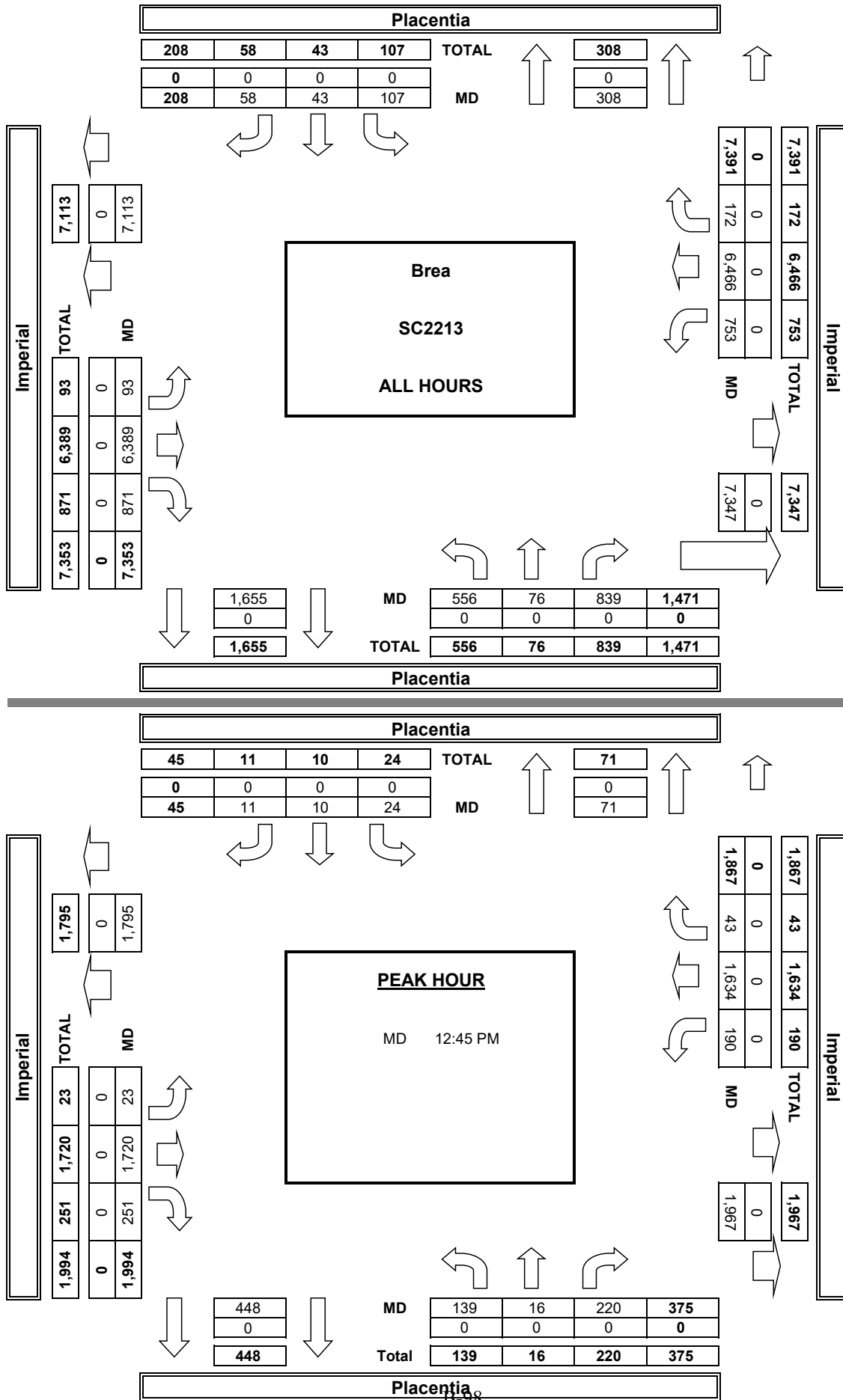
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
	Placentia			Placentia			Imperial			Imperial				NB	SB	EB	WB	TTL
LANES:	NL 1.5	NT 0.5	NR 1	SL 1	ST 1	SR 0	EL 1	ET 3	ER 1	WL 1	WT 3	WR 0	TOTAL	0	0	1	0	1
11:00 AM	47	6	56	9	3	4	8	375	41	46	414	9	1,018	0	0	1	0	1
11:15 AM	36	8	53	9	0	4	4	382	36	38	440	14	1,024	0	0	0	0	0
11:30 AM	39	5	48	7	2	2	1	358	40	49	401	7	959	0	0	0	2	2
11:45 AM	31	5	51	5	2	3	10	413	42	50	427	13	1,052	0	0	3	1	4
12:00 PM	45	4	48	14	4	2	10	360	49	41	341	9	927	0	0	5	0	5
12:15 PM	40	4	47	4	5	4	6	398	67	55	357	15	1,002	0	0	2	1	3
12:30 PM	41	5	56	10	4	7	7	444	69	56	362	15	1,076	0	0	3	1	4
12:45 PM	36	4	56	4	4	3	5	473	75	53	388	9	1,110	0	0	2	1	3
1:00 PM	34	4	55	6	1	2	8	389	64	48	384	11	1,006	0	0	5	1	6
1:15 PM	33	2	56	7	2	3	6	434	46	43	404	10	1,046	0	0	2	0	2
1:30 PM	36	6	53	7	3	3	4	424	66	46	458	13	1,119	0	0	2	1	3
1:45 PM	28	3	39	6	4	2	6	409	54	49	399	11	1,010	0	0	1	1	2
2:00 PM	18	1	51	5	3	6	9	399	61	48	394	16	1,011	0	0	3	0	3
2:15 PM	34	5	56	4	1	5	3	353	49	50	466	7	1,033	0	0	1	1	2
2:30 PM	29	9	67	5	2	4	3	391	59	42	412	7	1,030	0	0	1	1	2
2:45 PM	29	5	47	5	3	4	3	387	53	39	419	6	1,000	0	0	2	1	3
VOLUMES	556	76	839	107	43	58	93	6,389	871	753	6,466	172	16,423	0	0	33	12	45
APPROACH %	38%	5%	57%	51%	21%	28%	1%	87%	12%	10%	87%	2%						
APP/DEPART	1,471	/	308	208	/	1,655	7,353	/	7,347	7,391	/	7,113	0					
BEGIN PEAK HR	12:45 PM																	
VOLUMES	139	16	220	24	10	11	23	1,720	251	190	1,634	43	4,281					
APPROACH %	37%	4%	59%	53%	22%	24%	1%	86%	13%	10%	88%	2%						
PEAK HR FACTOR	0.977			0.865			0.901			0.903			0.956					
APP/DEPART	375	/	71	45	/	448	1,994	/	1,967	1,867	/	1,795	0					



MD		11:00 AM
		11:15 AM
		11:30 AM
		11:45 AM
		12:00 PM
		12:15 PM
		12:30 PM
		12:45 PM
		1:00 PM
		1:15 PM
		1:30 PM
		1:45 PM
		2:00 PM
		2:15 PM
		2:30 PM
		2:45 PM
		TOTAL
	AM BEGIN PEAK HR	

[illegible][illegible][illegible]

AimTD LLC
TURNING MOVEMENT COUNTS



National Data & Surveying Services

Intersection Turning Movement Count

Location: N Kraemer Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-017
Date: 5/22/2019

Total

NS/EW Streets:	N Kraemer Blvd				N Kraemer Blvd				Imperial Hwy				Imperial Hwy				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	0 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
7:00 AM	32	45	9	0	64	125	20	0	33	298	49	0	10	176	18	0	879
7:15 AM	29	36	7	0	72	153	22	0	38	272	52	0	21	226	13	0	941
7:30 AM	33	41	11	0	80	177	19	0	30	289	47	0	14	205	20	0	966
7:45 AM	47	76	22	0	73	163	32	0	36	337	50	1	8	251	21	0	1117
8:00 AM	34	49	21	0	89	155	24	0	30	296	65	1	19	234	25	0	1042
8:15 AM	35	55	14	0	61	127	20	0	31	248	56	1	22	246	16	0	932
8:30 AM	44	46	22	0	79	151	27	0	23	283	52	2	17	232	20	0	998
8:45 AM	49	41	16	2	72	107	15	0	28	325	41	2	11	210	15	0	934
TOTAL VOLUMES :	303	389	122	2	590	1158	179	0	249	2348	412	7	122	1780	148	0	7809
APPROACH %'s :	37.13%	47.67%	14.95%	0.25%	30.62%	60.09%	9.29%	0.00%	8.26%	77.85%	13.66%	0.23%	5.95%	86.83%	7.22%	0.00%	
PEAK HR :	07:45 AM - 08:45 AM				302	596	103	0	120	1164	223	5	66	963	82	0	4089
PEAK HR VOL :	160	226	79	0	0.848	0.914	0.805	0.000	0.833	0.864	0.858	0.625	0.750	0.959	0.820	0.000	0.915
PEAK HR FACTOR :	0.851	0.743	0.898	0.000	0.802	0.934	0.892	0.978									
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	0 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
4:00 PM	61	99	18	0	54	128	27	1	20	264	31	0	30	246	41	0	1020
4:15 PM	54	85	21	0	65	127	27	2	29	307	51	0	22	290	35	1	1116
4:30 PM	70	130	20	0	69	129	29	0	39	334	39	3	35	337	67	2	1303
4:45 PM	76	137	19	0	50	113	28	0	47	290	47	2	44	350	67	2	1272
5:00 PM	90	115	28	0	46	106	28	0	46	301	54	3	42	322	62	1	1244
5:15 PM	85	141	20	0	52	113	24	0	53	325	47	1	38	343	63	1	1306
5:30 PM	79	158	22	0	77	125	27	0	45	323	48	3	50	338	74	2	1371
5:45 PM	77	155	25	0	71	92	26	0	46	298	45	1	34	375	98	3	1346
TOTAL VOLUMES :	592	1020	173	0	484	933	216	3	325	2442	362	13	295	2601	507	12	9978
APPROACH %'s :	33.17%	57.14%	9.69%	0.00%	29.58%	57.03%	13.20%	0.18%	10.34%	77.72%	11.52%	0.41%	8.64%	76.16%	14.85%	0.35%	
PEAK HR :	05:00 PM - 06:00 PM				246	436	105	0	190	1247	194	8	164	1378	297	7	5267
PEAK HR VOL :	331	569	95	0	0.799	0.872	0.938	0.000	0.896	0.959	0.898	0.667	0.820	0.919	0.758	0.583	0.960
PEAK HR FACTOR :	0.919	0.900	0.848	0.000	0.960	0.859	0.962	0.905									

ID: 19-01101-017
City: Brea

Day: Wednesday
Date: 05/22/2019

B-100
1-314

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Kraemer Blvd & Imperial Hwy
City: Brea
Control: Signalized

Project ID: 19-01101-017
Date: 5/18/2019

Total

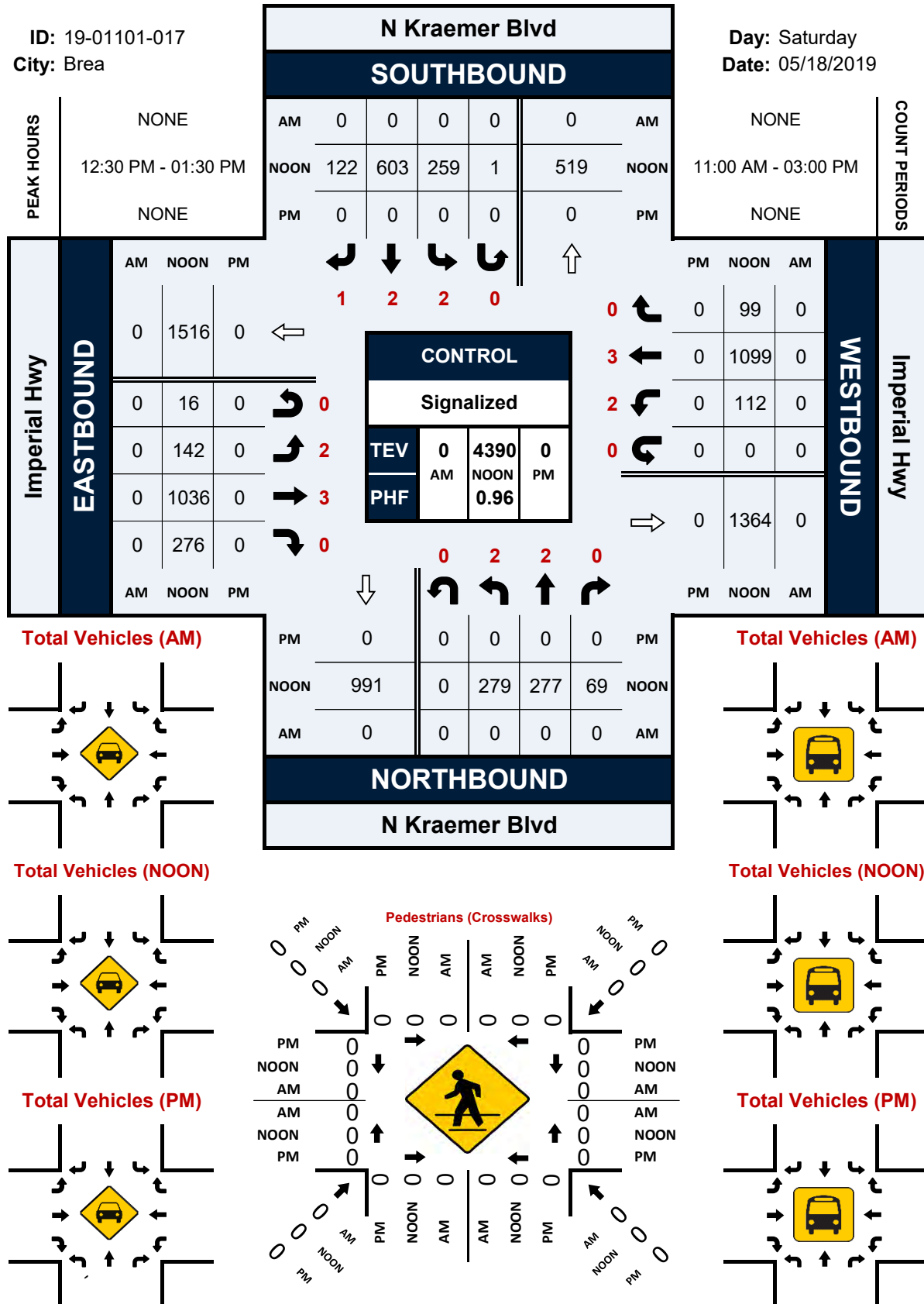
NS/EW Streets:		N Kraemer Blvd				N Kraemer Blvd				Imperial Hwy				Imperial Hwy				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		2 NL	2 NT	0 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	0 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
11:00 AM		91	58	16	0	44	104	33	0	37	187	48	5	26	261	27	0	937
11:15 AM		89	61	15	0	53	111	33	0	22	247	65	3	18	270	23	0	1010
11:30 AM		75	68	13	0	54	104	37	1	22	240	59	1	27	278	22	0	1001
11:45 AM		80	50	17	0	64	111	29	0	24	227	59	2	23	324	18	0	1028
12:00 PM		80	63	15	0	53	123	29	0	31	214	78	5	31	247	18	0	987
12:15 PM		90	64	28	0	67	129	34	0	32	226	50	6	20	231	22	0	999
12:30 PM		75	86	16	0	74	174	31	1	39	257	77	3	30	261	19	0	1143
12:45 PM		67	57	13	0	75	164	21	0	41	272	71	3	22	273	31	0	1110
1:00 PM		60	69	25	0	59	142	30	0	32	246	62	4	31	265	23	0	1048
1:15 PM		77	65	15	0	51	123	40	0	30	261	66	6	29	300	26	0	1089
1:30 PM		68	60	16	0	69	113	40	0	38	252	69	4	26	286	30	0	1071
1:45 PM		55	55	10	0	55	124	33	0	42	253	54	3	19	253	25	0	981
2:00 PM		61	54	12	1	56	113	38	1	31	222	65	4	19	302	26	2	1007
2:15 PM		67	50	11	1	80	101	24	0	25	225	56	5	22	289	21	1	978
2:30 PM		51	63	12	1	57	122	39	2	26	250	61	3	15	252	26	0	980
2:45 PM		54	53	22	0	54	115	31	1	28	230	64	4	16	264	14	0	950
TOTAL VOLUMES :		1140	976	256	3	965	1973	522	6	500	3809	1004	61	374	4356	371	3	16319
APPROACH %'s :		48.00%	41.09%	10.78%	0.13%	27.84%	56.92%	15.06%	0.17%	9.30%	70.88%	18.68%	1.14%	7.33%	85.34%	7.27%	0.06%	
PEAK HR :		12:30 PM - 01:30 PM																TOTAL
PEAK HR VOL :		279	277	69	0	259	603	122	1	142	1036	276	16	112	1099	99	0	4390
PEAK HR FACTOR :		0.906	0.805	0.690	0.000	0.863	0.866	0.763	0.250	0.866	0.952	0.896	0.667	0.903	0.916	0.798	0.000	0.960
		0.883				0.879				0.950				0.923				

N Kraemer Blvd & Imperial Hwy

Peak Hour Turning Movement Count

ID: 19-01101-017
City: Brea

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: N Brea Blvd & E Bastanchury Rd
City: Fullerton
Control: Signalized

Project ID: 19-01101-018
Date: 5/22/2019

Total

NS/EW Streets:	N Brea Blvd				N Brea Blvd				E Bastanchury Rd				E Bastanchury Rd			
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	2.5 WT	0.5 WR	0 WU
7:00 AM	42	76	60	0	51	192	104	0	27	222	26	0	51	270	21	0
7:15 AM	40	89	59	0	47	217	108	0	45	223	28	0	58	262	15	0
7:30 AM	51	163	59	0	68	231	107	0	50	299	52	0	63	282	32	0
7:45 AM	37	173	64	1	61	220	87	0	77	290	40	0	83	273	47	0
8:00 AM	9	100	56	0	49	228	77	0	64	252	24	0	83	259	40	0
8:15 AM	12	103	46	0	45	184	82	0	56	256	11	0	66	227	34	0
8:30 AM	11	96	51	0	45	191	109	0	80	264	16	0	69	228	30	0
8:45 AM	15	150	62	0	53	198	99	0	98	208	26	0	65	252	53	0
TOTAL VOLUMES :	NL 217	NT 950	NR 457	NU 1	SL 419	ST 1661	SR 773	SU 0	EL 497	ET 2014	ER 223	EU 0	WL 538	WT 2053	WR 272	WU 0
APPROACH %'s :	13.35%	58.46%	28.12%	0.06%	14.69%	58.22%	27.09%	0.00%	18.18%	73.66%	8.16%	0.00%	18.79%	71.71%	9.50%	0.00%
PEAK HR :	07:15 AM - 08:15 AM				225	896	379	0	236	1064	144	0	287	1076	134	0
PEAK HR VOL :	137	525	238	1	0.827	0.970	0.877	0.000	0.766	0.890	0.692	0.000	0.864	0.954	0.713	0.000
PEAK HR FACTOR :	0.819				0.924				0.887				0.929			
TOTAL																
5342																
0.917																
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND			
	1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	2.5 WT	0.5 WR	0 WU
4:00 PM	11	153	52	0	38	135	85	0	122	259	15	0	79	249	58	0
4:15 PM	19	160	70	1	45	116	89	0	122	321	15	0	79	234	69	0
4:30 PM	10	175	73	0	37	143	59	0	117	325	21	2	78	238	58	0
4:45 PM	12	175	68	0	49	132	55	0	143	301	23	0	74	232	46	0
5:00 PM	19	190	108	1	40	152	73	0	123	330	16	0	80	267	53	0
5:15 PM	23	211	66	1	42	143	86	0	155	359	16	0	87	277	60	0
5:30 PM	9	191	72	1	43	145	91	0	123	283	16	0	65	282	67	0
5:45 PM	21	196	63	0	36	117	70	0	131	254	18	0	73	267	68	0
TOTAL VOLUMES :	NL 124	NT 1451	NR 572	NU 4	SL 330	ST 1083	SR 608	SU 0	EL 1036	ET 2432	ER 140	EU 2	WL 615	WT 2046	WR 479	WU 0
APPROACH %'s :	5.76%	67.46%	26.59%	0.19%	16.33%	53.59%	30.08%	0.00%	28.70%	67.37%	3.88%	0.06%	19.59%	65.16%	15.25%	0.00%
PEAK HR :	05:00 PM - 06:00 PM				161	557	320	0	532	1226	66	0	305	1093	248	0
PEAK HR VOL :	72	788	309	3	0.936	0.916	0.879	0.000	0.858	0.854	0.917	0.000	0.876	0.969	0.912	0.000
PEAK HR FACTOR :	0.921				0.930				0.860				0.971			
TOTAL																
5680																
0.931																

Day: Wednesday
Date: 05/22/2019

B-104
1-318

National Data & Surveying Services

Intersection Turning Movement Count

Location: N Brea Blvd & E Bastanchury Rd
City: Fullerton
Control: Signalized

Project ID: 19-01101-018
Date: 5/18/2019

Total

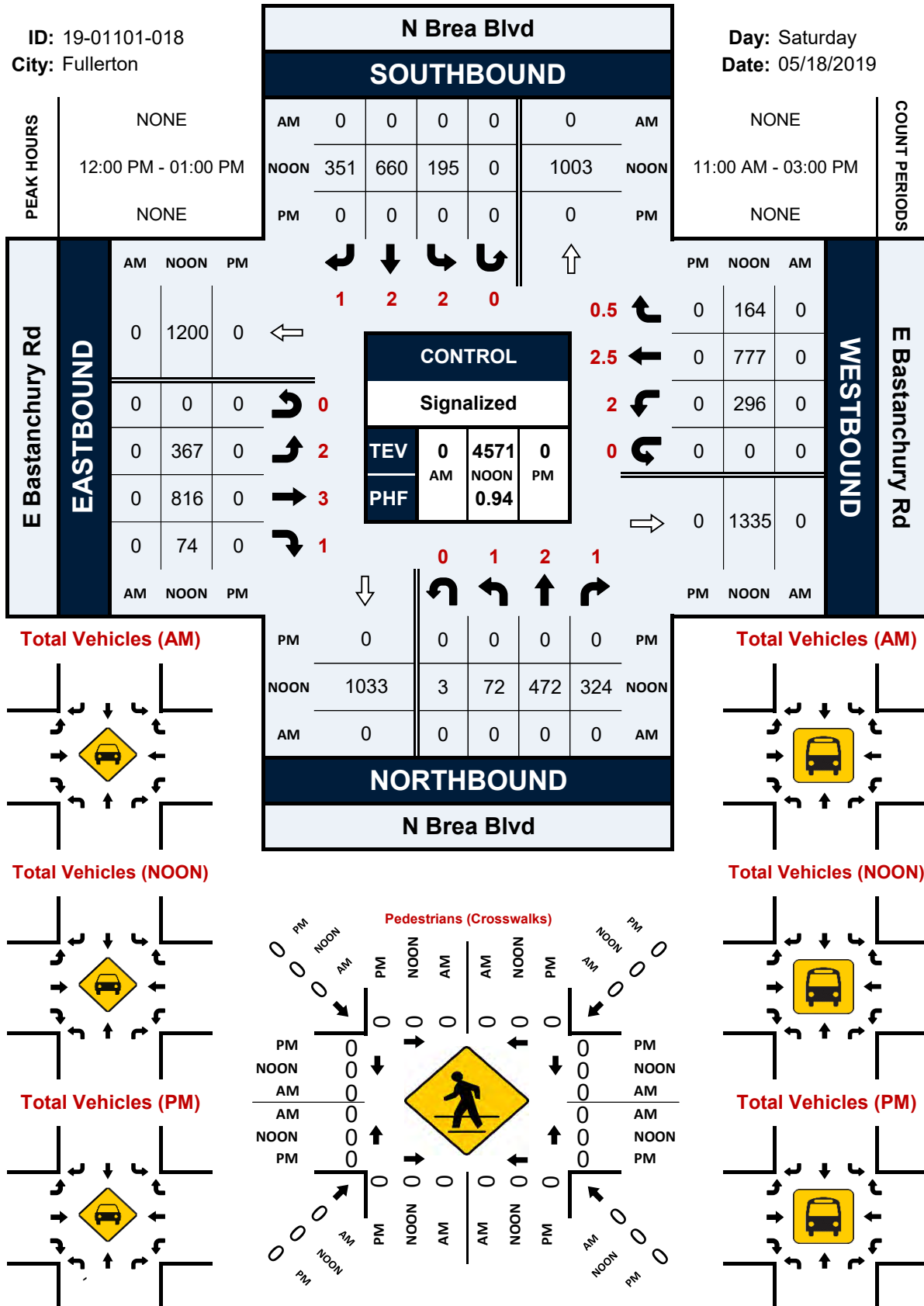
NS/EW Streets:		N Brea Blvd				N Brea Blvd				E Bastanchury Rd				E Bastanchury Rd				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
		1 NL	2 NT	1 NR	0 NU	2 SL	2 ST	1 SR	0 SU	2 EL	3 ET	1 ER	0 EU	2 WL	2.5 WT	0.5 WR	0 WU	
11:00 AM		17	107	52	0	44	124	65	0	75	180	17	0	55	178	37	0	951
11:15 AM		8	118	77	2	50	138	51	0	78	165	16	0	59	170	31	0	963
11:30 AM		15	99	56	0	55	118	58	0	85	167	16	0	68	176	39	0	952
11:45 AM		28	118	66	0	34	168	66	0	79	170	12	0	74	215	63	0	1093
12:00 PM		17	111	82	1	45	163	79	0	97	198	16	0	90	201	37	0	1137
12:15 PM		15	141	86	0	54	157	104	0	94	201	24	0	83	216	39	0	1214
12:30 PM		16	105	74	1	50	179	85	0	80	201	17	0	68	190	39	0	1105
12:45 PM		24	115	82	1	46	161	83	0	96	216	17	0	55	170	49	0	1115
1:00 PM		20	91	72	0	40	138	88	0	82	209	24	0	60	154	34	0	1012
1:15 PM		14	108	57	3	42	143	74	0	71	185	34	0	71	162	49	0	1013
1:30 PM		30	126	80	0	55	162	82	0	87	225	24	0	68	166	40	0	1145
1:45 PM		23	120	63	1	48	121	79	0	75	208	21	0	71	173	38	0	1041
2:00 PM		28	106	66	1	52	154	83	0	77	175	14	0	65	175	42	0	1038
2:15 PM		14	108	73	0	34	136	67	0	77	214	18	0	77	180	39	0	1037
2:30 PM		14	111	49	1	47	129	69	0	80	217	21	0	59	177	35	0	1009
2:45 PM		21	122	61	0	51	138	71	0	62	177	16	0	59	180	33	0	991
TOTAL VOLUMES :		NL 304	NT 1806	NR 1096	NU 11	SL 747	ST 2329	SR 1204	SU 0	EL 1295	ET 3108	ER 307	EU 0	WL 1082	WT 2883	WR 644	WU 0	TOTAL 16816
APPROACH %'s :		9.45%	56.14%	34.07%	0.34%	17.45%	54.42%	28.13%	0.00%	27.49%	65.99%	6.52%	0.00%	23.48%	62.55%	13.97%	0.00%	
PEAK HR :		12:00 PM - 01:00 PM																TOTAL
PEAK HR VOL :		72	472	324	3	195	660	351	0	367	816	74	0	296	777	164	0	4571
PEAK HR FACTOR :		0.750	0.837	0.942	0.750	0.903	0.922	0.844	0.000	0.946	0.944	0.771	0.000	0.822	0.899	0.837	0.000	0.941
		0.900				0.957				0.955				0.915				

N Brea Blvd & E Bastanchury Rd

Peak Hour Turning Movement Count

ID: 19-01101-018
City: Fullerton

Day: Saturday
Date: 05/18/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: State College Blvd & E Bastanchury Rd
City: Fullerton
Control: Signalized

Project ID: 19-01101-019
Date: 5/22/2019

Total

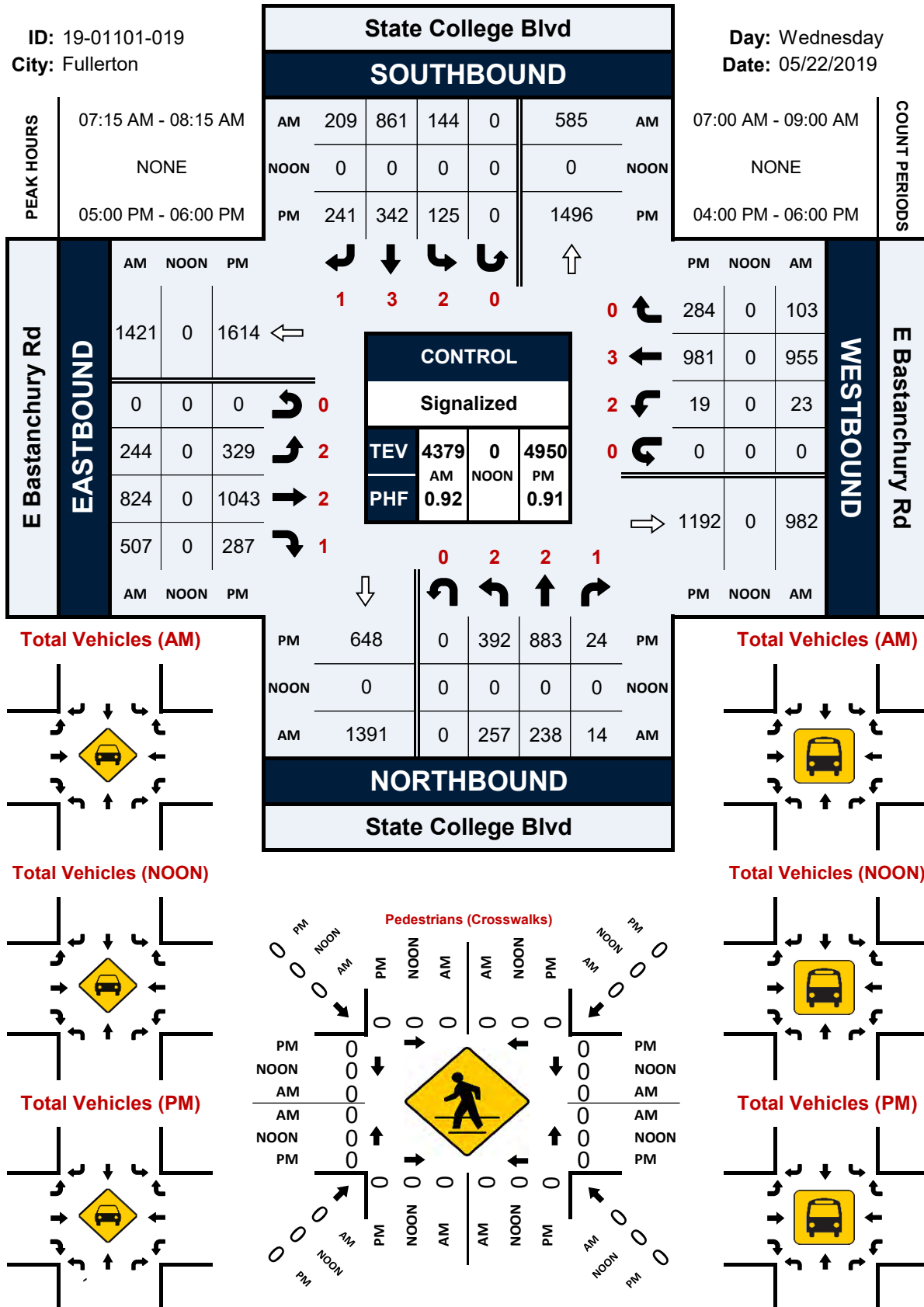
NS/EW Streets:	State College Blvd				State College Blvd				E Bastanchury Rd				E Bastanchury Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
7:00 AM	55	49	3	0	28	198	49	0	55	188	111	0	4	226	25	0	991
7:15 AM	64	58	3	0	34	222	52	0	51	174	120	0	6	235	22	0	1041
7:30 AM	69	47	2	0	36	218	50	0	63	224	138	0	7	240	20	0	1114
7:45 AM	61	71	5	0	34	240	57	0	60	215	157	0	5	257	28	0	1190
8:00 AM	63	62	4	0	40	181	50	0	70	211	92	0	5	223	33	0	1034
8:15 AM	44	49	1	0	27	131	53	0	63	197	74	0	8	228	39	0	914
8:30 AM	51	55	5	0	30	133	51	0	52	199	81	0	4	226	32	0	919
8:45 AM	45	59	2	0	49	152	59	0	51	186	89	0	3	247	38	0	980
TOTAL VOLUMES :	NL 452	NT 450	NR 25	NU 0	SL 278	ST 1475	SR 421	SU 0	EL 465	ET 1594	ER 862	EU 0	WL 42	WT 1882	WR 237	WU 0	TOTAL 8183
APPROACH %'s :	48.76%	48.54%	2.70%	0.00%	12.79%	67.85%	19.37%	0.00%	15.92%	54.57%	29.51%	0.00%	1.94%	87.09%	10.97%	0.00%	
PEAK HR :	07:15 AM - 08:15 AM																TOTAL
PEAK HR VOL :	257	238	14	0	144	861	209	0	244	824	507	0	23	955	103	0	4379
PEAK HR FACTOR :	0.931	0.838	0.700	0.000	0.900	0.897	0.917	0.000	0.871	0.920	0.807	0.000	0.821	0.929	0.780	0.000	0.920
	0.929				0.917				0.911				0.932				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	3 WT	0 WR	0 WU	
4:00 PM	59	108	7	0	23	92	57	0	43	233	63	0	5	236	45	0	971
4:15 PM	80	147	9	0	27	82	67	0	56	289	69	0	3	242	45	0	1116
4:30 PM	80	173	10	0	18	91	62	0	70	273	75	0	8	208	50	0	1118
4:45 PM	78	132	6	0	20	113	66	0	64	264	67	0	8	216	60	0	1094
5:00 PM	110	194	2	0	24	84	61	0	76	273	76	0	7	232	48	0	1187
5:15 PM	93	219	10	0	36	89	65	0	110	304	99	0	3	254	80	0	1362
5:30 PM	93	228	3	0	28	94	52	0	73	254	65	0	4	261	89	0	1244
5:45 PM	96	242	9	0	37	75	63	0	70	212	47	0	5	234	67	0	1157
TOTAL VOLUMES :	NL 689	NT 1443	NR 56	NU 0	SL 213	ST 720	SR 493	SU 0	EL 562	ET 2102	ER 561	EU 0	WL 43	WT 1883	WR 484	WU 0	TOTAL 9249
APPROACH %'s :	31.49%	65.95%	2.56%	0.00%	14.94%	50.49%	34.57%	0.00%	17.43%	65.18%	17.40%	0.00%	1.78%	78.13%	20.08%	0.00%	
PEAK HR :	05:00 PM - 06:00 PM																TOTAL
PEAK HR VOL :	392	883	24	0	125	342	241	0	329	1043	287	0	19	981	284	0	4950
PEAK HR FACTOR :	0.891	0.912	0.600	0.000	0.845	0.910	0.927	0.000	0.748	0.858	0.725	0.000	0.679	0.940	0.798	0.000	0.909
	0.936				0.932				0.808				0.907				

State College Blvd & E Bastanchury Rd

Peak Hour Turning Movement Count

ID: 19-01101-019
City: Fullerton

Day: Wednesday
Date: 05/22/2019



National Data & Surveying Services

Intersection Turning Movement Count

Location: State College Blvd & E Bastanchury Rd
City: Fullerton
Control: Signalized

Project ID: 19-01101-019
Date: 5/18/2019

Total

NS/EW Streets:		State College Blvd				State College Blvd				E Bastanchury Rd				E Bastanchury Rd				
NOON		NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				
		2 NL	2 NT	1 NR	0 NU	2 SL	3 ST	1 SR	0 SU	2 EL	2 ET	1 ER	0 EU	2 WL	3 WT	0 WR	0 WU	TOTAL
11:00 AM		46	117	78	0	28	62	59	0	74	154	48	0	6	162	24	0	858
11:15 AM		61	120	68	0	12	77	59	0	80	183	55	0	4	165	35	0	919
11:30 AM		62	216	143	0	32	68	57	0	64	182	60	0	7	170	40	0	1101
11:45 AM		82	145	99	0	23	107	79	0	61	161	45	0	8	190	41	0	1041
12:00 PM		78	203	124	0	38	114	72	0	85	205	55	0	11	202	45	0	1232
12:15 PM		61	164	83	0	42	132	74	0	71	215	56	0	12	179	34	0	1123
12:30 PM		60	146	28	0	44	186	64	1	71	220	42	0	12	175	34	0	1083
12:45 PM		51	89	7	0	48	169	66	0	77	211	62	0	7	171	44	0	1002
1:00 PM		46	88	7	0	36	129	56	0	94	192	57	0	7	138	54	0	904
1:15 PM		43	73	5	0	30	128	74	0	62	189	65	0	9	159	38	0	875
1:30 PM		39	77	4	0	32	131	71	0	93	200	54	0	10	154	53	0	918
1:45 PM		55	83	5	0	34	128	82	0	99	172	61	0	3	154	41	0	917
2:00 PM		38	71	4	0	31	142	72	0	65	177	53	0	6	163	31	0	853
2:15 PM		41	90	1	0	31	125	73	0	74	173	69	0	5	177	28	0	887
2:30 PM		40	77	4	0	29	122	77	0	71	175	63	0	3	155	46	0	862
2:45 PM		38	78	3	0	31	131	74	0	70	177	48	0	4	161	30	0	845
TOTAL VOLUMES :		NL 841	NT 1837	NR 663	NU 0	SL 521	ST 1951	SR 1109	SU 1	EL 1211	ET 2986	ER 893	EU 0	WL 114	WT 2675	WR 618	WU 0	TOTAL 15420
APPROACH %'s :		25.17%	54.98%	19.84%	0.00%	14.54%	54.47%	30.96%	0.03%	23.79%	58.66%	17.54%	0.00%	3.35%	78.51%	18.14%	0.00%	
PEAK HR :		11:30 AM - 12:30 PM																TOTAL
PEAK HR VOL :		283	728	449	0	135	421	282	0	281	763	216	0	38	741	160	0	4497
PEAK HR FACTOR :		0.863	0.843	0.785	0.000	0.804	0.797	0.892	0.000	0.826	0.887	0.900	0.000	0.792	0.917	0.889	0.000	0.913
		0.867				0.845				0.913				0.910				

National Data & Surveying Services

Intersection Turning Movement Count

Location: Placentia Ave & Bastanchury Rd
City: Placentia
Control: Signalized

Project ID: 18-01231-013
Date: 11/13/2018

Total

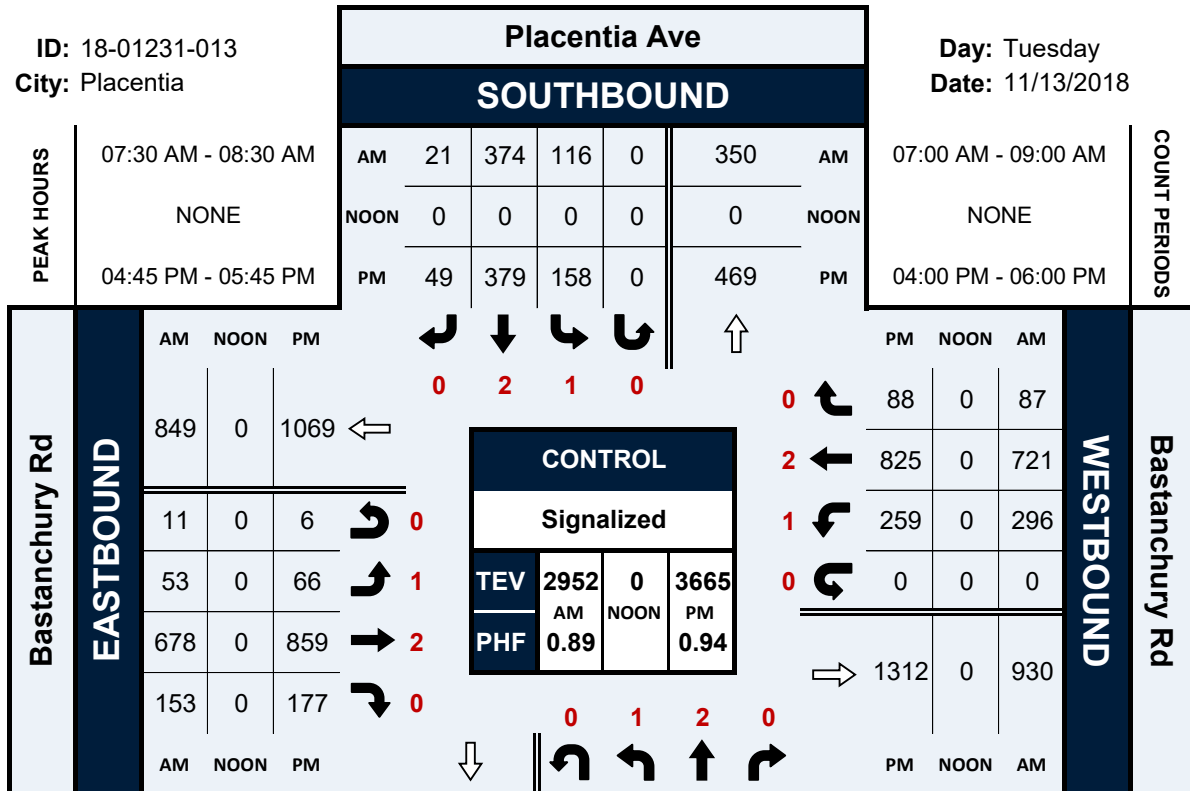
NS/EW Streets:	Placentia Ave				Placentia Ave				Bastanchury Rd				Bastanchury Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
7:00 AM	25	29	25	0	17	72	2	0	3	101	33	0	67	157	15	0	546
7:15 AM	20	25	32	0	33	78	4	0	4	132	30	0	62	141	19	0	580
7:30 AM	27	48	39	0	39	121	6	0	7	210	37	2	81	186	25	0	828
7:45 AM	24	70	28	0	31	102	8	0	18	169	48	5	78	173	28	0	782
8:00 AM	22	50	32	0	27	69	3	0	12	143	32	4	76	172	20	0	662
8:15 AM	23	42	37	0	19	82	4	0	16	156	36	0	61	190	14	0	680
8:30 AM	25	32	39	0	29	64	9	0	14	137	26	1	57	164	19	0	616
8:45 AM	25	33	30	0	28	60	11	0	10	147	21	1	56	154	12	0	588
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	191	329	262	0	223	648	47	0	84	1195	263	13	538	1337	152	0	5282
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	96	210	136	0	116	374	21	0	53	678	153	11	296	721	87	0	2952
PEAK HR FACTOR :	0.889	0.750	0.872	0.000	0.744	0.773	0.656	0.000	0.736	0.807	0.797	0.550	0.914	0.949	0.777	0.000	0.891
	0.906				0.770				0.874				0.945				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	1 NL	2 NT	0 NR	0 NU	1 SL	2 ST	0 SR	0 SU	1 EL	2 ET	0 ER	0 EU	1 WL	2 WT	0 WR	0 WU	
4:00 PM	35	61	46	0	33	89	9	0	6	169	29	1	55	160	31	0	724
4:15 PM	44	81	66	0	27	86	12	0	13	191	29	2	48	157	16	0	772
4:30 PM	45	79	70	0	39	92	20	0	18	182	34	0	60	175	29	0	843
4:45 PM	44	78	67	0	36	84	10	0	10	208	39	3	73	196	20	0	868
5:00 PM	50	72	74	0	47	100	13	0	21	216	45	0	61	199	19	0	917
5:15 PM	47	84	81	0	41	92	12	0	20	243	44	1	69	218	27	0	979
5:30 PM	48	81	73	0	34	103	14	0	15	192	49	2	56	212	22	0	901
5:45 PM	39	82	72	0	43	78	16	0	14	183	33	0	47	154	19	0	780
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	352	618	549	0	300	724	106	0	117	1584	302	9	469	1471	183	0	6784
PEAK HR :	04:45 PM - 05:45 PM																TOTAL
PEAK HR VOL :	189	315	295	0	158	379	49	0	66	859	177	6	259	825	88	0	3665
PEAK HR FACTOR :	0.945	0.938	0.910	0.000	0.840	0.920	0.875	0.000	0.786	0.884	0.903	0.500	0.887	0.946	0.815	0.000	0.936
	0.942				0.916				0.899				0.933				

Placentia Ave & Bastanchury Rd

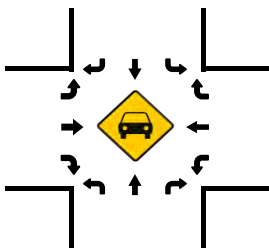
Peak Hour Turning Movement Count

ID: 18-01231-013
City: Placentia

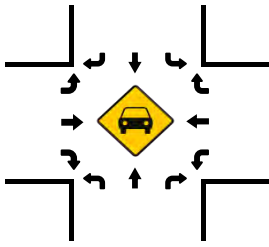
Day: Tuesday
Date: 11/13/2018



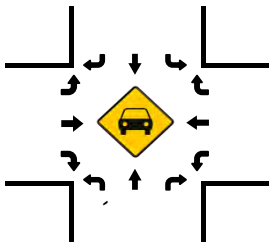
Total Vehicles (AM)



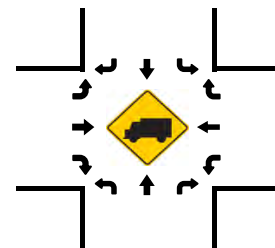
Total Vehicles (Noon)



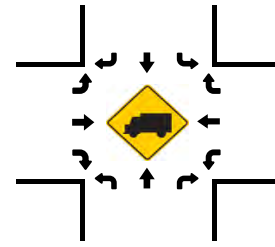
Total Vehicles (PM)



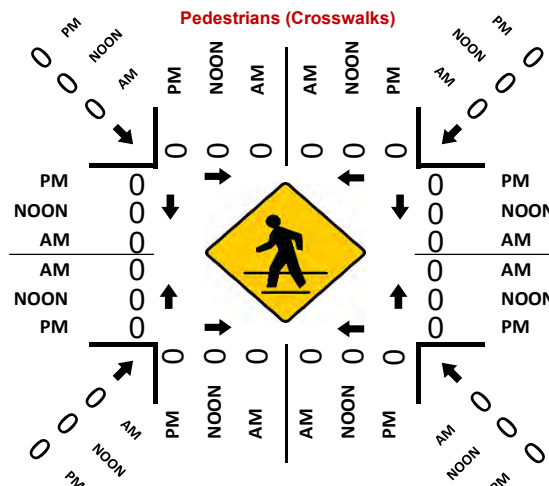
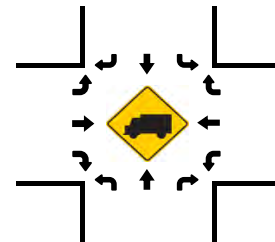
2axle (AM)



2axle (NOON)



2axle (PM)



INTERSECTION TURNING MOVEMENT COUNTS

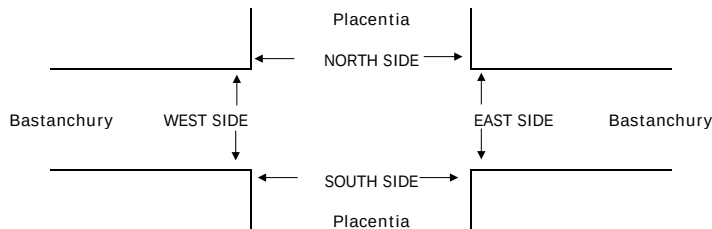
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Sat, May 18, 19	LOCATION: NORTH & SOUTH: EAST & WEST:	Brea Placentia Bastanchury	PROJECT #: LOCATION #: CONTROL:	SC2213 6 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

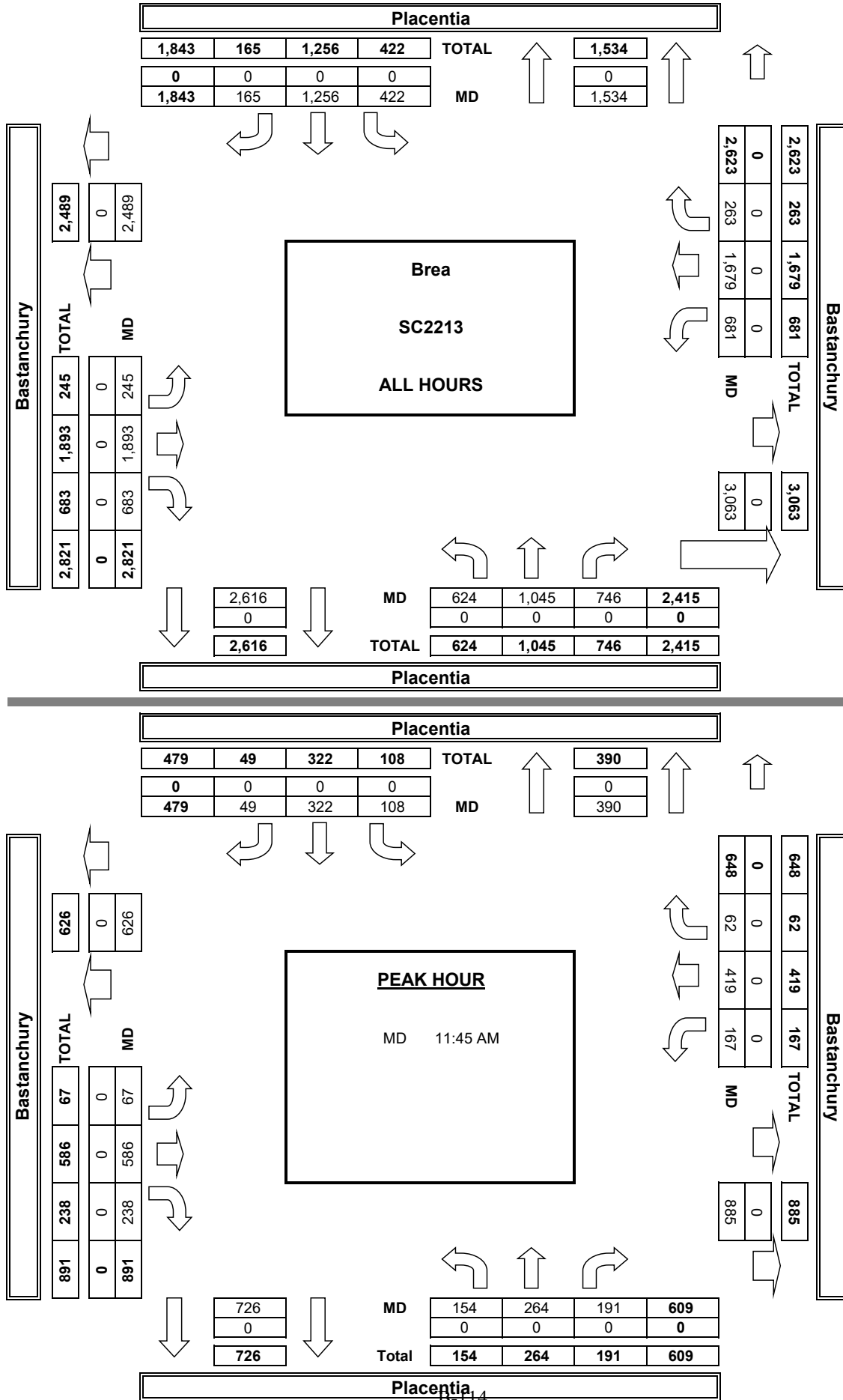
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
	Placentia			Placentia			Bastanchury			Bastanchury				NB	SB	EB	WB	TTL
LANES:	NL 1	NT 2	NR 0	SL 1	ST 2	SR 0	EL 1	ET 2	ER 0	WL 1	WT 2	WR 0	TOTAL	0	0	0	0	
11:00 AM	35	68	38	29	74	11	16	109	51	44	104	22	601	0	1	5	0	6
11:15 AM	36	73	49	25	49	6	17	108	53	50	92	13	571	0	0	3	0	3
11:30 AM	45	52	45	14	68	10	18	129	63	37	115	17	613	0	0	0	0	0
11:45 AM	42	69	50	21	83	14	14	133	63	38	116	17	660	0	0	1	1	2
12:00 PM	47	66	40	25	70	7	19	145	75	43	89	16	642	0	0	1	0	1
12:15 PM	30	57	46	35	86	14	17	169	60	50	115	17	696	0	0	0	0	0
12:30 PM	35	72	55	27	83	14	17	139	40	36	99	12	629	0	1	2	0	3
12:45 PM	38	60	56	35	90	10	15	116	47	52	93	20	632	0	0	0	0	0
1:00 PM	42	68	48	21	87	13	14	129	31	36	99	17	605	0	0	2	1	3
1:15 PM	37	72	45	32	75	13	12	136	27	45	118	21	633	0	0	0	0	0
1:30 PM	29	73	45	24	89	6	13	105	32	48	105	15	584	0	0	0	0	0
1:45 PM	39	53	48	31	95	8	6	109	25	38	110	19	581	0	0	1	0	1
2:00 PM	40	54	47	29	81	13	12	91	22	57	113	10	569	0	0	0	2	2
2:15 PM	48	77	32	30	76	11	18	89	27	33	100	17	558	0	0	2	0	2
2:30 PM	39	72	45	16	82	10	20	90	34	29	103	14	554	0	0	2	0	2
2:45 PM	42	59	57	28	68	5	17	96	33	45	108	16	574	0	0	2	0	2
VOLUMES	624	1,045	746	422	1,256	165	245	1,893	683	681	1,679	263	9,702	0	2	21	4	27
APPROACH %	26%	43%	31%	23%	68%	9%	9%	67%	24%	26%	64%	10%						
APP/DEPART	2,415	/	1,534	1,843	/	2,616	2,821	/	3,063	2,623	/	2,489	0					
BEGIN PEAK HR	11:45 AM																	
VOLUMES	154	264	191	108	322	49	67	586	238	167	419	62	2,627					
APPROACH %	25%	43%	31%	23%	67%	10%	8%	66%	27%	26%	65%	10%						
PEAK HR FACTOR	0.940			0.887			0.905			0.890			0.944					
APP/DEPART	609	/	390	479	/	726	891	/	885	648	/	626	0					



MD	11:00 AM
	11:15 AM
	11:30 AM
	11:45 AM
	12:00 PM
	12:15 PM
	12:30 PM
	12:45 PM
	1:00 PM
	1:15 PM
	1:30 PM
	1:45 PM
	2:00 PM
	2:15 PM
	2:30 PM
2:45 PM	
	TOTAL
	AM BEGIN PEAK HR

[illegible][illegible][illegible]

AimTD LLC
TURNING MOVEMENT COUNTS



National Data & Surveying Services

Intersection Turning Movement Count

Location: Kraemer Blvd & Bastanchury Rd
City: Placentia
Control: Signalized

Project ID: 18-01231-014
Date: 11/13/2018

Total

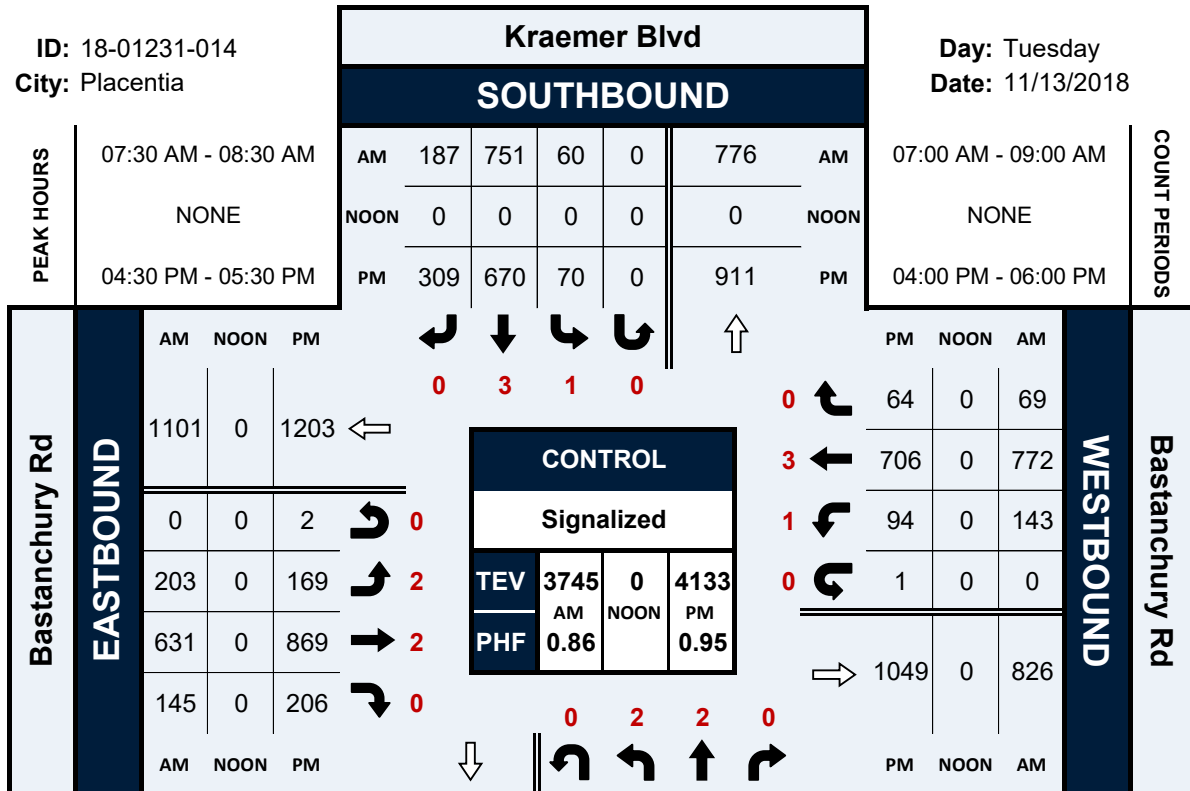
NS/EW Streets:	Kraemer Blvd				Kraemer Blvd				Bastanchury Rd				Bastanchury Rd				
AM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	0 NR	0 NU	1 SL	3 ST	0 SR	0 SU	2 EL	2 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
7:00 AM	24	60	8	0	5	165	45	0	19	92	39	0	18	153	11	0	639
7:15 AM	25	75	28	0	13	212	37	0	26	152	29	0	32	151	6	0	786
7:30 AM	42	117	77	1	26	264	46	0	33	181	29	0	62	202	14	0	1094
7:45 AM	32	150	29	1	15	174	54	0	63	184	38	0	39	203	21	0	1003
8:00 AM	23	115	17	0	8	140	48	0	54	140	36	0	16	196	19	0	812
8:15 AM	45	122	12	1	11	173	39	0	53	126	42	0	26	171	15	0	836
8:30 AM	26	142	16	0	13	174	47	0	54	111	31	0	35	141	26	0	816
8:45 AM	25	95	18	0	12	142	49	0	47	139	35	1	14	165	11	0	753
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	242	876	205	3	103	1444	365	0	349	1125	279	1	242	1382	123	0	6739
	18.25%	66.06%	15.46%	0.23%	5.39%	75.52%	19.09%	0.00%	19.90%	64.14%	15.91%	0.06%	13.85%	79.11%	7.04%	0.00%	
PEAK HR :	07:30 AM - 08:30 AM																TOTAL
PEAK HR VOL :	142	504	135	3	60	751	187	0	203	631	145	0	143	772	69	0	3745
PEAK HR FACTOR :	0.789	0.840	0.438	0.750	0.577	0.711	0.866	0.000	0.806	0.857	0.863	0.000	0.577	0.951	0.821	0.000	0.856
	0.827				0.743				0.859				0.885				
PM	NORTHBOUND				SOUTHBOUND				EASTBOUND				WESTBOUND				TOTAL
	2 NL	2 NT	0 NR	0 NU	1 SL	3 ST	0 SR	0 SU	2 EL	2 ET	0 ER	0 EU	1 WL	3 WT	0 WR	0 WU	
4:00 PM	43	109	20	0	15	162	70	0	48	171	33	1	26	156	18	0	872
4:15 PM	37	143	19	0	12	153	43	0	41	218	37	2	23	161	10	0	899
4:30 PM	46	177	23	0	21	151	77	0	41	205	51	0	23	175	13	1	1004
4:45 PM	42	151	32	0	8	167	70	0	45	206	51	1	27	165	16	0	981
5:00 PM	48	179	29	0	25	177	89	0	38	212	63	0	23	167	10	0	1060
5:15 PM	50	171	25	0	16	175	73	0	45	246	41	1	21	199	25	0	1088
5:30 PM	51	140	8	0	17	161	68	0	51	231	42	0	16	181	19	0	985
5:45 PM	35	156	24	1	16	139	55	0	33	209	45	0	19	154	8	0	894
TOTAL VOLUMES :	NL	NT	NR	NU	SL	ST	SR	SU	EL	ET	ER	EU	WL	WT	WR	WU	TOTAL
APPROACH %'s :	352	1226	180	1	130	1285	545	0	342	1698	363	5	178	1358	119	1	7783
	20.01%	69.70%	10.23%	0.06%	6.63%	65.56%	27.81%	0.00%	14.20%	70.51%	15.07%	0.21%	10.75%	82.00%	7.19%	0.06%	
PEAK HR :	04:30 PM - 05:30 PM																TOTAL
PEAK HR VOL :	186	678	109	0	70	670	309	0	169	869	206	2	94	706	64	1	4133
PEAK HR FACTOR :	0.930	0.947	0.852	0.000	0.700	0.946	0.868	0.000	0.939	0.883	0.817	0.500	0.870	0.887	0.640	0.250	0.950
	0.950				0.901				0.935				0.883				

Kraemer Blvd & Bastanchury Rd

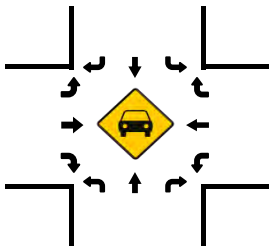
Peak Hour Turning Movement Count

ID: 18-01231-014
City: Placentia

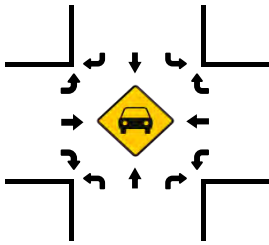
Day: Tuesday
Date: 11/13/2018



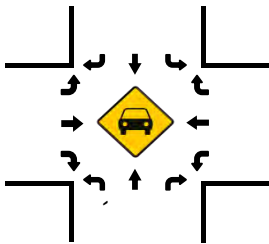
Total Vehicles (AM)



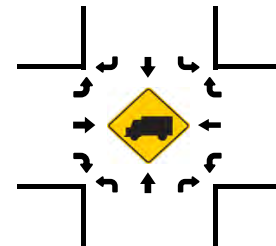
Total Vehicles (Noon)



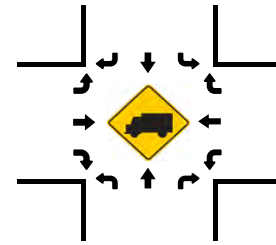
Total Vehicles (PM)



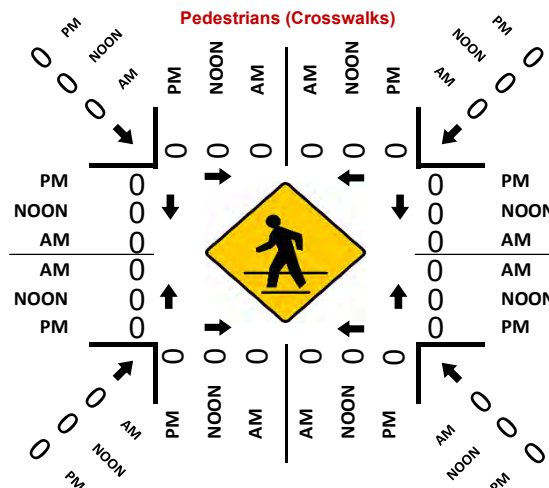
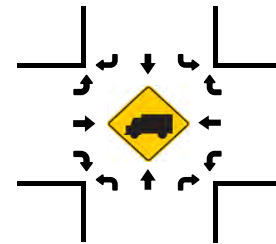
2axle (AM)



2axle (NOON)



2axle (PM)



INTERSECTION TURNING MOVEMENT COUNTS

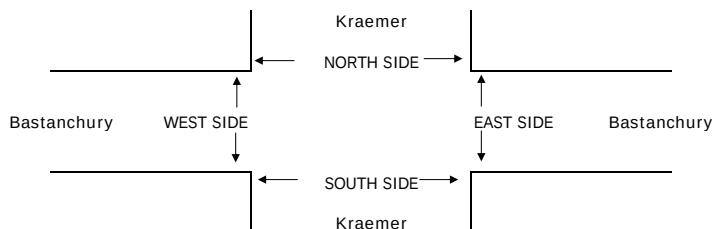
PREPARED BY: AimTD LLC. tel: 714 253 7888 cs@aimtd.com

DATE: Sat, May 18, 19	LOCATION: NORTH & SOUTH: EAST & WEST:	Brea Kraemer Bastanchury	PROJECT #: LOCATION #: CONTROL:	SC2213 7 SIGNAL
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NOTES:	AM		▲	
	PM		N	
	MD	◀ W		E ▶
	OTHER		S	
	OTHER		▼	

☒ Add U-Turns to Left Turns

	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND				U-TURNS				
	Kraemer			Kraemer			Bastanchury			Bastanchury				NB	SB	EB	WB	TTL
LANES:	NL 2	NT 2	NR 0	SL 1	ST 3	SR 0	EL 2	ET 2	ER 0	WL 1	WT 3	WR 0	TOTAL	0	0	1	0	1
11:00 AM	19	118	18	19	119	43	32	117	33	18	108	19	663	0	0	1	0	1
11:15 AM	21	104	12	7	139	36	28	120	40	18	97	12	634	0	0	0	0	0
11:30 AM	26	106	7	17	129	41	39	117	37	24	115	12	670	0	0	1	1	2
11:45 AM	29	98	10	20	135	33	35	132	45	17	101	16	671	0	0	0	0	0
12:00 PM	17	131	17	15	189	36	36	133	32	25	104	21	756	0	0	0	0	0
12:15 PM	25	122	13	16	188	31	46	160	57	12	118	14	802	0	0	2	0	2
12:30 PM	24	115	8	18	211	43	36	153	37	25	92	11	773	1	0	0	1	2
12:45 PM	27	108	18	9	199	47	33	136	31	24	91	8	731	1	0	0	0	1
1:00 PM	25	109	13	16	174	36	44	115	34	19	95	13	693	0	0	0	0	0
1:15 PM	21	131	18	13	156	36	36	137	36	16	121	15	736	0	0	1	1	2
1:30 PM	13	103	14	20	166	38	24	134	33	23	106	8	682	1	0	1	0	2
1:45 PM	26	95	17	14	184	33	38	116	32	18	104	11	688	0	0	0	0	0
2:00 PM	18	99	11	19	167	39	28	110	26	13	119	10	659	0	0	2	0	2
2:15 PM	22	91	11	15	130	35	30	111	24	16	112	14	611	0	0	0	0	0
2:30 PM	16	91	11	9	163	40	28	105	18	16	81	11	589	0	0	0	0	0
2:45 PM	29	104	11	12	141	32	42	118	20	20	108	10	647	0	0	0	1	1
VOLUMES	358	1,725	209	239	2,590	599	555	2,014	535	304	1,672	205	11,005	3	0	8	4	15
APPROACH %	16%	75%	9%	7%	76%	17%	18%	65%	17%	14%	77%	9%						
APP/DEPART	2,292	/	2,477	3,428	/	3,428	3,104	/	2,466	2,181	/	2,634	0					
BEGIN PEAK HR	12:00 PM																	
VOLUMES	93	476	56	58	787	157	151	582	157	86	405	54	3,062					
APPROACH %	15%	76%	9%	6%	79%	16%	17%	65%	18%	16%	74%	10%						
PEAK HR FACTOR	0.947			0.921			0.846			0.908			0.954					
APP/DEPART	625	/	679	1,002	/	1,031	890	/	697	545	/	655	0					



MD		11:00 AM
		11:15 AM
		11:30 AM
		11:45 AM
		12:00 PM
		12:15 PM
		12:30 PM
		12:45 PM
		1:00 PM
		1:15 PM
		1:30 PM
		1:45 PM
		2:00 PM
		2:15 PM
		2:30 PM
		2:45 PM
		TOTAL
	AM BEGIN PEAK HR	

[illegible][illegible][illegible]

TURNING MOVEMENT COUNTS



APPENDIX B-II

EXISTING ROADWAY SEGMENT TRAFFIC
COUNT DATA

VOLUME

Lambert Rd E/O Berry St

Day: Thursday
Date: 4/19/2018City: Brea
Project #: CA18_1082_002

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						15,819	18,378						34,197
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL							TOTAL
00:00			35	36	71		12:00			270	227	497							
00:15			31	33	64		12:15			242	220	462							
00:30			22	28	50		12:30			264	233	497							
00:45			22	110	21	118	12:45			250	1026	292	972	542	1998				
01:00			20	26	46		13:00			235	240	475							
01:15			20	12	32		13:15			208	231	439							
01:30			69	21	90		13:30			305	277	582							
01:45			61	170	15	74	13:45			248	996	277	1025	525	2021				
02:00			38	14	52		14:00			240	251	491							
02:15			19	16	35		14:15			241	277	518							
02:30			30	20	50		14:30			279	295	574							
02:45			18	105	32	82	14:45			248	1008	354	1177	602	2185				
03:00			15	26	41		15:00			258	291	549							
03:15			21	36	57		15:15			243	301	544							
03:30			39	69	108		15:30			319	307	626							
03:45			39	114	55	186	15:45			282	1102	352	1251	634	2353				
04:00			28	46	74		16:00			284	344	628							
04:15			52	46	98		16:15			258	416	674							
04:30			77	97	174		16:30			321	395	716							
04:45			125	282	112	301	16:45			338	1201	368	1523	706	2724				
05:00			89	91	180		17:00			315	383	698							
05:15			108	90	198		17:15			309	388	697							
05:30			124	163	287		17:30			304	394	698							
05:45			140	461	170	514	17:45			274	1202	353	1518	627	2720				
06:00			120	162	282		18:00			278	304	582							
06:15			140	181	321		18:15			232	280	512							
06:30			195	204	399		18:30			240	285	525							
06:45			249	704	319	866	18:45			208	958	252	1121	460	2079				
07:00			224	278	502		19:00			173	251	424							
07:15			242	332	574		19:15			187	233	420							
07:30			318	285	603		19:30			163	183	346							
07:45			290	1074	340	1235	19:45			158	681	177	844	335	1525				
08:00			271	340	611		20:00			166	201	367							
08:15			216	299	515		20:15			125	192	317							
08:30			217	305	522		20:30			102	130	232							
08:45			240	944	264	1208	20:45			111	504	148	671	259	1175				
09:00			189	246	435		21:00			116	144	260							
09:15			213	239	452		21:15			92	157	249							
09:30			157	224	381		21:30			94	114	208							
09:45			197	756	249	958	21:45			90	392	102	517	192	909				
10:00			145	222	367		22:00			83	97	180							
10:15			181	239	420		22:15			67	89	156							
10:30			193	194	387		22:30			80	74	154							
10:45			206	725	205	860	22:45			49	279	76	336	125	615				
11:00			215	198	413		23:00			33	43	76							
11:15			223	212	435		23:15			29	44	73							
11:30			237	194	431		23:30			46	49	95							
11:45			212	887	240	844	23:45			30	138	41	177	71	315				
TOTALS			6332	7246	13578		TOTALS			9487	11132	20619							
SPLIT %			46.6%	53.4%	39.7%		SPLIT %			46.0%	54.0%	60.3%							

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						15,819	18,378						34,197
AM Peak Hour			07:15	07:15	07:15		PM Peak Hour			16:30	16:15	16:30							
AM Pk Volume			1121	1297	2418		PM Pk Volume			1283	1562	2817							
Pk Hr Factor			0.881	0.954	0.960		Pk Hr Factor			0.949	0.939	0.984							
7 - 9 Volume	0	0	2018	2443	4461		4 - 6 Volume	0	0	2403	3041	5444							
7 - 9 Peak Hour			07:15	07:15	07:15		4 - 6 Peak Hour			16:30	16:15	16:30							
7 - 9 Pk Volume	0	0	1121	1297	2418		4 - 6 Pk Volume	0	0	1283	1562	2817							
Pk Hr Factor	0.000	0.000	0.881	0.954	0.960		Pk Hr Factor	0.000	0.000	0.949	0.939	0.984							

VOLUME

Lambert Rd E/O N Brea Blvd

Day: Thursday
Date: 4/19/2018City: Brea
Project #: CA18_1082_003

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						18,008	18,780						36,788
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL							TOTAL
00:00			43	43	86		12:00			292	251	543							
00:15			32	27	59		12:15			269	225	494							
00:30			29	32	61		12:30			312	261	573							
00:45			29	133	22	124	12:45			306	1179	299	1036	605	2215				
01:00			18	31	49		13:00			268	243	511							
01:15			24	13	37		13:15			270	248	518							
01:30			57	23	80		13:30			353	276	629							
01:45			58	157	16	83	13:45			311	1202	260	1027	571	2229				
02:00			38	12	50		14:00			286	238	524							
02:15			22	15	37		14:15			294	264	558							
02:30			28	22	50		14:30			366	306	672							
02:45			19	107	30	79	14:45			275	1221	334	1142	609	2363				
03:00			18	29	47		15:00			295	282	577							
03:15			23	35	58		15:15			311	273	584							
03:30			52	76	128		15:30			318	305	623							
03:45			53	146	62	202	15:45			329	1253	367	1227	696	2480				
04:00			33	36	69		16:00			305	333	638							
04:15			43	57	100		16:15			288	389	677							
04:30			78	110	188		16:30			341	368	709							
04:45			139	293	131	334	16:45			344	1278	384	1474	728	2752				
05:00			103	95	198		17:00			362	364	726							
05:15			113	117	230		17:15			338	412	750							
05:30			136	178	314		17:30			327	398	725							
05:45			141	493	186	576	17:45			309	1336	377	1551	686	2887				
06:00			132	147	279		18:00			304	316	620							
06:15			156	186	342		18:15			292	315	607							
06:30			209	212	421		18:30			276	293	569							
06:45			253	750	315	860	18:45			257	1129	301	1225	558	2354				
07:00			232	304	536		19:00			216	288	504							
07:15			257	332	589		19:15			232	240	472							
07:30			334	305	639		19:30			221	211	432							
07:45			312	1135	397	1338	19:45			239	908	195	934	434	1842				
08:00			301	364	665		20:00			207	170	377							
08:15			227	255	482		20:15			180	177	357							
08:30			233	291	524		20:30			157	106	263							
08:45			254	1015	260	1170	20:45			118	662	153	606	271	1268				
09:00			215	253	468		21:00			150	140	290							
09:15			225	238	463		21:15			135	143	278							
09:30			179	267	446		21:30			96	93	189							
09:45			208	827	233	991	21:45			109	490	98	474	207	964				
10:00			182	235	417		22:00			112	88	200							
10:15			211	262	473		22:15			81	81	162							
10:30			218	223	441		22:30			103	85	188							
10:45			250	861	226	946	22:45			65	361	62	316	127	677				
11:00			192	213	405		23:00			50	49	99							
11:15			228	201	429		23:15			27	36	63							
11:30			260	243	503		23:30			59	40	99							
11:45			223	903	242	899	23:45			33	169	41	166	74	335				
TOTALS			6820	7602	14422		TOTALS			11188	11178	22366							
SPLIT %			47.3%	52.7%	39.2%		SPLIT %			50.0%	50.0%	60.8%							

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						18,008	18,780						36,788
AM Peak Hour			07:15	07:15	07:15		PM Peak Hour			16:30	16:45	16:45							
AM Pk Volume			1204	1398	2602		PM Pk Volume			1385	1558	2929							
Pk Hr Factor			0.901	0.880	0.917		Pk Hr Factor			0.956	0.945	0.976							
7 - 9 Volume	0	0	2150	2508	4658		4 - 6 Volume	0	0	2614	3025	5639							
7 - 9 Peak Hour			07:15	07:15	07:15		4 - 6 Peak Hour			16:30	16:45	16:45							
7 - 9 Pk Volume	0	0	1204	1398	2602		4 - 6 Pk Volume	0	0	1385	1558	2929							
Pk Hr Factor	0.000	0.000	0.901	0.880	0.917		Pk Hr Factor	0.000	0.000	0.956	0.945	0.976							

VOLUME

Lambert Rd W/O Santa Fe Rd/Kraemer Blvd

Day: Tuesday
Date: 11/13/2018City: Brea
Project #: CA18_1232_003

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						18,802	14,273
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			25	8	33		12:00			191	204	395	
00:15			20	2	22		12:15			227	175	402	
00:30			24	8	32		12:30			185	193	378	
00:45			15	84	9	27	12:45			183	786	181	753
					24	111						364	1539
01:00			15	6	21		13:00			239	220	459	
01:15			6	6	12		13:15			220	178	398	
01:30			14	1	15		13:30			232	241	473	
01:45			10	45	1	14	13:45			218	909	188	827
					11	59						406	1736
02:00			5	3	8		14:00			230	197	427	
02:15			9	9	18		14:15			224	205	429	
02:30			12	8	20		14:30			258	264	522	
02:45			4	30	13	33	14:45			329	1041	220	886
					17	63						549	1927
03:00			8	5	13		15:00			320	216	536	
03:15			9	7	16		15:15			337	230	567	
03:30			11	14	25		15:30			383	242	625	
03:45			12	40	13	39	15:45			366	1406	243	931
					25	79						609	2337
04:00			19	22	41		16:00			374	286	660	
04:15			35	35	70		16:15			346	271	617	
04:30			55	57	112		16:30			423	305	728	
04:45			99	208	80	194	16:45			417	1560	291	1153
					179	402						708	2713
05:00			53	95	148		17:00			407	326	733	
05:15			81	152	233		17:15			398	243	641	
05:30			126	195	321		17:30			397	223	620	
05:45			208	468	173	615	17:45			447	1649	230	1022
					381	1083						677	2671
06:00			164	185	349		18:00			390	249	639	
06:15			232	165	397		18:15			342	235	577	
06:30			326	213	539		18:30			398	201	599	
06:45			442	1164	267	830	18:45			308	1438	176	861
					709	1994						484	2299
07:00			358	207	565		19:00			311	134	445	
07:15			417	249	666		19:15			273	113	386	
07:30			400	301	701		19:30			211	115	326	
07:45			412	1587	318	1075	19:45			200	995	87	449
					730	2662						287	1444
08:00			462	340	802		20:00			185	163	348	
08:15			368	312	680		20:15			160	153	313	
08:30			368	283	651		20:30			146	101	247	
08:45			341	1539	287	1222	20:45			159	650	66	483
					628	2761						225	1133
09:00			289	239	528		21:00			135	71	206	
09:15			212	268	480		21:15			124	79	203	
09:30			201	255	456		21:30			79	41	120	
09:45			184	886	225	987	21:45			72	410	42	233
					409	1873						114	643
10:00			188	236	424		22:00			81	40	121	
10:15			175	171	346		22:15			59	37	96	
10:30			188	161	349		22:30			67	22	89	
10:45			187	738	171	739	22:45			48	255	23	122
					358	1477						71	377
11:00			201	169	370		23:00			42	35	77	
11:15			182	187	369		23:15			29	19	48	
11:30			196	163	359		23:30			33	25	58	
11:45			208	787	162	681	23:45			23	127	18	97
					370	1468						41	224
TOTALS			7576	6456	14032		TOTALS			11226	7817	19043	
SPLIT %			54.0%	46.0%	42.4%		SPLIT %			59.0%	41.0%	57.6%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						18,802	14,273						33,075
AM Peak Hour			07:15	07:30	07:30		PM Peak Hour			17:00	16:15	16:30							
AM Pk Volume			1691	1271	2913		PM Pk Volume			1649	1193	2810							
Pk Hr Factor			0.915	0.935	0.908		Pk Hr Factor			0.922	0.915	0.958							
7 - 9 Volume	0	0	3126	2297	5423		4 - 6 Volume	0	0	3209	2175	5384							
7 - 9 Peak Hour			07:15	07:30	07:30		4 - 6 Peak Hour			17:00	16:15	16:30							
7 - 9 Pk Volume	0	0	1691	1271	2913		4 - 6 Pk Volume	0	0	1649	1193	2810							
Pk Hr Factor	0.000	0.000	0.915	0.935	0.908		Pk Hr Factor	0.000	0.000	0.922	0.915	0.958							

VOLUME

Brea Blvd N/O Birch St

Day: Thursday

Date: 4/19/2018

City: Brea

Project #: CA18_1082_006

DAILY TOTALS					NB	SB	EB					WB	Total
					13,086	13,736						0	0
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00	23	21			44		12:00	174	215			389	
00:15	13	17			30		12:15	219	175			394	
00:30	12	15			27		12:30	265	185			450	
00:45	18	66	17	70	35	136	12:45	217	875	184	759	401	1634
01:00	13	6			19		13:00	182	182			364	
01:15	8	10			18		13:15	189	181			370	
01:30	9	6			15		13:30	226	217			443	
01:45	7	37	5	27	12	64	13:45	238	835	191	771	429	1606
02:00	6	5			11		14:00	197	170			367	
02:15	8	7			15		14:15	213	176			389	
02:30	4	0			4		14:30	243	215			458	
02:45	4	22	5	17	9	39	14:45	249	902	223	784	472	1686
03:00	7	2			9		15:00	247	293			540	
03:15	3	8			11		15:15	255	227			482	
03:30	9	4			13		15:30	258	190			448	
03:45	23	42	9	23	32	65	15:45	263	1023	215	925	478	1948
04:00	13	4			17		16:00	269	219			488	
04:15	19	10			29		16:15	299	212			511	
04:30	32	14			46		16:30	288	249			537	
04:45	64	128	22	50	86	178	16:45	305	1161	215	895	520	2056
05:00	28	25			53		17:00	292	249			541	
05:15	23	39			62		17:15	292	248			540	
05:30	30	80			110		17:30	311	217			528	
05:45	41	122	87	231	128	353	17:45	315	1210	213	927	528	2137
06:00	54	124			178		18:00	258	225			483	
06:15	44	164			208		18:15	270	206			476	
06:30	56	241			297		18:30	247	227			474	
06:45	105	259	258	787	363	1046	18:45	269	1044	211	869	480	1913
07:00	95	297			392		19:00	228	177			405	
07:15	119	296			415		19:15	239	200			439	
07:30	137	342			479		19:30	184	165			349	
07:45	217	568	342	1277	559	1845	19:45	188	839	123	665	311	1504
08:00	204	290			494		20:00	194	146			340	
08:15	137	301			438		20:15	165	106			271	
08:30	137	254			391		20:30	142	123			265	
08:45	130	608	284	1129	414	1737	20:45	136	637	114	489	250	1126
09:00	134	213			347		21:00	169	121			290	
09:15	119	171			290		21:15	137	105			242	
09:30	137	160			297		21:30	115	141			256	
09:45	118	508	213	757	331	1265	21:45	109	530	97	464	206	994
10:00	125	156			281		22:00	108	137			245	
10:15	134	141			275		22:15	71	75			146	
10:30	147	142			289		22:30	55	68			123	
10:45	119	525	182	621	301	1146	22:45	52	286	39	319	91	605
11:00	154	177			331		23:00	40	35			75	
11:15	172	192			364		23:15	36	39			75	
11:30	192	177			369		23:30	32	35			67	
11:45	208	726	202	748	410	1474	23:45	25	133	23	132	48	265
TOTALS	3611	5737			9348		TOTALS	9475	7999			17474	
SPLIT %	38.6%	61.4%			34.9%		SPLIT %	54.2%	45.8%			65.1%	

DAILY TOTALS					NB	SB					EB	WB	Total	
					13,086	13,736					0	0	26,822	
AM Peak Hour	11:45	07:00		07:30	PM Peak Hour	17:00	16:30		16:30					
AM Pk Volume	866	1277		1970	PM Pk Volume	1210	961		2138					
Pk Hr Factor	0.817	0.933		0.881	Pk Hr Factor	0.960	0.965		0.988					
7 - 9 Volume	1176	2406	0	0	3582	4 - 6 Volume	2371	1822	0	0	4193			
7 - 9 Peak Hour	07:30	07:00		07:30	4 - 6 Peak Hour	17:00	16:30		16:30					
7 - 9 Pk Volume	695	1277	0	0	1970	4 - 6 Pk Volume	1210	961	0	0	2138			
Pk Hr Factor	0.801	0.933	0.000	0.000	0.881	Pk Hr Factor	0.960	0.965	0.000	0.000	0.988			

VOLUME

Kraemer Blvd Bet. Lambert Rd & Birch St

Day: Tuesday
Date: 3/27/2018City: Brea
Project #: CA18_1059_006

DAILY TOTALS					NB	SB	EB					WB	Total
					7,290	9,280						0	0
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00	5	2			7		12:00	103	108			211	
00:15	5	3			8		12:15	100	117			217	
00:30	6	2			8		12:30	92	110			202	
00:45	5	21	4	11	9	32	12:45	97	392	109	444	206	836
01:00	2	4			6		13:00	91	123			214	
01:15	2	0			2		13:15	70	108			178	
01:30	3	3			6		13:30	123	122			245	
01:45	2	9	3	10	5	19	13:45	110	394	129	482	239	876
02:00	2	4			6		14:00	97	120			217	
02:15	4	2			6		14:15	142	113			255	
02:30	0	0			0		14:30	153	120			273	
02:45	2	8	5	11	7	19	14:45	128	520	138	491	266	1011
03:00	0	5			5		15:00	125	122			247	
03:15	2	1			3		15:15	154	123			277	
03:30	5	7			12		15:30	179	117			296	
03:45	2	9	10	23	12	32	15:45	195	653	159	521	354	1174
04:00	4	15			19		16:00	182	113			295	
04:15	3	8			11		16:15	192	142			334	
04:30	6	35			41		16:30	202	118			320	
04:45	18	31	52	110	70	141	16:45	236	812	173	546	409	1358
05:00	13	28			41		17:00	219	166			385	
05:15	10	51			61		17:15	223	206			429	
05:30	17	98			115		17:30	204	166			370	
05:45	15	55	145	322	160	377	17:45	182	828	152	690	334	1518
06:00	18	118			136		18:00	164	117			281	
06:15	32	161			193		18:15	186	117			303	
06:30	30	234			264		18:30	150	114			264	
06:45	63	143	241	754	304	897	18:45	130	630	98	446	228	1076
07:00	59	302			361		19:00	137	102			239	
07:15	62	257			319		19:15	122	66			188	
07:30	69	302			371		19:30	106	68			174	
07:45	117	307	266	1127	383	1434	19:45	111	476	81	317	192	793
08:00	95	234			329		20:00	88	57			145	
08:15	86	236			322		20:15	105	59			164	
08:30	78	205			283		20:30	60	50			110	
08:45	83	342	202	877	285	1219	20:45	77	330	46	212	123	542
09:00	78	182			260		21:00	51	42			93	
09:15	74	150			224		21:15	84	44			128	
09:30	66	119			185		21:30	44	33			77	
09:45	68	286	135	586	203	872	21:45	50	229	34	153	84	382
10:00	80	105			185		22:00	28	21			49	
10:15	86	120			206		22:15	20	17			37	
10:30	65	128			193		22:30	29	14			43	
10:45	99	330	137	490	236	820	22:45	14	91	12	64	26	155
11:00	92	125			217		23:00	19	10			29	
11:15	75	143			218		23:15	9	10			19	
11:30	100	138			238		23:30	12	9			21	
11:45	77	344	151	557	228	901	23:45	10	50	7	36	17	86
TOTALS	1885	4878			6763		TOTALS	5405	4402			9807	
SPLIT %	27.9%	72.1%			40.8%		SPLIT %	55.1%	44.9%			59.2%	

DAILY TOTALS					NB	SB					EB	WB	Total	
					7,290	9,280					0	0	16,570	

AM Peak Hour	11:30	07:00			07:00		PM Peak Hour	16:45	16:45			16:45	
AM Pk Volume	380	1127			1434		PM Pk Volume	882	711			1593	
Pk Hr Factor	0.922	0.933			0.936		Pk Hr Factor	0.934	0.863			0.928	
7 - 9 Volume	649	2004	0	0	2653		4 - 6 Volume	1640	1236	0	0	2876	
7 - 9 Peak Hour	07:45	07:00			07:00		4 - 6 Peak Hour	16:45	16:45			16:45	
7 - 9 Pk Volume	376	1127	0	0	1434		4 - 6 Pk Volume	882	711	0	0	1593	
Pk Hr Factor	0.803	0.933	0.000	0.000	0.936		Pk Hr Factor	0.934	0.863	0.000	0.000	0.928	

VOLUME

Birch St E/O Brea Blvd

Day: Thursday
Date: 4/19/2018City: Brea
Project #: CA18_1082_007

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						7,982	9,630						17,612
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL							TOTAL
00:00			10	19	29		12:00			152	162	314							314
00:15			7	10	17		12:15			154	185	339							339
00:30			12	4	16		12:30			130	183	313							313
00:45			3	32	11	44	12:45			128	564	244	774	372	1338				
01:00			4	6	10		13:00			120	178	298							298
01:15			3	5	8		13:15			128	152	280							280
01:30			0	6	6		13:30			136	138	274							274
01:45			1	8	1	17	13:45			138	522	176	644	314	1166				
02:00			0	3	3		14:00			127	201	328							328
02:15			2	2	4		14:15			168	166	334							334
02:30			2	1	3		14:30			123	135	258							258
02:45			1	5	2	7	14:45			129	547	225	727	354	1274				
03:00			1	2	3		15:00			165	216	381							381
03:15			5	2	7		15:15			153	196	349							349
03:30			3	3	6		15:30			152	216	368							368
03:45			5	14	9	11	15:45			172	642	230	858	402	1500				
04:00			3	2	5		16:00			156	204	360							360
04:15			4	6	10		16:15			163	239	402							402
04:30			6	8	14		16:30			156	216	372							372
04:45			12	25	25	54	16:45			191	666	210	869	401	1535				
05:00			16	17	33		17:00			177	229	406							406
05:15			12	20	32		17:15			181	227	408							408
05:30			25	20	45		17:30			152	224	376							376
05:45			34	87	73	183	17:45			148	658	223	903	371	1561				
06:00			32	32	64		18:00			163	196	359							359
06:15			26	32	58		18:15			136	160	296							296
06:30			74	82	156		18:30			144	169	313							313
06:45			62	194	153	431	18:45			141	584	145	670	286	1254				
07:00			76	90	166		19:00			130	161	291							291
07:15			90	103	193		19:15			140	136	276							276
07:30			151	128	279		19:30			104	168	272							272
07:45			165	482	345	983	19:45			87	461	125	590	212	1051				
08:00			121	116	237		20:00			85	105	190							190
08:15			109	100	209		20:15			78	131	209							209
08:30			92	95	187		20:30			81	75	156							156
08:45			119	441	242	875	20:45			67	311	87	398	154	709				
09:00			71	88	159		21:00			83	86	169							169
09:15			101	101	202		21:15			49	55	104							104
09:30			75	82	157		21:30			71	48	119							119
09:45			106	353	222	740	21:45			70	273	45	234	115	507				
10:00			74	101	175		22:00			58	35	93							93
10:15			93	85	178		22:15			35	30	65							65
10:30			101	121	222		22:30			32	32	64							64
10:45			116	384	248	823	22:45			15	140	29	126	44	266				
11:00			118	140	258		23:00			19	13	32							32
11:15			138	140	278		23:15			18	13	31							31
11:30			129	138	267		23:30			11	13	24							24
11:45			145	530	313	1116	23:45			11	59	10	49	21	108				
TOTALS			2555	2788	5343		TOTALS			5427	6842	12269							12269
SPLIT %			47.8%	52.2%	30.3%		SPLIT %			44.2%	55.8%	69.7%							69.7%

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						7,982	9,630						17,612
AM Peak Hour			11:45	11:45	11:45		PM Peak Hour			16:30	17:00	16:45							16:45
AM Pk Volume			581	698	1279		PM Pk Volume			705	903	1591							1591
Pk Hr Factor			0.943	0.943	0.943		Pk Hr Factor			0.923	0.986	0.975							0.975
7 - 9 Volume	0	0	923	935	1858		4 - 6 Volume	0	0	1324	1772	3096							3096
7 - 9 Peak Hour			07:30	07:15	07:30		4 - 6 Peak Hour			16:30	17:00	16:45							16:45
7 - 9 Pk Volume	0	0	546	527	1070		4 - 6 Pk Volume	0	0	705	903	1591							1591
Pk Hr Factor	0.000	0.000	0.827	0.732	0.775		Pk Hr Factor	0.000	0.000	0.923	0.986	0.975							0.975

VOLUME

Birch St E/O Randolph Ave

Day: Thursday
Date: 5/16/2019City: Brea
Project #: CA19_1100_001

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						9,018	10,323
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			14	16	30		12:00			142	175	317	
00:15			6	6	12		12:15			148	167	315	
00:30			4	9	13		12:30			159	163	322	
00:45			1	25	7	38	12:45			159	608	183	688
01:00			4	8	12		13:00			161	168	329	
01:15			4	7	11		13:15			161	190	351	
01:30			4	0	4		13:30			161	160	321	
01:45			3	15	3	18	13:45			159	642	192	710
02:00			1	1	2		14:00			137	202	339	
02:15			3	8	11		14:15			180	183	363	
02:30			3	4	7		14:30			160	176	336	
02:45			5	12	2	15	14:45			142	619	270	831
03:00			2	7	9		15:00			161	237	398	
03:15			8	5	13		15:15			174	207	381	
03:30			9	2	11		15:30			174	204	378	
03:45			14	33	10	24	15:45			178	687	221	869
04:00			8	4	12		16:00			159	238	397	
04:15			7	4	11		16:15			175	275	450	
04:30			9	9	18		16:30			180	250	430	
04:45			18	42	7	24	16:45			197	711	270	1033
05:00			11	11	22		17:00			206	268	474	
05:15			25	14	39		17:15			177	283	460	
05:30			20	20	40		17:30			184	252	436	
05:45			44	100	38	83	17:45			168	735	268	1071
06:00			33	42	75		18:00			170	210	380	
06:15			42	44	86		18:15			161	191	352	
06:30			97	44	141		18:30			155	186	341	
06:45			107	279	81	211	18:45			134	620	196	783
07:00			108	60	168		19:00			141	171	312	
07:15			117	84	201		19:15			116	156	272	
07:30			189	113	302		19:30			135	134	269	
07:45			198	612	184	441	19:45			100	492	122	583
08:00			160	154	314		20:00			106	118	224	
08:15			122	103	225		20:15			107	112	219	
08:30			115	122	237		20:30			79	112	191	
08:45			107	504	116	495	20:45			88	380	109	451
09:00			97	103	200		21:00			79	110	189	
09:15			111	79	190		21:15			75	91	166	
09:30			97	92	189		21:30			58	64	122	
09:45			115	420	98	372	21:45			45	257	64	329
10:00			133	104	237		22:00			57	54	111	
10:15			121	108	229		22:15			23	43	66	
10:30			104	103	207		22:30			32	28	60	
10:45			126	484	113	428	22:45			24	136	31	156
11:00			125	137	262		23:00			19	42	61	
11:15			122	139	261		23:15			18	16	34	
11:30			121	149	270		23:30			10	10	20	
11:45			169	537	163	588	23:45			21	68	14	82
TOTALS			3063	2737	5800		TOTALS			5955	7586	13541	
SPLIT %			52.8%	47.2%	30.0%		SPLIT %			44.0%	56.0%	70.0%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						9,018	10,323						19,341
AM Peak Hour			07:30	11:45	11:45		PM Peak Hour			16:45	16:45	16:45							
AM Pk Volume			669	668	1286		PM Pk Volume			764	1073	1837							
Pk Hr Factor			0.845	0.954	0.968		Pk Hr Factor			0.927	0.948	0.969							
7 - 9 Volume	0	0	1116	936	2052		4 - 6 Volume	0	0	1446	2104	3550							
7 - 9 Peak Hour			07:30	07:45	07:30		4 - 6 Peak Hour			16:45	16:45	16:45							
7 - 9 Pk Volume	0	0	669	563	1223		4 - 6 Pk Volume	0	0	764	1073	1837							
Pk Hr Factor	0.000	0.000	0.845	0.765	0.800		Pk Hr Factor	0.000	0.000	0.927	0.948	0.969							

VOLUME

Birch St E/O Randolph Ave

Day: Saturday
Date: 5/18/2019City: Brea
Project #: CA19_1100_001

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						8,068	9,284
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			17	22	39		12:00			179	221	400	
00:15			19	22	41		12:15			166	219	385	
00:30			10	18	28		12:30			194	208	402	
00:45			8	54	11	73	12:45			185	724	195	843
					19	127						380	1567
01:00			12	11	23		13:00			174	217	391	
01:15			7	10	17		13:15			164	185	349	
01:30			10	5	15		13:30			187	185	372	
01:45			8	37	7	33	13:45			173	698	184	771
					15	70						357	1469
02:00			6	3	9		14:00			160	168	328	
02:15			3	12	15		14:15			160	214	374	
02:30			9	3	12		14:30			167	177	344	
02:45			2	20	3	21	14:45			164	651	212	771
					5	41						376	1422
03:00			3	1	4		15:00			155	224	379	
03:15			6	3	9		15:15			163	184	347	
03:30			2	2	4		15:30			155	210	365	
03:45			5	16	4	10	15:45			158	631	192	810
					9	26						350	1441
04:00			5	4	9		16:00			150	194	344	
04:15			3	0	3		16:15			141	191	332	
04:30			7	5	12		16:30			142	157	299	
04:45			9	24	4	13	16:45			165	598	188	730
					13	37						353	1328
05:00			5	6	11		17:00			120	187	307	
05:15			11	7	18		17:15			141	186	327	
05:30			14	11	25		17:30			143	134	277	
05:45			21	51	12	36	17:45			115	519	162	669
					33	87						277	1188
06:00			9	13	22		18:00			134	160	294	
06:15			27	16	43		18:15			118	160	278	
06:30			23	20	43		18:30			117	155	272	
06:45			35	94	30	79	18:45			133	502	161	636
					65	173						294	1138
07:00			22	24	46		19:00			132	129	261	
07:15			44	32	76		19:15			101	145	246	
07:30			38	42	80		19:30			87	145	232	
07:45			62	166	49	147	19:45			88	408	126	545
					111	313						214	953
08:00			65	40	105		20:00			96	120	216	
08:15			55	56	111		20:15			91	109	200	
08:30			90	78	168		20:30			77	104	181	
08:45			109	319	94	268	20:45			83	347	96	429
					203	587						179	776
09:00			100	94	194		21:00			94	112	206	
09:15			112	92	204		21:15			62	86	148	
09:30			102	102	204		21:30			62	79	141	
09:45			133	447	144	432	21:45			54	272	76	353
					277	879						130	625
10:00			145	129	274		22:00			51	58	109	
10:15			138	127	265		22:15			45	59	104	
10:30			114	154	268		22:30			40	46	86	
10:45			141	538	166	576	22:45			37	173	36	199
					307	1114						73	372
11:00			142	157	299		23:00			30	36	66	
11:15			169	159	328		23:15			31	32	63	
11:30			164	170	334		23:30			33	35	68	
11:45			183	658	215	701	23:45			27	121	36	139
					398	1359						63	260
TOTALS			2424	2389	4813		TOTALS			5644	6895	12539	
SPLIT %			50.4%	49.6%	27.7%		SPLIT %			45.0%	55.0%	72.3%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						8,068	9,284						17,352
AM Peak Hour			11:45	11:45	11:45		PM Peak Hour			12:00	12:00	12:00							
AM Pk Volume			722	863	1585		PM Pk Volume			724	843	1567							
Pk Hr Factor			0.930	0.976	0.986		Pk Hr Factor			0.933	0.954	0.975							
7 - 9 Volume	0	0	485	415	900		4 - 6 Volume	0	0	1117	1399	2516							
7 - 9 Peak Hour			08:00	08:00	08:00		4 - 6 Peak Hour			16:00	16:00	16:00							
7 - 9 Pk Volume	0	0	319	268	587		4 - 6 Pk Volume	0	0	598	730	1328							
Pk Hr Factor	0.000	0.000	0.732	0.713	0.723		Pk Hr Factor	0.000	0.000	0.906	0.941	0.941							

VOLUME

Birch St E/O State College Blvd

Day: Tuesday
Date: 11/13/2018City: Brea
Project #: CA18_1232_007

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						12,499	11,971
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			14	7	21		12:00			220	192	412	
00:15			6	10	16		12:15			205	191	396	
00:30			8	2	10		12:30			199	182	381	
00:45			4	32	6	25	12:45			230	854	215	780
					10	57						445	1634
01:00			4	2	6		13:00			193	179	372	
01:15			10	2	12		13:15			199	164	363	
01:30			2	2	4		13:30			219	166	385	
01:45			5	21	6	28	13:45			242	853	177	686
					6	28						419	1539
02:00			1	3	4		14:00			255	159	414	
02:15			1	4	5		14:15			231	190	421	
02:30			1	0	1		14:30			246	214	460	
02:45			2	5	3	13	14:45			246	978	268	831
					3	13						514	1809
03:00			1	2	3		15:00			303	247	550	
03:15			1	7	8		15:15			314	230	544	
03:30			2	8	10		15:30			252	243	495	
03:45			4	8	17	38	15:45			228	1097	282	1002
					17	38						510	2099
04:00			3	8	11		16:00			225	271	496	
04:15			8	18	26		16:15			272	277	549	
04:30			18	11	29		16:30			250	358	608	
04:45			22	51	46	112	16:45			275	1022	400	1306
					46	112						675	2328
05:00			11	18	29		17:00			266	384	650	
05:15			25	24	49		17:15			295	388	683	
05:30			29	34	63		17:30			272	360	632	
05:45			77	142	135	276	17:45			244	1077	300	1432
					135	276						544	2509
06:00			62	29	91		18:00			244	263	507	
06:15			101	70	171		18:15			245	217	462	
06:30			171	92	263		18:30			194	213	407	
06:45			226	560	320	845	18:45			216	899	174	867
					320	845						390	1766
07:00			211	128	339		19:00			163	133	296	
07:15			228	145	373		19:15			151	135	286	
07:30			308	190	498		19:30			136	98	234	
07:45			318	1065	596	1806	19:45			115	565	103	469
					596	1806						218	1034
08:00			285	246	531		20:00			116	76	192	
08:15			187	220	407		20:15			114	83	197	
08:30			143	185	328		20:30			125	74	199	
08:45			159	774	353	1619	20:45			115	470	76	309
					353	1619						191	779
09:00			146	156	302		21:00			73	51	124	
09:15			103	138	241		21:15			68	25	93	
09:30			112	131	243		21:30			58	26	84	
09:45			110	471	288	1074	21:45			47	246	28	130
					288	1074						75	376
10:00			110	158	268		22:00			52	33	85	
10:15			119	121	240		22:15			34	25	59	
10:30			140	156	296		22:30			36	19	55	
10:45			134	503	272	1076	22:45			17	139	12	89
					272	1076						29	228
11:00			150	152	302		23:00			25	15	40	
11:15			144	167	311		23:15			18	10	28	
11:30			158	200	358		23:30			8	7	15	
11:45			154	606	353	1324	23:45			10	61	8	40
					353	1324						18	101
TOTALS			4238	4030	8268		TOTALS			8261	7941	16202	
SPLIT %			51.3%	48.7%	33.8%		SPLIT %			51.0%	49.0%	66.2%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						12,499	11,971						24,470
AM Peak Hour			07:15	07:30	07:30		PM Peak Hour			14:45	16:45	16:45							
AM Pk Volume			1139	934	2032		PM Pk Volume			1115	1532	2640							
Pk Hr Factor			0.895	0.840	0.852		Pk Hr Factor			0.888	0.958	0.966							
7 - 9 Volume	0	0	1839	1586	3425		4 - 6 Volume	0	0	2099	2738	4837							
7 - 9 Peak Hour			07:15	07:30	07:30		4 - 6 Peak Hour			16:45	16:45	16:45							
7 - 9 Pk Volume	0	0	1139	934	2032		4 - 6 Pk Volume	0	0	1108	1532	2640							
Pk Hr Factor	0.000	0.000	0.895	0.840	0.852		Pk Hr Factor	0.000	0.000	0.939	0.958	0.966							

VOLUME

Birch St E/O S Associated Rd

Day: Tuesday
Date: 11/13/2018City: Brea
Project #: CA18_1232_008

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						12,383	11,595
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			13	6	19		12:00			201	199	400	
00:15			10	10	20		12:15			187	185	372	
00:30			6	1	7		12:30			175	147	322	
00:45			3	32	3	20	12:45			215	778	177	708
01:00			6	4	10		13:00			163	161	324	
01:15			4	3	7		13:15			215	145	360	
01:30			2	4	6		13:30			205	180	385	
01:45			5	17	2	13	13:45			242	825	160	646
02:00			0	2	2		14:00			248	153	401	
02:15			3	2	5		14:15			239	166	405	
02:30			2	1	3		14:30			278	206	484	
02:45			6	11	1	6	14:45			256	1021	307	832
03:00			6	4	10		15:00			310	233	543	
03:15			1	9	10		15:15			280	185	465	
03:30			4	15	19		15:30			242	266	508	
03:45			5	16	10	38	15:45			237	1069	248	932
04:00			2	7	9		16:00			218	268	486	
04:15			16	13	29		16:15			254	264	518	
04:30			32	18	50		16:30			265	320	585	
04:45			31	81	24	62	16:45			265	1002	324	1176
05:00			18	20	38		17:00			269	365	634	
05:15			29	26	55		17:15			294	368	662	
05:30			31	47	78		17:30			284	344	628	
05:45			92	170	64	157	17:45			263	1110	278	1355
06:00			75	49	124		18:00			235	224	459	
06:15			97	97	194		18:15			242	193	435	
06:30			214	108	322		18:30			186	193	379	
06:45			256	642	147	401	18:45			208	871	141	751
07:00			202	164	366		19:00			173	112	285	
07:15			215	165	380		19:15			137	123	260	
07:30			282	223	505		19:30			123	96	219	
07:45			335	1034	296	848	19:45			96	529	87	418
08:00			292	271	563		20:00			114	81	195	
08:15			275	246	521		20:15			109	77	186	
08:30			148	188	336		20:30			112	57	169	
08:45			147	862	182	887	20:45			93	428	65	280
09:00			133	157	290		21:00			75	50	125	
09:15			101	126	227		21:15			68	22	90	
09:30			107	134	241		21:30			48	31	79	
09:45			110	451	158	575	21:45			54	245	27	130
10:00			97	145	242		22:00			45	23	68	
10:15			111	122	233		22:15			38	32	70	
10:30			124	148	272		22:30			35	22	57	
10:45			126	458	142	557	22:45			17	135	15	92
11:00			133	135	268		23:00			27	15	42	
11:15			125	159	284		23:15			14	14	28	
11:30			123	189	312		23:30			13	15	28	
11:45			154	535	175	658	23:45			7	61	9	53
TOTALS			4309	4222	8531		TOTALS			8074	7373	15447	
SPLIT %			50.5%	49.5%	35.6%		SPLIT %			52.3%	47.7%	64.4%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						12,383	11,595						23,978
AM Peak Hour			07:30	07:30	07:30		PM Peak Hour			14:30	16:45	16:45							
AM Pk Volume			1184	1036	2220		PM Pk Volume			1124	1401	2513							
Pk Hr Factor			0.884	0.875	0.880		Pk Hr Factor			0.906	0.952	0.949							
7 - 9 Volume	0	0	1896	1735	3631		4 - 6 Volume	0	0	2112	2531	4643							
7 - 9 Peak Hour			07:30	07:30	07:30		4 - 6 Peak Hour			16:45	16:45	16:45							
7 - 9 Pk Volume	0	0	1184	1036	2220		4 - 6 Pk Volume	0	0	1112	1401	2513							
Pk Hr Factor	0.000	0.000	0.884	0.875	0.880		Pk Hr Factor	0.000	0.000	0.946	0.952	0.949							

VOLUME

Birch St E/O N Associated Rd

Day: Tuesday

Date: 11/27/2018

City: Brea

Project #: CA18_1232_009

DAILY TOTALS					NB	SB	EB					WB	Total				
					0	0						10,589					
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL					
00:00			2	4	6		12:00			168	172	340					
00:15			6	5	11		12:15			163	164	327					
00:30			5	8	13		12:30			185	154	339					
00:45			6	19	10	27	12:45			202	718	159	649				
01:00			4	0	4		13:00			181	139	320					
01:15			2	0	2		13:15			196	152	348					
01:30			3	3	6		13:30			177	147	324					
01:45			1	10	1	4	13:45			160	714	132	570				
02:00			0	1	1		14:00			175	161	336					
02:15			1	2	3		14:15			160	200	360					
02:30			2	0	2		14:30			163	200	363					
02:45			4	7	5	8	14:45			199	697	194	755				
03:00			2	3	5		15:00			200	212	412					
03:15			0	1	1		15:15			209	160	369					
03:30			4	4	8		15:30			195	253	448					
03:45			3	9	3	11	15:45			174	778	205	830				
04:00			5	7	12		16:00			203	256	459					
04:15			13	5	18		16:15			215	224	439					
04:30			29	11	40		16:30			201	287	488					
04:45			45	92	13	36	16:45			257	876	285	1052				
05:00			19	12	31		17:00			242	321	563					
05:15			22	16	38		17:15			256	340	596					
05:30			28	21	49		17:30			260	283	543					
05:45			94	163	56	105	17:45			237	995	266	1210				
06:00			82	37	119		18:00			211	232	443					
06:15			105	51	156		18:15			212	235	447					
06:30			151	86	237		18:30			174	198	372					
06:45			219	557	95	269	18:45			141	738	133	798				
07:00			173	84	257		19:00			142	119	261					
07:15			198	128	326		19:15			134	87	221					
07:30			213	136	349		19:30			105	99	204					
07:45			255	839	234	582	19:45			109	490	52	357				
08:00			229	207	436		20:00			119	86	205					
08:15			180	162	342		20:15			106	55	161					
08:30			159	135	294		20:30			90	59	149					
08:45			149	717	145	649	20:45			75	390	40	240				
09:00			132	113	245		21:00			82	69	151					
09:15			99	113	212		21:15			70	42	112					
09:30			94	95	189		21:30			50	37	87					
09:45			126	451	117	438	21:45			45	247	21	169				
10:00			102	107	209		22:00			42	29	71					
10:15			97	123	220		22:15			33	18	51					
10:30			93	65	158		22:30			24	11	35					
10:45			112	404	140	435	22:45			20	119	13	71				
11:00			139	118	257		23:00			15	11	26					
11:15			103	146	249		23:15			12	10	22					
11:30			131	176	307		23:30			14	17	31					
11:45			142	515	179	619	23:45			3	44	14	52				
TOTALS			3783	3183	6966		TOTALS			6806	6753	13559					
SPLIT %			54.3%	45.7%	33.9%		SPLIT %			50.2%	49.8%	66.1%					

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						10,589	9,936						20,525
AM Peak Hour			07:15	07:30	07:30		PM Peak Hour			16:45	16:30	16:45							
AM Pk Volume			895	739	1616		PM Pk Volume			1015	1233	2244							
Pk Hr Factor			0.877	0.790	0.826		Pk Hr Factor			0.976	0.907	0.941							
7 - 9 Volume	0	0	1556	1231	2787		4 - 6 Volume	0	0	1871	2262	4133							
7 - 9 Peak Hour			07:15	07:30	07:30		4 - 6 Peak Hour			16:45	16:30	16:45							
7 - 9 Pk Volume	0	0	895	739	1616		4 - 6 Pk Volume	0	0	1015	1233	2244							
Pk Hr Factor	0.000	0.000	0.877	0.790	0.826		Pk Hr Factor	0.000	0.000	0.976	0.907	0.941							

VOLUME

Randolph Ave S/O Birch St

Day: Thursday
Date: 5/16/2019City: Brea
Project #: CA19_1100_002

DAILY TOTALS					NB	SB	EB					WB	Total
					3,686	3,446	0					0	7,132
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00	11	2			13		12:00	60	76			136	
00:15	2	1			3		12:15	65	46			111	
00:30	3	4			7		12:30	79	72			151	
00:45	2	18	3	10	5	28	12:45	66	270	70	264	136	534
01:00	4	3			7		13:00	92	54			146	
01:15	1	1			2		13:15	77	76			153	
01:30	0	1			1		13:30	71	58			129	
01:45	3	8	0	5	3	13	13:45	73	313	50	238	123	551
02:00	1	1			2		14:00	73	66			139	
02:15	2	3			5		14:15	71	77			148	
02:30	2	1			3		14:30	84	69			153	
02:45	1	6	0	5	1	11	14:45	61	289	63	275	124	564
03:00	1	6			7		15:00	59	71			130	
03:15	7	2			9		15:15	76	61			137	
03:30	0	1			1		15:30	71	70			141	
03:45	9	17	3	12	12	29	15:45	81	287	62	264	143	551
04:00	4	4			8		16:00	77	64			141	
04:15	1	3			4		16:15	86	70			156	
04:30	2	4			6		16:30	67	86			153	
04:45	8	15	8	19	16	34	16:45	106	336	83	303	189	639
05:00	4	4			8		17:00	80	81			161	
05:15	7	11			18		17:15	76	85			161	
05:30	6	13			19		17:30	84	49			133	
05:45	4	21	27	55	31	76	17:45	65	305	72	287	137	592
06:00	15	25			40		18:00	86	52			138	
06:15	8	23			31		18:15	82	60			142	
06:30	12	24			36		18:30	58	57			115	
06:45	14	49	39	111	53	160	18:45	58	284	48	217	106	501
07:00	29	21			50		19:00	59	53			112	
07:15	19	37			56		19:15	52	38			90	
07:30	29	31			60		19:30	60	36			96	
07:45	36	113	40	129	76	242	19:45	53	224	32	159	85	383
08:00	33	45			78		20:00	54	36			90	
08:15	41	40			81		20:15	42	33			75	
08:30	36	51			87		20:30	57	32			89	
08:45	38	148	54	190	92	338	20:45	39	192	33	134	72	326
09:00	26	36			62		21:00	41	15			56	
09:15	29	44			73		21:15	45	18			63	
09:30	27	47			74		21:30	25	19			44	
09:45	41	123	50	177	91	300	21:45	20	131	13	65	33	196
10:00	48	54			102		22:00	25	7			32	
10:15	51	56			107		22:15	19	10			29	
10:30	33	53			86		22:30	18	10			28	
10:45	39	171	60	223	99	394	22:45	17	79	8	35	25	114
11:00	62	56			118		23:00	17	8			25	
11:15	54	63			117		23:15	7	2			9	
11:30	52	70			122		23:30	6	5			11	
11:45	76	244	62	251	138	495	23:45	13	43	3	18	16	61
TOTALS	933	1187			2120		TOTALS	2753	2259			5012	
SPLIT %	44.0%	56.0%			29.7%		SPLIT %	54.9%	45.1%			70.3%	

DAILY TOTALS				NB	SB	EB				WB	Total	
				3,686	3,446					0		
AM Peak Hour	11:45	11:15			11:45		PM Peak Hour	16:45	16:30			16:30
AM Pk Volume	280	271			536		PM Pk Volume	346	335			664
Pk Hr Factor	0.886	0.891			0.887		Pk Hr Factor	0.816	0.974			0.878
7 - 9 Volume	261	319	0	0	580		4 - 6 Volume	641	590	0	0	1231
7 - 9 Peak Hour	08:00	08:00			08:00		4 - 6 Peak Hour	16:45	16:30			16:30
7 - 9 Pk Volume	148	190	0	0	338		4 - 6 Pk Volume	346	335	0	0	664
Pk Hr Factor	0.902	0.880	0.000	0.000	0.918		Pk Hr Factor	0.816	0.974	0.000	0.000	0.878

VOLUME

Randolph Ave S/O Birch St

Day: Saturday
Date: 5/18/2019City: Brea
Project #: CA19_1100_002

DAILY TOTALS					NB	SB	EB					WB	Total	
					3,869	3,404						0		
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
00:00	6	7			13		12:00	96	88			184		
00:15	12	2			14		12:15	75	77			152		
00:30	9	9			18		12:30	75	69			144		
00:45	4	31	0	18	4	49	12:45	89	335	79	313	168	648	
01:00	2	3			5		13:00	79	97			176		
01:15	10	2			12		13:15	102	59			161		
01:30	6	1			7		13:30	85	72			157		
01:45	6	24	2	8	8	32	13:45	90	356	87	315	177	671	
02:00	1	2			3		14:00	76	84			160		
02:15	3	3			6		14:15	82	93			175		
02:30	0	1			1		14:30	108	62			170		
02:45	2	6	1	7	3	13	14:45	74	340	80	319	154	659	
03:00	2	2			4		15:00	102	77			179		
03:15	1	2			3		15:15	101	65			166		
03:30	2	0			2		15:30	80	65			145		
03:45	8	13	2	6	10	19	15:45	89	372	59	266	148	638	
04:00	3	5			8		16:00	85	70			155		
04:15	7	2			9		16:15	63	59			122		
04:30	1	1			2		16:30	73	49			122		
04:45	6	17	3	11	9	28	16:45	79	300	46	224	125	524	
05:00	1	10			11		17:00	67	63			130		
05:15	10	2			12		17:15	75	55			130		
05:30	4	6			10		17:30	71	43			114		
05:45	6	21	6	24	12	45	17:45	55	268	41	202	96	470	
06:00	3	6			9		18:00	61	38			99		
06:15	5	10			15		18:15	43	42			85		
06:30	8	12			20		18:30	60	40			100		
06:45	10	26	16	44	26	70	18:45	56	220	48	168	104	388	
07:00	9	12			21		19:00	58	28			86		
07:15	14	10			24		19:15	38	31			69		
07:30	19	30			49		19:30	54	35			89		
07:45	21	63	28	80	49	143	19:45	42	192	32	126	74	318	
08:00	27	28			55		20:00	49	31			80		
08:15	31	22			53		20:15	51	23			74		
08:30	33	43			76		20:30	55	28			83		
08:45	35	126	53	146	88	272	20:45	43	198	27	109	70	307	
09:00	40	43			83		21:00	46	24			70		
09:15	55	56			111		21:15	25	16			41		
09:30	42	37			79		21:30	28	12			40		
09:45	62	199	90	226	152	425	21:45	26	125	19	71	45	196	
10:00	53	66			119		22:00	23	22			45		
10:15	54	75			129		22:15	21	13			34		
10:30	58	77			135		22:30	13	15			28		
10:45	56	221	94	312	150	533	22:45	20	77	7	57	27	134	
11:00	65	81			146		23:00	15	10			25		
11:15	80	69			149		23:15	11	11			22		
11:30	78	75			153		23:30	14	6			20		
11:45	61	284	95	320	156	604	23:45	15	55	5	32	20	87	
TOTALS	1031	1202			2233		TOTALS	2838	2202			5040		
SPLIT %	46.2%	53.8%			30.7%		SPLIT %	56.3%	43.7%			69.3%		

DAILY TOTALS				NB	SB	EB				WB	Total			
				3,869	3,404					0				
AM Peak Hour	11:15	11:30			11:30		PM Peak Hour	14:30	13:30			13:45		
AM Pk Volume	315	335			645		PM Pk Volume	385	336			682		
Pk Hr Factor	0.820	0.882			0.876		Pk Hr Factor	0.891	0.903			0.963		
7 - 9 Volume	189	226	0	0	415		4 - 6 Volume	568	426	0	0	994		
7 - 9 Peak Hour	08:00	08:00			08:00		4 - 6 Peak Hour	16:00	16:00			16:00		
7 - 9 Pk Volume	126	146	0	0	272		4 - 6 Pk Volume	300	224	0	0	524		
Pk Hr Factor	0.900	0.689	0.000	0.000	0.773		Pk Hr Factor	0.882	0.800	0.000	0.000	0.845		

VOLUME

State College Blvd S/O Birch St

Day: Thursday
Date: 5/16/2019City: Brea
Project #: CA19_1100_003

DAILY TOTALS					NB	SB						EB	WB	Total
					6,005	7,452						0	0	13,457
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
00:00	10	7			17		12:00	80	105			185		
00:15	7	5			12		12:15	79	142			221		
00:30	4	7			11		12:30	106	129			235		
00:45	9	30	4	23	13	53	12:45	124	389	117	493	241	882	
01:00	3	1			4		13:00	127	118			245		
01:15	0	1			1		13:15	139	111			250		
01:30	6	3			9		13:30	123	122			245		
01:45	5	14	2	7	7	21	13:45	119	508	125	476	244	984	
02:00	2	1			3		14:00	121	109			230		
02:15	1	4			5		14:15	104	102			206		
02:30	2	5			7		14:30	104	109			213		
02:45	2	7	3	13	5	20	14:45	101	430	127	447	228	877	
03:00	1	1			2		15:00	99	142			241		
03:15	2	4			6		15:15	123	120			243		
03:30	3	2			5		15:30	131	128			259		
03:45	1	7	5	12	6	19	15:45	133	486	122	512	255	998	
04:00	4	1			5		16:00	107	137			244		
04:15	5	6			11		16:15	132	105			237		
04:30	4	9			13		16:30	123	140			263		
04:45	2	15	10	26	12	41	16:45	140	502	126	508	266	1010	
05:00	9	9			18		17:00	129	127			256		
05:15	7	8			15		17:15	146	130			276		
05:30	10	22			32		17:30	138	126			264		
05:45	19	45	39	78	58	123	17:45	133	546	143	526	276	1072	
06:00	8	44			52		18:00	131	131			262		
06:15	14	59			73		18:15	140	113			253		
06:30	27	100			127		18:30	123	131			254		
06:45	45	94	137	340	182	434	18:45	114	508	108	483	222	991	
07:00	42	109			151		19:00	132	115			247		
07:15	46	119			165		19:15	100	95			195		
07:30	54	148			202		19:30	94	124			218		
07:45	44	186	146	522	190	708	19:45	94	420	66	400	160	820	
08:00	61	147			208		20:00	89	91			180		
08:15	57	152			209		20:15	92	73			165		
08:30	58	122			180		20:30	90	62			152		
08:45	52	228	137	558	189	786	20:45	90	361	67	293	157	654	
09:00	48	124			172		21:00	113	60			173		
09:15	60	103			163		21:15	72	53			125		
09:30	41	116			157		21:30	58	30			88		
09:45	51	200	116	459	167	659	21:45	33	276	37	180	70	456	
10:00	55	119			174		22:00	49	32			81		
10:15	54	105			159		22:15	27	18			45		
10:30	52	117			169		22:30	22	16			38		
10:45	86	247	126	467	212	714	22:45	23	121	19	85	42	206	
11:00	64	124			188		23:00	21	18			39		
11:15	75	122			197		23:15	22	11			33		
11:30	81	124			205		23:30	17	7			24		
11:45	94	314	133	503	227	817	23:45	11	71	5	41	16	112	
TOTALS	1387	3008			4395		TOTALS	4618	4444			9062		
SPLIT %	31.6%	68.4%			32.7%		SPLIT %	51.0%	49.0%			67.3%		

DAILY TOTALS			NB		SB		EB		WB		Total	
			6,005		7,452		0		0		13,457	
AM Peak Hour	11:45	07:30				11:45	PM Peak Hour	16:45	17:15			
AM Pk Volume	359	593				868	PM Pk Volume	553	530			
Pk Hr Factor	0.847	0.975				0.923	Pk Hr Factor	0.947	0.927			
7 - 9 Volume	414	1080	0	0	1494	4 - 6 Volume	1048	1034	0	0	2082	
7 - 9 Peak Hour	08:00	07:30				07:30	4 - 6 Peak Hour	16:45	17:00			
7 - 9 Pk Volume	228	593	0	0	809	4 - 6 Pk Volume	553	526	0	0	1072	
Pk Hr Factor	0.934	0.975	0.000	0.000	0.968	Pk Hr Factor	0.947	0.920	0.000	0.000	0.971	

VOLUME

State College Blvd S/O Birch St

Day: Saturday
Date: 5/18/2019City: Brea
Project #: CA19_1100_003

DAILY TOTALS					NB	SB	EB					WB	Total	
					6,548	7,440						0		
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
00:00	22	12			34		12:00	106	195			301		
00:15	15	14			29		12:15	139	180			319		
00:30	19	12			31		12:30	144	218			362		
00:45	18	74	8	46	26	120	12:45	131	520	201	794	332	1314	
01:00	16	4			20		13:00	134	146			280		
01:15	9	7			16		13:15	154	165			319		
01:30	6	7			13		13:30	151	177			328		
01:45	5	36	1	19	6	55	13:45	137	576	186	674	323	1250	
02:00	5	6			11		14:00	141	132			273		
02:15	4	1			5		14:15	137	154			291		
02:30	0	4			4		14:30	162	138			300		
02:45	2	11	6	17	8	28	14:45	148	588	177	601	325	1189	
03:00	3	2			5		15:00	131	152			283		
03:15	7	0			7		15:15	163	154			317		
03:30	1	2			3		15:30	137	163			300		
03:45	2	13	5	9	7	22	15:45	144	575	186	655	330	1230	
04:00	2	5			7		16:00	154	151			305		
04:15	7	7			14		16:15	146	159			305		
04:30	2	2			4		16:30	134	161			295		
04:45	1	12	4	18	5	30	16:45	115	549	163	634	278	1183	
05:00	6	7			13		17:00	119	170			289		
05:15	2	8			10		17:15	128	137			265		
05:30	1	6			7		17:30	128	145			273		
05:45	5	14	11	32	16	46	17:45	136	511	123	575	259	1086	
06:00	8	9			17		18:00	125	148			273		
06:15	9	15			24		18:15	113	130			243		
06:30	15	15			30		18:30	102	141			243		
06:45	17	49	15	54	32	103	18:45	128	468	139	558	267	1026	
07:00	10	25			35		19:00	131	124			255		
07:15	18	32			50		19:15	111	81			192		
07:30	10	39			49		19:30	114	76			190		
07:45	32	70	34	130	66	200	19:45	112	468	72	353	184	821	
08:00	18	60			78		20:00	103	88			191		
08:15	26	46			72		20:15	128	61			189		
08:30	19	71			90		20:30	114	57			171		
08:45	36	99	54	231	90	330	20:45	107	452	47	253	154	705	
09:00	34	64			98		21:00	92	56			148		
09:15	41	58			99		21:15	77	53			130		
09:30	46	70			116		21:30	74	31			105		
09:45	51	172	103	295	154	467	21:45	47	290	40	180	87	470	
10:00	61	101			162		22:00	42	44			86		
10:15	67	117			184		22:15	67	37			104		
10:30	64	125			189		22:30	39	29			68		
10:45	79	271	135	478	214	749	22:45	36	184	25	135	61	319	
11:00	90	148			238		23:00	34	26			60		
11:15	110	156			266		23:15	28	14			42		
11:30	123	153			276		23:30	22	24			46		
11:45	115	438	165	622	280	1060	23:45	24	108	13	77	37	185	
TOTALS	1259	1951			3210		TOTALS	5289	5489			10778		
SPLIT %	39.2%	60.8%			22.9%		SPLIT %	49.1%	50.9%			77.1%		

DAILY TOTALS					NB	SB					EB	WB	Total	
					6,548	7,440					0	0	13,988	
AM Peak Hour	11:45	11:45			11:45		PM Peak Hour	14:30	12:00			12:00		
AM Pk Volume	504	758			1262		PM Pk Volume	604	794			1314		
Pk Hr Factor	0.875	0.869			0.872		Pk Hr Factor	0.926	0.911			0.907		
7 - 9 Volume	169	361	0	0	530		4 - 6 Volume	1060	1209	0	0	2269		
7 - 9 Peak Hour	08:00	08:00			08:00		4 - 6 Peak Hour	16:00	16:15			16:00		
7 - 9 Pk Volume	99	231	0	0	330		4 - 6 Pk Volume	549	653	0	0	1183		
Pk Hr Factor	0.688	0.813	0.000	0.000	0.917		Pk Hr Factor	0.891	0.960	0.000	0.000	0.970		

VOLUME

Kraemer Blvd Bet. Birch St & Imperial Hwy

Day: Tuesday
Date: 3/27/2018City: Brea
Project #: CA18_1059_007

DAILY TOTALS					NB	SB	EB					WB	Total
					8,819	10,869						0	0
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00	5	5			10		12:00	165	259			424	
00:15	7	4			11		12:15	176	226			402	
00:30	4	2			6		12:30	182	203			385	
00:45	4	20	6	17	10	37	12:45	139	662	202	890	341	1552
01:00	8	3			11		13:00	153	210			363	
01:15	2	0			2		13:15	135	155			290	
01:30	4	2			6		13:30	155	151			306	
01:45	2	16	5	10	7	26	13:45	142	585	132	648	274	1233
02:00	5	5			10		14:00	155	144			299	
02:15	5	1			6		14:15	129	159			288	
02:30	1	1			2		14:30	180	155			335	
02:45	2	13	3	10	5	23	14:45	150	614	162	620	312	1234
03:00	0	5			5		15:00	125	161			286	
03:15	1	3			4		15:15	164	178			342	
03:30	6	4			10		15:30	221	124			345	
03:45	4	11	6	18	10	29	15:45	179	689	181	644	360	1333
04:00	6	12			18		16:00	222	158			380	
04:15	7	7			14		16:15	188	172			360	
04:30	9	23			32		16:30	235	151			386	
04:45	27	49	33	75	60	124	16:45	211	856	211	692	422	1548
05:00	17	12			29		17:00	259	206			465	
05:15	20	40			60		17:15	239	226			465	
05:30	17	49			66		17:30	236	176			412	
05:45	43	97	89	190	132	287	17:45	201	935	167	775	368	1710
06:00	36	89			125		18:00	213	141			354	
06:15	39	133			172		18:15	188	151			339	
06:30	55	176			231		18:30	175	138			313	
06:45	96	226	202	600	298	826	18:45	143	719	100	530	243	1249
07:00	71	250			321		19:00	157	125			282	
07:15	82	229			311		19:15	122	96			218	
07:30	81	235			316		19:30	128	99			227	
07:45	143	377	305	1019	448	1396	19:45	114	521	85	405	199	926
08:00	138	283			421		20:00	77	98			175	
08:15	128	258			386		20:15	79	74			153	
08:30	109	235			344		20:30	60	66			126	
08:45	128	503	222	998	350	1501	20:45	77	293	69	307	146	600
09:00	100	197			297		21:00	54	59			113	
09:15	95	184			279		21:15	63	44			107	
09:30	98	133			231		21:30	47	45			92	
09:45	95	388	176	690	271	1078	21:45	43	207	34	182	77	389
10:00	107	122			229		22:00	28	28			56	
10:15	100	156			256		22:15	21	21			42	
10:30	109	175			284		22:30	24	16			40	
10:45	115	431	168	621	283	1052	22:45	15	88	16	81	31	169
11:00	102	190			292		23:00	16	10			26	
11:15	116	176			292		23:15	13	7			20	
11:30	124	218			342		23:30	7	8			15	
11:45	133	475	228	812	361	1287	23:45	8	44	10	35	18	79
TOTALS	2606	5060			7666		TOTALS	6213	5809			12022	
SPLIT %	34.0%	66.0%			38.9%		SPLIT %	51.7%	48.3%			61.1%	

DAILY TOTALS					NB	SB					EB	WB	Total	
					8,819	10,869					0	0	19,688	

AM Peak Hour	11:45	07:30			07:45		PM Peak Hour	16:45	12:00			16:45	
AM Pk Volume	656	1081			1599		PM Pk Volume	945	890			1764	
Pk Hr Factor	0.901	0.886			0.892		Pk Hr Factor	0.912	0.859			0.948	
7 - 9 Volume	880	2017	0	0	2897		4 - 6 Volume	1791	1467	0	0	3258	
7 - 9 Peak Hour	07:45	07:30			07:45		4 - 6 Peak Hour	16:45	16:45			16:45	
7 - 9 Pk Volume	518	1081	0	0	1599		4 - 6 Pk Volume	945	819	0	0	1764	
Pk Hr Factor	0.906	0.886	0.000	0.000	0.892		Pk Hr Factor	0.912	0.906	0.000	0.000	0.948	

VOLUME

Imperial Hwy E/O Berry St

Day: Thursday
Date: 4/19/2018City: Brea
Project #: CA18_1082_011

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						27,735	27,773
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			58	57	115		12:00			451	375	826	
00:15			51	64	115		12:15			456	400	856	
00:30			29	47	76		12:30			445	427	872	
00:45			40	178	31	199	12:45			431	1783	447	1649
01:00			23	29	52		13:00			386	404	790	
01:15			30	33	63		13:15			409	448	857	
01:30			37	19	56		13:30			419	408	827	
01:45			43	133	31	112	13:45			351	1565	527	1787
02:00			40	20	60		14:00			458	420	878	
02:15			31	23	54		14:15			481	459	940	
02:30			42	52	94		14:30			471	434	905	
02:45			36	149	42	137	14:45			449	1859	506	1819
03:00			34	34	68		15:00			431	486	917	
03:15			38	41	79		15:15			493	489	982	
03:30			55	76	131		15:30			558	470	1028	
03:45			63	190	66	217	15:45			435	1917	471	1916
04:00			78	65	143		16:00			538	498	1036	
04:15			90	77	167		16:15			485	485	970	
04:30			139	109	248		16:30			561	504	1065	
04:45			154	461	142	393	16:45			526	2110	514	2001
05:00			146	115	261		17:00			533	522	1055	
05:15			161	132	293		17:15			532	494	1026	
05:30			202	198	400		17:30			491	524	1015	
05:45			222	731	263	708	17:45			458	2014	473	2013
06:00			250	205	455		18:00			443	439	882	
06:15			295	253	548		18:15			455	419	874	
06:30			381	244	625		18:30			376	377	753	
06:45			351	1277	388	1090	18:45			356	1630	364	1599
07:00			407	378	785		19:00			357	343	700	
07:15			472	414	886		19:15			329	347	676	
07:30			568	489	1057		19:30			305	345	650	
07:45			515	1962	544	1825	19:45			287	1278	300	1335
08:00			505	487	992		20:00			275	342	617	
08:15			409	448	857		20:15			222	265	487	
08:30			417	435	852		20:30			231	262	493	
08:45			437	1768	384	1754	20:45			203	931	252	1121
09:00			387	404	791		21:00			197	291	488	
09:15			335	355	690		21:15			181	297	478	
09:30			359	335	694		21:30			149	213	362	
09:45			313	1394	370	1464	21:45			135	662	177	978
10:00			346	312	658		22:00			134	188	322	
10:15			362	357	719		22:15			101	135	236	
10:30			367	290	657		22:30			91	142	233	
10:45			416	1491	345	1304	22:45			75	401	108	573
11:00			355	342	697		23:00			89	77	166	
11:15			399	378	777		23:15			67	83	150	
11:30			441	362	803		23:30			57	73	130	
11:45			396	1591	393	1475	23:45			47	260	71	304
TOTALS			11325	10678	22003		TOTALS			16410	17095	33505	
SPLIT %			51.5%	48.5%	39.6%		SPLIT %			49.0%	51.0%	60.4%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						27,735	27,773						55,508
AM Peak Hour			07:15	07:30	07:15		PM Peak Hour			16:30	16:45	16:30							
AM Pk Volume			2060	1968	3994		PM Pk Volume			2152	2054	4186							
Pk Hr Factor			0.907	0.904	0.943		Pk Hr Factor			0.959	0.980	0.983							
7 - 9 Volume	0	0	3730	3579	7309		4 - 6 Volume	0	0	4124	4014	8138							
7 - 9 Peak Hour			07:15	07:30	07:15		4 - 6 Peak Hour			16:30	16:45	16:30							
7 - 9 Pk Volume	0	0	2060	1968	3994		4 - 6 Pk Volume	0	0	2152	2054	4186							
Pk Hr Factor	0.000	0.000	0.907	0.904	0.943		Pk Hr Factor	0.000	0.000	0.959	0.980	0.983							

VOLUME

Imperial Hwy E/O S Brea Blvd

Day: Thursday
Date: 4/19/2018City: Brea
Project #: CA18_1082_012

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						26,531	26,094
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			79	54	133		12:00			423	342	765	
00:15			64	57	121		12:15			429	383	812	
00:30			42	51	93		12:30			387	401	788	
00:45			37	222	36	198	12:45			468	1707	390	1516
01:00			34	33	67		13:00			364	386	750	
01:15			36	29	65		13:15			422	408	830	
01:30			41	24	65		13:30			414	366	780	
01:45			35	146	30	116	13:45			374	1574	476	1636
02:00			52	18	70		14:00			397	420	817	
02:15			30	34	64		14:15			415	418	833	
02:30			47	49	96		14:30			425	411	836	
02:45			29	158	37	138	14:45			441	1678	441	1690
03:00			34	32	66		15:00			420	422	842	
03:15			33	45	78		15:15			398	452	850	
03:30			51	78	129		15:30			493	411	904	
03:45			58	176	67	222	15:45			395	1706	445	1730
04:00			68	69	137		16:00			458	462	920	
04:15			93	82	175		16:15			431	476	907	
04:30			126	113	239		16:30			467	497	964	
04:45			133	420	137	401	16:45			501	1857	458	1893
05:00			155	108	263		17:00			495	463	958	
05:15			179	128	307		17:15			481	509	990	
05:30			207	188	395		17:30			469	449	918	
05:45			223	764	239	663	17:45			415	1860	451	1872
06:00			237	192	429		18:00			392	395	787	
06:15			296	229	525		18:15			389	421	810	
06:30			333	262	595		18:30			359	393	752	
06:45			349	1215	341	1024	18:45			345	1485	393	1602
07:00			373	296	669		19:00			348	337	685	
07:15			424	363	787		19:15			307	361	668	
07:30			458	418	876		19:30			330	309	639	
07:45			394	1649	434	1511	19:45			289	1274	339	1346
08:00			445	368	813		20:00			312	310	622	
08:15			350	379	729		20:15			268	276	544	
08:30			361	378	739		20:30			259	259	518	
08:45			407	1563	335	1460	20:45			236	1075	273	1118
09:00			357	352	709		21:00			262	265	527	
09:15			357	367	724		21:15			232	287	519	
09:30			351	310	661		21:30			187	212	399	
09:45			306	1371	357	1386	21:45			182	863	213	977
10:00			313	302	615		22:00			164	151	315	
10:15			374	342	716		22:15			117	150	267	
10:30			341	329	670		22:30			125	133	258	
10:45			427	1455	348	1321	22:45			82	488	105	539
11:00			328	310	638		23:00			109	88	197	
11:15			380	371	751		23:15			81	88	169	
11:30			396	367	763		23:30			62	72	134	
11:45			403	1507	370	1418	23:45			66	318	69	317
TOTALS			10646	9858	20504		TOTALS			15885	16236	32121	
SPLIT %			51.9%	48.1%	39.0%		SPLIT %			49.5%	50.5%	61.0%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						26,531	26,094						52,625
AM Peak Hour			07:15	07:30	07:15		PM Peak Hour			16:45	16:30	16:30							
AM Pk Volume			1721	1599	3304		PM Pk Volume			1946	1927	3871							
Pk Hr Factor			0.939	0.921	0.943		Pk Hr Factor			0.971	0.946	0.978							
7 - 9 Volume	0	0	3212	2971	6183		4 - 6 Volume	0	0	3717	3765	7482							
7 - 9 Peak Hour			07:15	07:30	07:15		4 - 6 Peak Hour			16:45	16:30	16:30							
7 - 9 Pk Volume	0	0	1721	1599	3304		4 - 6 Pk Volume	0	0	1946	1927	3871							
Pk Hr Factor	0.000	0.000	0.939	0.921	0.943		Pk Hr Factor	0.000	0.000	0.971	0.946	0.978							

VOLUME

Imperial Hwy E/O State College Blvd

Day: Thursday
Date: 4/19/2018City: Brea
Project #: CA18_1082_013

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						33,879	37,392
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
00:00			51	60	111		12:00			498	559	1057	
00:15			51	59	110		12:15			497	622	1119	
00:30			47	41	88		12:30			551	639	1190	
00:45			44	193	38	198	12:45			519	2065	618	2438
01:00			37	34	71		13:00			550	572	1122	
01:15			30	33	63		13:15			480	606	1086	
01:30			27	45	72		13:30			510	610	1120	
01:45			29	123	40	152	13:45			536	2076	547	2335
02:00			24	36	60		14:00			500	521	1021	
02:15			35	33	68		14:15			506	542	1048	
02:30			54	49	103		14:30			527	605	1132	
02:45			38	151	78	196	14:45			538	2071	597	2265
03:00			33	39	72		15:00			539	636	1175	
03:15			56	62	118		15:15			541	550	1091	
03:30			78	84	162		15:30			547	563	1110	
03:45			61	228	97	282	15:45			588	2215	645	2394
04:00			79	93	172		16:00			627	649	1276	
04:15			97	148	245		16:15			641	719	1360	
04:30			138	113	251		16:30			646	691	1337	
04:45			147	461	209	563	16:45			632	2546	646	2705
05:00			139	153	292		17:00			617	688	1305	
05:15			157	202	359		17:15			653	684	1337	
05:30			214	225	439		17:30			633	683	1316	
05:45			302	812	305	885	17:45			625	2528	724	2779
06:00			208	235	443		18:00			548	715	1263	
06:15			263	276	539		18:15			586	640	1226	
06:30			317	344	661		18:30			525	597	1122	
06:45			446	1234	441	1296	18:45			533	2192	591	2543
07:00			372	402	774		19:00			513	563	1076	
07:15			474	528	1002		19:15			497	484	981	
07:30			530	512	1042		19:30			452	497	949	
07:45			518	1894	545	1987	19:45			420	1882	490	2034
08:00			460	477	937		20:00			406	432	838	
08:15			496	501	997		20:15			361	433	794	
08:30			465	505	970		20:30			316	419	735	
08:45			464	1885	528	2011	20:45			297	1380	352	1636
09:00			446	417	863		21:00			326	348	674	
09:15			495	528	1023		21:15			272	253	525	
09:30			462	488	950		21:30			239	235	474	
09:45			538	1941	571	2004	21:45			212	1049	241	1077
10:00			449	553	1002		22:00			168	215	383	
10:15			480	559	1039		22:15			190	182	372	
10:30			440	524	964		22:30			165	173	338	
10:45			473	1842	591	2227	22:45			123	646	132	702
11:00			493	531	1024		23:00			93	98	191	
11:15			529	545	1074		23:15			71	138	209	
11:30			565	607	1172		23:30			76	101	177	
11:45			556	2143	572	2255	23:45			82	322	91	428
TOTALS			12907	14056	26963		TOTALS			20972	23336	44308	
SPLIT %			47.9%	52.1%	37.8%		SPLIT %			47.3%	52.7%	62.2%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						33,879	37,392						71,271
AM Peak Hour			11:15	11:45	11:45		PM Peak Hour			16:30	17:15	17:00							
AM Pk Volume			2148	2392	4494		PM Pk Volume			2548	2806	5307							
Pk Hr Factor			0.950	0.936	0.944		Pk Hr Factor			0.975	0.969	0.984							
7 - 9 Volume	0	0	3779	3998	7777		4 - 6 Volume	0	0	5074	5484	10558							
7 - 9 Peak Hour			07:30	07:15	07:15		4 - 6 Peak Hour			16:30	17:00	17:00							
7 - 9 Pk Volume	0	0	2004	2062	4044		4 - 6 Pk Volume	0	0	2548	2779	5307							
Pk Hr Factor	0.000	0.000	0.945	0.946	0.951		Pk Hr Factor	0.000	0.000	0.975	0.960	0.984							

VOLUME

Imperial Hwy E/O SR-57 NB Ramps

Day: Tuesday
Date: 11/13/2018City: Brea
Project #: CA18_1233_013

DAILY TOTALS					NB	SB	EB					WB	Total	
					0	0						26,754		
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL		
0:00			44	32	76		12:00			363	466	829		
0:15			36	32	68		12:15			394	437	831		
0:30			34	23	57		12:30			365	461	826		
0:45			16	130	11	98	12:45			394	1516	454	1818	
					27	228						848	3334	
1:00			22	27	49		13:00			390	438	828		
1:15			17	9	26		13:15			428	431	859		
1:30			19	29	48		13:30			409	449	858		
1:45			19	77	18	83	13:45			429	1656	404	1722	
					37	160						833	3378	
2:00			14	17	31		14:00			412	426	838		
2:15			14	16	30		14:15			378	441	819		
2:30			18	12	30		14:30			393	456	849		
2:45			26	72	14	59	14:45			396	1579	414	1737	
					40	131						810	3316	
3:00			14	21	35		15:00			398	484	882		
3:15			10	21	31		15:15			465	450	915		
3:30			25	43	68		15:30			491	480	971		
3:45			35	84	38	123	15:45			473	1827	517	1931	
					73	207						990	3758	
4:00			32	47	79		16:00			469	473	942		
4:15			38	50	88		16:15			499	486	985		
4:30			107	89	196		16:30			473	497	970		
4:45			153	330	87	273	16:45			496	1937	483	1939	
					240	603						979	3876	
5:00			88	98	186		17:00			469	451	920		
5:15			133	117	250		17:15			530	525	1055		
5:30			177	188	365		17:30			514	496	1010		
5:45			235	633	179	582	17:45			537	2050	476	1948	
					414	1215						1013	3998	
6:00			249	228	477		18:00			464	436	900		
6:15			260	233	493		18:15			477	418	895		
6:30			404	255	659		18:30			418	378	796		
6:45			417	1330	310	1026	18:45			389	1748	347	1579	
					727	2356						736	3327	
7:00			441	336	777		19:00			380	340	720		
7:15			446	374	820		19:15			358	346	704		
7:30			446	418	864		19:30			292	310	602		
7:45			531	1864	447	1575	19:45			268	1298	276	1272	
					978	3439						544	2570	
8:00			477	455	932		20:00			253	301	554		
8:15			483	413	896		20:15			254	247	501		
8:30			518	354	872		20:30			242	245	487		
8:45			462	1940	342	1564	20:45			205	954	247	1040	
					804	3504						452	1994	
9:00			413	297	710		21:00			180	230	410		
9:15			359	295	654		21:15			176	222	398		
9:30			369	290	659		21:30			141	164	305		
9:45			374	1515	376	1258	21:45			137	634	163	779	
					750	2773						300	1413	
10:00			362	349	711		22:00			142	145	287		
10:15			412	339	751		22:15			127	98	225		
10:30			352	408	760		22:30			106	94	200		
10:45			355	1481	416	1512	22:45			78	453	96	433	
					771	2993						174	886	
11:00			366	389	755		23:00			52	61	113		
11:15			363	441	804		23:15			57	61	118		
11:30			349	453	802		23:30			41	57	98		
11:45			382	1460	455	1738	23:45			36	186	36	215	
					837	3198						72	401	
TOTALS			10916	9891	20807		TOTALS			15838	16413	32251		
SPLIT %			52.5%	47.5%	39.2%		SPLIT %			49.1%	50.9%	60.8%		

DAILY TOTALS					NB	SB	EB				WB	Total
					0	0	26,754				26,304	53,058
AM Peak Hour			7:45	11:45	7:45		PM Peak Hour			17:00	15:45	17:00
AM Pk Volume			2009	1819	3678		PM Pk Volume			2050	1973	3998
Pk Hr Factor			0.946	0.976	0.940		Pk Hr Factor			0.954	0.954	0.947
7 - 9 Volume	0	0	3804	3139	6943		4 - 6 Volume	0	0	3987	3887	7874
7 - 9 Peak Hour			7:45	7:30	7:45		4 - 6 Peak Hour			17:00	16:30	17:00
7 - 9 Pk Volume	0	0	2009	1733	3678		4 - 6 Pk Volume	0	0	2050	1956	3998
Pk Hr Factor	0.000	0.000	0.946	0.952	0.940		Pk Hr Factor	0.000	0.000	0.954	0.931	0.947

VOLUME

Imperial Hwy E/O Associated Rd

Day: Tuesday
Date: 11/13/2018City: Brea
Project #: CA18_1233_014

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						26,549	24,435						50,984
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL							TOTAL
0:00			31	23	54		12:00			390	434	824							
0:15			26	22	48		12:15			434	435	869							
0:30			28	19	47		12:30			414	427	841							
0:45			13	98	11	75	12:45			464	1702	436	1732	900	3434				
1:00			18	22	40		13:00			428	413	841							
1:15			13	6	19		13:15			452	417	869							
1:30			17	20	37		13:30			417	445	862							
1:45			16	64	12	60	13:45			468	1765	388	1663	856	3428				
2:00			14	15	29		14:00			431	400	831							
2:15			11	13	24		14:15			395	424	819							
2:30			16	10	26		14:30			408	438	846							
2:45			22	63	10	48	14:45			394	1628	384	1646	778	3274				
3:00			11	12	23		15:00			412	451	863							
3:15			7	17	24		15:15			478	425	903							
3:30			23	28	51		15:30			480	472	952							
3:45			35	76	28	85	15:45			479	1849	472	1820	951	3669				
4:00			31	38	69		16:00			472	454	926							
4:15			31	39	70		16:15			488	449	937							
4:30			89	68	157		16:30			478	488	966							
4:45			141	292	64	209	16:45			502	1940	454	1845	956	3785				
5:00			87	65	152		17:00			477	420	897							
5:15			128	86	214		17:15			511	500	1011							
5:30			164	143	307		17:30			506	496	1002							
5:45			217	596	148	442	17:45			517	2011	456	1872	973	3883				
6:00			238	187	425		18:00			462	425	887							
6:15			245	183	428		18:15			468	422	890							
6:30			372	235	607		18:30			410	366	776							
6:45			402	1257	271	876	18:45			352	1692	333	1546	685	3238				
7:00			422	303	725		19:00			357	325	682							
7:15			420	330	750		19:15			342	332	674							
7:30			423	384	807		19:30			285	291	576							
7:45			514	1779	422	1439	19:45			267	1251	250	1198	517	2449				
8:00			484	422	906		20:00			238	293	531							
8:15			488	396	884		20:15			236	216	452							
8:30			528	321	849		20:30			238	216	454							
8:45			494	1994	322	1461	20:45			183	895	219	944	402	1839				
9:00			425	275	700		21:00			146	209	355							
9:15			351	294	645		21:15			161	191	352							
9:30			356	267	623		21:30			125	139	264							
9:45			346	1478	365	1201	21:45			112	544	139	678	251	1222				
10:00			367	351	718		22:00			133	116	249							
10:15			412	320	732		22:15			105	83	188							
10:30			373	375	748		22:30			80	82	162							
10:45			360	1512	418	1464	22:45			64	382	78	359	142	741				
11:00			387	360	747		23:00			36	48	84							
11:15			368	418	786		23:15			50	38	88							
11:30			365	423	788		23:30			32	35	67							
11:45			409	1529	428	1629	23:45			34	152	22	143	56	295				
TOTALS			10738	8989	19727		TOTALS			15811	15446	31257							
SPLIT %			54.4%	45.6%	38.7%		SPLIT %			50.6%	49.4%	61.3%							

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						26,549	24,435						50,984
AM Peak Hour			7:45	11:45	7:45		PM Peak Hour			17:00	17:15	17:00							
AM Pk Volume			2014	1724	3575		PM Pk Volume			2011	1877	3883							
Pk Hr Factor			0.954	0.991	0.955		Pk Hr Factor			0.972	0.939	0.960							
7 - 9 Volume	0	0	3773	2900	6673		4 - 6 Volume	0	0	3951	3717	7668							
7 - 9 Peak Hour			7:45	7:30	7:45		4 - 6 Peak Hour			17:00	17:00	17:00							
7 - 9 Pk Volume	0	0	2014	1624	3575		4 - 6 Pk Volume	0	0	2011	1872	3883							
Pk Hr Factor	0.000	0.000	0.954	0.962	0.955		Pk Hr Factor	0.000	0.000	0.972	0.936	0.960							

VOLUME

Imperial Hwy E/O Castlegate Ln/Placentia Ave

Day: Tuesday

City: Brea

Date: 11/13/2018

Project #: CA18_1233_015

DAILY TOTALS					NB	SB	EB					WB	Total
					0	0						26,188	24,966
AM Period	NB	SB	EB	WB	TOTAL		PM Period	NB	SB	EB	WB	TOTAL	
0:00			27	20	47		12:00			398	437	835	
0:15			18	18	36		12:15			448	429	877	
0:30			24	15	39		12:30			419	457	876	
0:45			11	80	8	61	12:45			495	1760	415	1738
1:00			11	19	30		13:00			450	421	871	
1:15			16	3	19		13:15			464	428	892	
1:30			13	18	31		13:30			434	464	898	
1:45			17	57	13	53	13:45			456	1804	412	1725
2:00			15	14	29		14:00			444	439	883	
2:15			10	6	16		14:15			415	430	845	
2:30			15	7	22		14:30			426	456	882	
2:45			20	60	9	36	14:45			419	1704	399	1724
3:00			10	12	22		15:00			447	434	881	
3:15			7	14	21		15:15			485	448	933	
3:30			21	30	51		15:30			491	478	969	
3:45			31	69	25	81	15:45			500	1923	468	1828
4:00			33	36	69		16:00			454	479	933	
4:15			31	40	71		16:15			482	481	963	
4:30			80	63	143		16:30			469	502	971	
4:45			129	273	57	196	16:45			488	1893	462	1924
5:00			78	62	140		17:00			472	491	963	
5:15			114	72	186		17:15			511	523	1034	
5:30			175	136	311		17:30			481	468	949	
5:45			248	615	131	401	17:45			494	1958	466	1948
6:00			231	191	422		18:00			431	445	876	
6:15			227	164	391		18:15			438	452	890	
6:30			331	236	567		18:30			450	422	872	
6:45			403	1192	295	886	18:45			334	1653	331	1650
7:00			388	315	703		19:00			342	341	683	
7:15			391	327	718		19:15			324	338	662	
7:30			406	347	753		19:30			266	304	570	
7:45			467	1652	428	1417	19:45			258	1190	260	1243
8:00			444	399	843		20:00			236	307	543	
8:15			426	373	799		20:15			213	251	464	
8:30			491	329	820		20:30			213	221	434	
8:45			465	1826	332	1433	20:45			162	824	227	1006
9:00			411	325	736		21:00			121	228	349	
9:15			364	312	676		21:15			143	197	340	
9:30			393	271	664		21:30			107	151	258	
9:45			376	1544	368	1276	21:45			106	477	141	717
10:00			381	355	736		22:00			103	106	209	
10:15			418	315	733		22:15			85	91	176	
10:30			380	381	761		22:30			68	80	148	
10:45			376	1555	413	1464	22:45			49	305	73	350
11:00			384	378	762		23:00			35	52	87	
11:15			411	411	822		23:15			48	40	88	
11:30			393	432	825		23:30			32	34	66	
11:45			440	1628	439	1660	23:45			31	146	23	149
TOTALS			10551	8964	19515		TOTALS			15637	16002	31639	
SPLIT %			54.1%	45.9%	38.1%		SPLIT %			49.4%	50.6%	61.9%	

DAILY TOTALS					NB	SB						EB	WB						Total
					0	0						26,188	24,966						51,154
AM Peak Hour			7:45	11:45	11:45		PM Peak Hour			17:00	16:30	16:30							
AM Pk Volume			1828	1762	3467		PM Pk Volume			1958	1978	3918							
Pk Hr Factor			0.931	0.964	0.986		Pk Hr Factor			0.958	0.946	0.947							
7 - 9 Volume	0	0	3478	2850	6328		4 - 6 Volume	0	0	3851	3872	7723							
7 - 9 Peak Hour			7:45	7:30	7:45		4 - 6 Peak Hour			17:00	16:30	16:30							
7 - 9 Pk Volume	0	0	1828	1547	3357		4 - 6 Pk Volume	0	0	1958	1978	3918							
Pk Hr Factor	0.000	0.000	0.931	0.904	0.938		Pk Hr Factor	0.000	0.000	0.958	0.946	0.947							

VOLUME

Kraemer Blvd S/O Imperial Hwy

Day: Tuesday
Date: 11/13/2018City: Brea
Project #: CA18_1232_016

DAILY TOTALS					NB	SB	EB					WB	Total
					9,387	10,302						0	0
AM Period	NB	SB	EB	WB	TOTAL	PM Period	NB	SB	EB	WB	TOTAL		
00:00	2	10			12	12:00	163	209			372		
00:15	6	6			12	12:15	202	141			343		
00:30	1	7			8	12:30	199	176			375		
00:45	3	12	3	26	6	12:45	211	775	164	690	375	1465	
01:00	0	2			2	13:00	194	154			348		
01:15	1	1			2	13:15	163	173			336		
01:30	2	1			3	13:30	174	164			338		
01:45	1	4	2	6	3	13:45	165	696	166	657	331	1353	
02:00	2	6			8	14:00	140	179			319		
02:15	0	4			4	14:15	171	170			341		
02:30	0	1			1	14:30	186	162			348		
02:45	3	5	2	13	5	14:45	158	655	213	724	371	1379	
03:00	2	0			2	15:00	206	198			404		
03:15	4	2			6	15:15	189	189			378		
03:30	6	4			10	15:30	186	227			413		
03:45	8	20	1	7	9	15:45	194	775	213	827	407	1602	
04:00	9	5			14	16:00	166	247			413		
04:15	5	2			7	16:15	178	204			382		
04:30	17	7			24	16:30	257	248			505		
04:45	29	60	8	22	37	16:45	189	790	238	937	427	1727	
05:00	14	5			19	17:00	187	288			475		
05:15	20	20			40	17:15	197	259			456		
05:30	39	25			64	17:30	179	238			417		
05:45	67	140	54	104	121	17:45	181	744	206	991	387	1735	
06:00	55	67			122	18:00	141	208			349		
06:15	53	99			152	18:15	151	192			343		
06:30	76	141			217	18:30	127	163			290		
06:45	118	302	151	458	269	18:45	115	534	140	703	255	1237	
07:00	107	197			304	19:00	77	134			211		
07:15	113	215			328	19:15	100	114			214		
07:30	132	277			409	19:30	61	102			163		
07:45	243	595	177	866	420	19:45	69	307	94	444	163	751	
08:00	186	141			327	20:00	76	86			162		
08:15	170	147			317	20:15	54	80			134		
08:30	180	153			333	20:30	44	71			115		
08:45	176	712	138	579	314	20:45	38	212	68	305	106	517	
09:00	178	124			302	21:00	39	85			124		
09:15	147	121			268	21:15	35	61			96		
09:30	131	113			244	21:30	28	37			65		
09:45	152	608	117	475	269	21:45	32	134	29	212	61	346	
10:00	141	133			274	22:00	15	35			50		
10:15	144	110			254	22:15	15	27			42		
10:30	127	110			237	22:30	11	29			40		
10:45	148	560	124	477	272	22:45	10	51	20	111	30	162	
11:00	170	144			314	23:00	12	28			40		
11:15	150	142			292	23:15	10	13			23		
11:30	157	164			321	23:30	8	10			18		
11:45	183	660	158	608	341	23:45	6	36	9	60	15	96	
TOTALS	3678	3641			7319	TOTALS	5709	6661			12370		
SPLIT %	50.3%	49.7%			37.2%	SPLIT %	46.2%	53.8%			62.8%		

DAILY TOTALS			NB	SB	EB			WB	Total		
			9,387	10,302				0			
AM Peak Hour	07:45	07:00			07:15	PM Peak Hour	16:30	16:30			16:30
AM Pk Volume	779	866			1484	PM Pk Volume	830	1033			1863
Pk Hr Factor	0.801	0.782			0.883	Pk Hr Factor	0.807	0.897			0.922
7 - 9 Volume	1307	1445	0	0	2752	4 - 6 Volume	1534	1928	0	0	3462
7 - 9 Peak Hour	07:45	07:00			07:15	4 - 6 Peak Hour	16:30	16:30			16:30
7 - 9 Pk Volume	779	866	0	0	1484	4 - 6 Pk Volume	830	1033	0	0	1863
Pk Hr Factor	0.801	0.782	0.000	0.000	0.883	Pk Hr Factor	0.807	0.897	0.000	0.000	0.922

APPENDIX C

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS – ICU

APPENDIX C-1

EXISTING TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.522

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	50	144	95	145	314	73	81	1159	123	111	1101	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	144	95	145	314	73	81	1159	123	111	1101	55
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	36	24	36	79	18	20	290	31	28	275	14
Total Analysis Volume [veh/h]	50	144	95	145	314	73	81	1159	123	111	1101	55
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.07	0.07	0.09	0.11	0.11	0.05	0.25	0.25	0.07	0.23	0.23
Intersection LOS	A											
Intersection V/C	0.522											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	196	317	137	107	841	246	84	1118	278	188	1148	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	317	137	107	841	246	84	1118	278	188	1148	133
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	79	34	27	210	62	21	280	70	47	287	33
Total Analysis Volume [veh/h]	196	317	137	107	841	246	84	1118	278	188	1148	133
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.09	0.08	0.06	0.25	0.14	0.05	0.22	0.16	0.11	0.25	0.25
Intersection LOS	B											
Intersection V/C	0.685											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	144	183	127	824	554	8	13	1162	187	410	1447	509
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	183	127	824	554	8	13	1162	187	410	1447	509
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	46	32	206	139	2	3	291	47	103	362	127
Total Analysis Volume [veh/h]	144	183	127	824	554	8	13	1162	187	410	1447	509
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.24	0.17	0.17	0.00	0.20	0.20	0.12	0.28	0.06
Intersection LOS	B											
Intersection V/C	0.672											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	977	0	489	0	1580	538	207	1930	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	977	0	489	0	1580	538	207	1930	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	244	0	122	0	395	135	52	483	0
Total Analysis Volume [veh/h]	0	0	0	977	0	489	0	1580	538	207	1930	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.31	0.31	0.06	0.38	0.00
Intersection LOS	C											
Intersection V/C	0.716											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.783

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐						⇐			⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	970	0	459	0	0	0	262	2285	0	0	1178	452
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	970	0	459	0	0	0	262	2285	0	0	1178	452
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	243	0	115	0	0	0	66	571	0	0	295	113
Total Analysis Volume [veh/h]	970	0	459	0	0	0	262	2285	0	0	1178	452
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.00	0.27	0.00	0.00	0.00	0.08	0.45	0.00	0.00	0.24	0.24
Intersection LOS	C											
Intersection V/C	0.783											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	272	105	29	18	200	302	90	602	988	249	677	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	105	29	18	200	302	90	602	988	249	677	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	26	7	5	50	76	23	151	247	62	169	3
Total Analysis Volume [veh/h]	272	105	29	18	200	302	90	602	988	249	677	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.06	0.00	0.01	0.12	0.18	0.05	0.18	0.21	0.07	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.591											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.380

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	26	404	181	320	950	57	46	65	11	247	66	216
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	404	181	320	950	57	46	65	11	247	66	216
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	101	45	80	238	14	12	16	3	62	17	54
Total Analysis Volume [veh/h]	26	404	181	320	950	57	46	65	11	247	66	216
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.11	0.09	0.20	0.20	0.03	0.04	0.04	0.07	0.04	0.03
Intersection LOS	A											
Intersection V/C	0.380											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.338

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	22	38	81	35	33	24	37	528	85	67	446	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	38	81	35	33	24	37	528	85	67	446	41
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	10	20	9	8	6	9	132	21	17	112	10
Total Analysis Volume [veh/h]	22	38	81	35	33	24	37	528	85	67	446	41
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.05	0.02	0.03	0.03	0.02	0.18	0.18	0.04	0.13	0.02
Intersection LOS	A											
Intersection V/C	0.338											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.506

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	72	114	91	598	742	138	71	478	45	74	529	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	114	91	598	742	138	71	478	45	74	529	260
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	29	23	150	186	35	18	120	11	19	132	65
Total Analysis Volume [veh/h]	72	114	91	598	742	138	71	478	45	74	529	260
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.05	0.18	0.26	0.26	0.02	0.14	0.03	0.02	0.16	0.15
Intersection LOS	A											
Intersection V/C	0.506											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	223	6	292	52	27	8	2	866	288	325	711	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	6	292	52	27	8	2	866	288	325	711	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	2	73	13	7	2	1	217	72	81	178	3
Total Analysis Volume [veh/h]	223	6	292	52	27	8	2	866	288	325	711	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.34	0.34	0.10	0.21	0.21
Intersection LOS	A											
Intersection V/C	0.592											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	5	149	2	428	303	794	16	8	684	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	5	149	2	428	303	794	16	8	684	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	37	1	107	76	199	4	2	171	19
Total Analysis Volume [veh/h]	3	3	5	149	2	428	303	794	16	8	684	77
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.07	0.18	0.24	0.24	0.00	0.20	0.05
Intersection LOS	A											
Intersection V/C	0.520											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	127	205	87	419	939	169	35	523	328	59	403	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	205	87	419	939	169	35	523	328	59	403	205
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	51	22	105	235	42	9	131	82	15	101	51
Total Analysis Volume [veh/h]	127	205	87	419	939	169	35	523	328	59	403	205
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.12	0.22	0.22	0.02	0.15	0.19	0.03	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.532											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.134

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	24	124	8	6	113	13	30	2	54	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	124	8	6	113	13	30	2	54	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	31	2	2	28	3	8	1	14	0	0	0
Total Analysis Volume [veh/h]	24	124	8	6	113	13	30	2	54	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.04	0.04	0.00	0.04	0.04	0.02	0.03	0.03	0.00	0.00	0.00
Intersection LOS	A											
Intersection V/C	0.134											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.132

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	12	155	63	14	134	6	1	0	1	25	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	155	63	14	134	6	1	0	1	25	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	39	16	4	34	2	0	0	0	6	0	1
Total Analysis Volume [veh/h]	12	155	63	14	134	6	1	0	1	25	0	5
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.06	0.06	0.01	0.04	0.04	0.00	0.00	0.00	0.01	0.00	0.01
Intersection LOS	A											
Intersection V/C	0.132											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.176

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	30	5	14	3	2	26	73	227	14	26	304	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	5	14	3	2	26	73	227	14	26	304	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	4	1	1	7	18	57	4	7	76	3
Total Analysis Volume [veh/h]	30	5	14	3	2	26	73	227	14	26	304	11
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.07	0.07	0.02	0.09	0.09
Intersection LOS	A											
Intersection V/C	0.176											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	288	572	247	136	1182	266	174	1234	344	269	1089	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	572	247	136	1182	266	174	1234	344	269	1089	94
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	143	62	34	296	67	44	309	86	67	272	24
Total Analysis Volume [veh/h]	288	572	247	136	1182	266	174	1234	344	269	1089	94
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.11	0.15	0.04	0.23	0.16	0.05	0.31	0.31	0.08	0.21	0.06
Intersection LOS	C											
Intersection V/C	0.755											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	56	108	145	114	80	127	208	1251	74	46	1138	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	108	145	114	80	127	208	1251	74	46	1138	149
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	27	36	29	20	32	52	313	19	12	285	37
Total Analysis Volume [veh/h]	56	108	145	114	80	127	208	1251	74	46	1138	149
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.06	0.09	0.07	0.02	0.07	0.12	0.26	0.26	0.03	0.22	0.09
Intersection LOS	A											
Intersection V/C	0.548											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	406	430	135	120	899	155	124	1408	329	143	1342	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	430	135	120	899	155	124	1408	329	143	1342	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	102	108	34	30	225	39	31	352	82	36	336	15
Total Analysis Volume [veh/h]	406	430	135	120	899	155	124	1408	329	143	1342	60
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.08	0.08	0.04	0.26	0.09	0.04	0.28	0.19	0.04	0.26	0.04
Intersection LOS	C											
Intersection V/C	0.752											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.402

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	50	119	13	28	55	1444	9	23	1396	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	50	119	13	28	55	1444	9	23	1396	136
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	13	30	3	7	14	361	2	6	349	34
Total Analysis Volume [veh/h]	14	13	50	119	13	28	55	1444	9	23	1396	136
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.02	0.04	0.02	0.02	0.02	0.28	0.28	0.01	0.27	0.08
Intersection LOS	A											
Intersection V/C	0.402											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	92	130	378	80	325	25	31	1446	163	410	1445	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	92	130	378	80	325	25	31	1446	163	410	1445	128
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	33	95	20	81	6	8	362	41	103	361	32
Total Analysis Volume [veh/h]	92	130	378	80	325	25	31	1446	163	410	1445	128
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.22	0.03	0.10	0.10	0.01	0.24	0.24	0.12	0.28	0.04
Intersection LOS	B											
Intersection V/C	0.660											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↲		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	547	0	438	0	1343	609	0	1567	171
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	547	0	438	0	1343	609	0	1567	171
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	137	0	110	0	336	152	0	392	43
Total Analysis Volume [veh/h]	0	0	0	547	0	438	0	1343	609	0	1567	171
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.16	0.00	0.19	0.00	0.26	0.00	0.00	0.31	0.00
Intersection LOS	A											
Intersection V/C	0.550											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	791	167	746	0	0	90	152	1220	506	0	1333	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	791	167	746	0	0	90	152	1220	506	0	1333	6
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	198	42	187	0	0	23	38	305	127	0	333	2
Total Analysis Volume [veh/h]	791	167	746	0	0	90	152	1220	506	0	1333	6
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.25	0.25	0.00	0.00	0.00	0.09	0.24	0.00	0.00	0.20	0.20
Intersection LOS	B											
Intersection V/C	0.605											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.673

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	137	192	66	138	305	136	138	1709	92	85	1465	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	137	192	66	138	305	136	138	1709	92	85	1465	78
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	48	17	35	76	34	35	427	23	21	366	20
Total Analysis Volume [veh/h]	137	192	66	138	305	136	138	1709	92	85	1465	78
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.08	0.04	0.18	0.08	0.08	0.35	0.35	0.05	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.673											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	160	11	134	23	26	13	12	1672	330	162	1339	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	11	134	23	26	13	12	1672	330	162	1339	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	3	34	6	7	3	3	418	83	41	335	8
Total Analysis Volume [veh/h]	160	11	134	23	26	13	12	1672	330	162	1339	30
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.08	0.01	0.02	0.02	0.01	0.33	0.19	0.10	0.27	0.27
Intersection LOS	A											
Intersection V/C	0.575											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	160	226	79	302	596	103	125	1165	223	66	965	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	226	79	302	596	103	125	1165	223	66	965	82
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	57	20	76	149	26	31	291	56	17	241	21
Total Analysis Volume [veh/h]	160	226	79	302	596	103	125	1165	223	66	965	82
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.09	0.09	0.09	0.18	0.06	0.04	0.27	0.27	0.02	0.21	0.21
Intersection LOS	A											
Intersection V/C	0.564											

Intersection Level Of Service Report

Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	96	211	136	116	374	21	64	678	153	296	721	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	211	136	116	374	21	64	678	153	296	721	88
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	53	34	29	94	5	16	170	38	74	180	22
Total Analysis Volume [veh/h]	96	211	136	116	374	21	64	678	153	296	721	88
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.10	0.10	0.07	0.12	0.12	0.04	0.24	0.24	0.17	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.641											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	146	504	135	60	751	187	203	631	145	143	772	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	146	504	135	60	751	187	203	631	145	143	772	69
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	126	34	15	188	47	51	158	36	36	193	17
Total Analysis Volume [veh/h]	146	504	135	60	751	187	203	631	145	143	772	69
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.19	0.19	0.04	0.18	0.18	0.06	0.23	0.23	0.08	0.16	0.16
Intersection LOS	A											
Intersection V/C	0.589											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	110	361	129	85	149	123	80	1057	66	76	1400	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	361	129	85	149	123	80	1057	66	76	1400	128
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	90	32	21	37	31	20	264	17	19	350	32
Total Analysis Volume [veh/h]	110	361	129	85	149	123	80	1057	66	76	1400	128
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.14	0.14	0.05	0.08	0.08	0.05	0.22	0.22	0.04	0.30	0.30
Intersection LOS	A											
Intersection V/C	0.591											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	399	648	171	66	295	91	150	1117	355	204	1173	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	399	648	171	66	295	91	150	1117	355	204	1173	74
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	162	43	17	74	23	38	279	89	51	293	19
Total Analysis Volume [veh/h]	399	648	171	66	295	91	150	1117	355	204	1173	74
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.19	0.10	0.04	0.09	0.05	0.09	0.22	0.21	0.12	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.618											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.647

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	288	549	241	519	354	14	36	1086	233	301	960	653
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	549	241	519	354	14	36	1086	233	301	960	653
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	137	60	130	89	4	9	272	58	75	240	163
Total Analysis Volume [veh/h]	288	549	241	519	354	14	36	1086	233	301	960	653
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.16	0.14	0.15	0.11	0.11	0.01	0.19	0.19	0.09	0.19	0.23
Intersection LOS	B											
Intersection V/C	0.647											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	422	0	664	0	1062	710	215	1533	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	422	0	664	0	1062	710	215	1533	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	106	0	166	0	266	178	54	383	0
Total Analysis Volume [veh/h]	0	0	0	422	0	664	0	1062	710	215	1533	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.12	0.00	0.21	0.00	0.26	0.26	0.06	0.30	0.00
Intersection LOS	A											
Intersection V/C	0.587											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.543

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	606	0	248	0	0	0	339	1340	0	0	975	487
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	606	0	248	0	0	0	339	1340	0	0	975	487
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	0	62	0	0	0	85	335	0	0	244	122
Total Analysis Volume [veh/h]	606	0	248	0	0	0	339	1340	0	0	975	487
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.00	0.15	0.00	0.00	0.00	0.10	0.26	0.00	0.00	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.543											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.498

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	465	274	205	4	92	106	169	772	438	75	306	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	465	274	205	4	92	106	169	772	438	75	306	25
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	69	51	1	23	27	42	193	110	19	77	6
Total Analysis Volume [veh/h]	465	274	205	4	92	106	169	772	438	75	306	25
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.16	0.10	0.00	0.05	0.06	0.10	0.23	0.00	0.02	0.06	0.06
Intersection LOS	A											
Intersection V/C	0.498											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.603

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	61	743	281	367	611	53	63	85	30	325	140	535
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	743	281	367	611	53	63	85	30	325	140	535
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	186	70	92	153	13	16	21	8	81	35	134
Total Analysis Volume [veh/h]	61	743	281	367	611	53	63	85	30	325	140	535
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.20	0.20	0.11	0.13	0.13	0.04	0.07	0.07	0.10	0.08	0.21
Intersection LOS	B											
Intersection V/C	0.603											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.541

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	123	53	154	48	46	101	73	579	89	174	985	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	123	53	154	48	46	101	73	579	89	174	985	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	13	39	12	12	25	18	145	22	44	246	9
Total Analysis Volume [veh/h]	123	53	154	48	46	101	73	579	89	174	985	36
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.03	0.09	0.03	0.09	0.09	0.04	0.20	0.20	0.10	0.29	0.02
Intersection LOS	A											
Intersection V/C	0.541											

Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	132	336	149	295	309	245	185	706	147	134	904	573
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	336	149	295	309	245	185	706	147	134	904	573
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	84	37	74	77	61	46	177	37	34	226	143
Total Analysis Volume [veh/h]	132	336	149	295	309	245	185	706	147	134	904	573
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.10	0.09	0.09	0.16	0.16	0.05	0.21	0.09	0.04	0.27	0.34
Intersection LOS	B											
Intersection V/C	0.643											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	438	30	326	10	18	6	12	814	273	270	1155	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	438	30	326	10	18	6	12	814	273	270	1155	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	8	82	3	5	2	3	204	68	68	289	4
Total Analysis Volume [veh/h]	438	30	326	10	18	6	12	814	273	270	1155	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.02	0.11	0.01	0.01	0.01	0.01	0.32	0.32	0.08	0.34	0.34
Intersection LOS	A											
Intersection V/C	0.592											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	94	3	270	260	849	11	5	1192	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	94	3	270	260	849	11	5	1192	124
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	3	24	1	68	65	212	3	1	298	31
Total Analysis Volume [veh/h]	12	2	10	94	3	270	260	849	11	5	1192	124
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.06	0.00	0.01	0.15	0.25	0.25	0.00	0.35	0.07
Intersection LOS	B											
Intersection V/C	0.616											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	552	683	115	200	346	97	202	665	273	72	634	197
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	552	683	115	200	346	97	202	665	273	72	634	197
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	171	29	50	87	24	51	166	68	18	159	49
Total Analysis Volume [veh/h]	552	683	115	200	346	97	202	665	273	72	634	197
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.16	0.16	0.06	0.09	0.09	0.12	0.20	0.16	0.04	0.19	0.12
Intersection LOS	B											
Intersection V/C	0.605											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.234

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	44	293	39	26	233	26	57	4	48	69	4	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	293	39	26	233	26	57	4	48	69	4	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	73	10	7	58	7	14	1	12	17	1	9
Total Analysis Volume [veh/h]	44	293	39	26	233	26	57	4	48	69	4	35
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.10	0.10	0.02	0.08	0.08	0.03	0.03	0.03	0.04	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.234											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.343

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	299	295	34	329	18	16	3	11	250	3	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	299	295	34	329	18	16	3	11	250	3	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	75	74	9	82	5	4	1	3	63	1	11
Total Analysis Volume [veh/h]	15	299	295	34	329	18	16	3	11	250	3	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.17	0.17	0.02	0.10	0.10	0.01	0.01	0.01	0.07	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.343											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.423

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	131	18	61	41	12	350	452	470	21	90	394	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	18	61	41	12	350	452	470	21	90	394	25
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	5	15	10	3	88	113	118	5	23	99	6
Total Analysis Volume [veh/h]	131	18	61	41	12	350	452	470	21	90	394	25
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.04	0.04	0.02	0.01	0.07	0.13	0.14	0.14	0.05	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.423											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	406	1039	201	187	811	291	255	1132	273	405	1427	209
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	1039	201	187	811	291	255	1132	273	405	1427	209
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	102	260	50	47	203	73	64	283	68	101	357	52
Total Analysis Volume [veh/h]	406	1039	201	187	811	291	255	1132	273	405	1427	209
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.20	0.12	0.06	0.16	0.17	0.08	0.28	0.28	0.12	0.28	0.12
Intersection LOS	C											
Intersection V/C	0.735											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.563

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	33	45	77	155	99	194	119	1353	35	98	1565	241
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	45	77	155	99	194	119	1353	35	98	1565	241
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	11	19	39	25	49	30	338	9	25	391	60
Total Analysis Volume [veh/h]	33	45	77	155	99	194	119	1353	35	98	1565	241
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.05	0.09	0.03	0.11	0.07	0.27	0.27	0.06	0.31	0.14
Intersection LOS	A											
Intersection V/C	0.563											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	480	764	231	195	599	167	178	1571	386	213	1607	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	480	764	231	195	599	167	178	1571	386	213	1607	131
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	191	58	49	150	42	45	393	97	53	402	33
Total Analysis Volume [veh/h]	480	764	231	195	599	167	178	1571	386	213	1607	131
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.15	0.14	0.06	0.18	0.10	0.05	0.31	0.23	0.06	0.32	0.08
Intersection LOS	C											
Intersection V/C	0.738											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	41	31	56	299	23	198	233	1517	26	53	1753	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	31	56	299	23	198	233	1517	26	53	1753	307
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	8	14	75	6	50	58	379	7	13	438	77
Total Analysis Volume [veh/h]	41	31	56	299	23	198	233	1517	26	53	1753	307
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.03	0.09	0.13	0.13	0.07	0.30	0.30	0.03	0.34	0.18
Intersection LOS	B											
Intersection V/C	0.618											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	334	510	328	397	262	89	102	1675	87	418	1702	443
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	510	328	397	262	89	102	1675	87	418	1702	443
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	128	82	99	66	22	26	419	22	105	426	111
Total Analysis Volume [veh/h]	334	510	328	397	262	89	102	1675	87	418	1702	443
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.15	0.19	0.15	0.10	0.10	0.03	0.26	0.26	0.12	0.33	0.11
Intersection LOS	C											
Intersection V/C	0.778											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	620	0	497	0	1559	859	0	2067	368
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	620	0	497	0	1559	859	0	2067	368
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	155	0	124	0	390	215	0	517	92
Total Analysis Volume [veh/h]	0	0	0	620	0	497	0	1559	859	0	2067	368
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.18	0.00	0.22	0.00	0.31	0.00	0.00	0.41	0.00
Intersection LOS	B											
Intersection V/C	0.674											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.671

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	844	59	389	0	0	244	182	1655	343	0	2159	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	844	59	389	0	0	244	182	1655	343	0	2159	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	211	15	97	0	0	61	46	414	86	0	540	11
Total Analysis Volume [veh/h]	844	59	389	0	0	244	182	1655	343	0	2159	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.19	0.19	0.00	0.00	0.00	0.11	0.32	0.00	0.00	0.32	0.32
Intersection LOS	B											
Intersection V/C	0.671											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	201	240	78	270	323	208	235	1662	130	162	1563	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	201	240	78	270	323	208	235	1662	130	162	1563	158
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	60	20	68	81	52	59	416	33	41	391	40
Total Analysis Volume [veh/h]	201	240	78	270	323	208	235	1662	130	162	1563	158
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.09	0.09	0.08	0.19	0.12	0.14	0.35	0.35	0.10	0.25	0.25
Intersection LOS	C											
Intersection V/C	0.746											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	224	44	246	23	21	13	17	1671	261	213	1720	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	224	44	246	23	21	13	17	1671	261	213	1720	52
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	11	62	6	5	3	4	418	65	53	430	13
Total Analysis Volume [veh/h]	224	44	246	23	21	13	17	1671	261	213	1720	52
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.08	0.14	0.01	0.02	0.02	0.01	0.33	0.15	0.13	0.35	0.35
Intersection LOS	B											
Intersection V/C	0.668											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.706

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	331	569	95	246	436	105	198	1255	194	171	1385	297
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	331	569	95	246	436	105	198	1255	194	171	1385	297
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	83	142	24	62	109	26	50	314	49	43	346	74
Total Analysis Volume [veh/h]	331	569	95	246	436	105	198	1255	194	171	1385	297
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.20	0.20	0.07	0.13	0.06	0.06	0.28	0.28	0.05	0.33	0.33
Intersection LOS	C											
Intersection V/C	0.706											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.781

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	189	317	295	160	382	49	72	859	177	259	825	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	317	295	160	382	49	72	859	177	259	825	90
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	79	74	40	96	12	18	215	44	65	206	23
Total Analysis Volume [veh/h]	189	317	295	160	382	49	72	859	177	259	825	90
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.18	0.18	0.09	0.13	0.13	0.04	0.30	0.30	0.15	0.27	0.27
Intersection LOS	C											
Intersection V/C	0.781											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	188	678	109	70	670	309	171	869	208	95	706	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	678	109	70	670	309	171	869	208	95	706	64
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	170	27	18	168	77	43	217	52	24	177	16
Total Analysis Volume [veh/h]	188	678	109	70	670	309	171	869	208	95	706	64
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.23	0.23	0.04	0.19	0.19	0.05	0.32	0.32	0.06	0.15	0.15
Intersection LOS	B											
Intersection V/C	0.695											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.403

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	64	108	50	85	113	70	63	989	47	42	1058	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	108	50	85	113	70	63	989	47	42	1058	61
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	27	13	21	28	18	16	247	12	11	265	15
Total Analysis Volume [veh/h]	64	108	50	85	113	70	63	989	47	42	1058	61
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.05	0.05	0.05	0.05	0.04	0.20	0.20	0.02	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.403											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	250	338	148	134	671	136	61	914	248	204	861	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	250	338	148	134	671	136	61	914	248	204	861	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	85	37	34	168	34	15	229	62	51	215	11
Total Analysis Volume [veh/h]	250	338	148	134	671	136	61	914	248	204	861	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.10	0.09	0.08	0.20	0.08	0.04	0.18	0.15	0.12	0.18	0.18
Intersection LOS	B											
Intersection V/C	0.620											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	122	235	303	472	334	5	17	924	247	619	1270	656
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	235	303	472	334	5	17	924	247	619	1270	656
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	59	76	118	84	1	4	231	62	155	318	164
Total Analysis Volume [veh/h]	122	235	303	472	334	5	17	924	247	619	1270	656
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.11	0.11	0.14	0.10	0.10	0.01	0.17	0.17	0.18	0.25	0.25
Intersection LOS	B											
Intersection V/C	0.649											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	756	0	971	0	1190	495	157	1575	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	756	0	971	0	1190	495	157	1575	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	189	0	243	0	298	124	39	394	0
Total Analysis Volume [veh/h]	0	0	0	756	0	971	0	1190	495	157	1575	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.22	0.00	0.34	0.00	0.25	0.25	0.05	0.31	0.00
Intersection LOS	B											
Intersection V/C	0.697											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.656

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	982	0	401	0	0	0	513	1438	0	0	750	380
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	982	0	401	0	0	0	513	1438	0	0	750	380
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	246	0	100	0	0	0	128	360	0	0	188	95
Total Analysis Volume [veh/h]	982	0	401	0	0	0	513	1438	0	0	750	380
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.00	0.24	0.00	0.00	0.00	0.15	0.28	0.00	0.00	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.656											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.444

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	208	140	75	1	137	171	145	705	588	83	534	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	140	75	1	137	171	145	705	588	83	534	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	35	19	0	34	43	36	176	147	21	134	2
Total Analysis Volume [veh/h]	208	140	75	1	137	171	145	705	588	83	534	7
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.08	0.02	0.00	0.08	0.10	0.09	0.21	0.11	0.02	0.11	0.11
Intersection LOS	A											
Intersection V/C	0.444											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.435

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	77	383	218	319	813	93	81	111	37	254	123	299
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	383	218	319	813	93	81	111	37	254	123	299
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	96	55	80	203	23	20	28	9	64	31	75
Total Analysis Volume [veh/h]	77	383	218	319	813	93	81	111	37	254	123	299
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.12	0.12	0.09	0.18	0.18	0.05	0.09	0.09	0.07	0.07	0.08
Intersection LOS	A											
Intersection V/C	0.435											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.448

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	91	70	160	51	35	73	82	537	115	139	676	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	70	160	51	35	73	82	537	115	139	676	24
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	23	18	40	13	9	18	21	134	29	35	169	6
Total Analysis Volume [veh/h]	91	70	160	51	35	73	82	537	115	139	676	24
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.04	0.09	0.03	0.06	0.06	0.05	0.19	0.19	0.08	0.20	0.01
Intersection LOS	A											
Intersection V/C	0.448											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.605

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	117	250	168	240	523	409	214	658	154	156	625	206
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	117	250	168	240	523	409	214	658	154	156	625	206
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	63	42	60	131	102	54	165	39	39	156	52
Total Analysis Volume [veh/h]	117	250	168	240	523	409	214	658	154	156	625	206
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.07	0.10	0.07	0.27	0.27	0.06	0.19	0.09	0.05	0.18	0.12
Intersection LOS	B											
Intersection V/C	0.605											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	303	18	159	11	20	12	8	671	318	145	656	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	303	18	159	11	20	12	8	671	318	145	656	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	5	40	3	5	3	2	168	80	36	164	3
Total Analysis Volume [veh/h]	303	18	159	11	20	12	8	671	318	145	656	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.01	0.05	0.01	0.02	0.02	0.00	0.29	0.29	0.04	0.20	0.20
Intersection LOS	A											
Intersection V/C	0.491											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.370

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	90	4	191	156	718	5	11	575	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	90	4	191	156	718	5	11	575	70
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	2	23	1	48	39	180	1	3	144	18
Total Analysis Volume [veh/h]	10	2	8	90	4	191	156	718	5	11	575	70
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.05	0.00	0.02	0.09	0.21	0.21	0.01	0.17	0.04
Intersection LOS	A											
Intersection V/C	0.370											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.448

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	220	297	58	153	588	99	106	407	285	53	346	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	297	58	153	588	99	106	407	285	53	346	85
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	74	15	38	147	25	27	102	71	13	87	21
Total Analysis Volume [veh/h]	220	297	58	153	588	99	106	407	285	53	346	85
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.07	0.07	0.05	0.13	0.13	0.06	0.12	0.17	0.03	0.10	0.05
Intersection LOS	A											
Intersection V/C	0.448											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.279

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	20	260	106	66	247	19	32	10	55	76	4	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	260	106	66	247	19	32	10	55	76	4	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	65	27	17	62	5	8	3	14	19	1	14
Total Analysis Volume [veh/h]	20	260	106	66	247	19	32	10	55	76	4	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.11	0.11	0.04	0.08	0.08	0.02	0.04	0.04	0.04	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.279											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.430

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	21	309	394	39	278	20	23	13	25	362	6	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	309	394	39	278	20	23	13	25	362	6	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	77	99	10	70	5	6	3	6	91	2	18
Total Analysis Volume [veh/h]	21	309	394	39	278	20	23	13	25	362	6	71
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.21	0.21	0.02	0.09	0.09	0.01	0.02	0.01	0.11	0.17	0.17
Intersection LOS	A											
Intersection V/C	0.430											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.562

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	160	23	86	57	18	485	620	333	28	82	555	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	23	86	57	18	485	620	333	28	82	555	33
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	6	22	14	5	121	155	83	7	21	139	8
Total Analysis Volume [veh/h]	160	23	86	57	18	485	620	333	28	82	555	33
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.05	0.03	0.01	0.10	0.18	0.11	0.11	0.05	0.17	0.17
Intersection LOS	A											
Intersection V/C	0.562											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	327	710	189	200	738	257	300	1052	259	329	1149	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	710	189	200	738	257	300	1052	259	329	1149	167
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	178	47	50	185	64	75	263	65	82	287	42
Total Analysis Volume [veh/h]	327	710	189	200	738	257	300	1052	259	329	1149	167
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.14	0.11	0.06	0.14	0.15	0.09	0.26	0.26	0.10	0.23	0.10
Intersection LOS	B											
Intersection V/C	0.651											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.457

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	25	29	89	115	40	109	66	1209	34	73	1246	141
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	29	89	115	40	109	66	1209	34	73	1246	141
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	7	22	29	10	27	17	302	9	18	312	35
Total Analysis Volume [veh/h]	25	29	89	115	40	109	66	1209	34	73	1246	141
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.05	0.07	0.01	0.06	0.04	0.24	0.24	0.04	0.24	0.08
Intersection LOS	A											
Intersection V/C	0.457											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	380	449	248	247	787	165	168	1313	243	317	1243	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	380	449	248	247	787	165	168	1313	243	317	1243	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	112	62	62	197	41	42	328	61	79	311	35
Total Analysis Volume [veh/h]	380	449	248	247	787	165	168	1313	243	317	1243	138
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.09	0.15	0.07	0.23	0.10	0.05	0.26	0.14	0.09	0.24	0.08
Intersection LOS	C											
Intersection V/C	0.744											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.688

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	64	36	164	379	72	271	292	1354	30	104	1487	429
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	36	164	379	72	271	292	1354	30	104	1487	429
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	9	41	95	18	68	73	339	8	26	372	107
Total Analysis Volume [veh/h]	64	36	164	379	72	271	292	1354	30	104	1487	429
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.11	0.20	0.20	0.09	0.27	0.27	0.06	0.29	0.25
Intersection LOS	B											
Intersection V/C	0.688											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.981

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	252	475	535	534	358	169	126	1420	168	603	1679	878
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	252	475	535	534	358	169	126	1420	168	603	1679	878
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	119	134	134	90	42	32	355	42	151	420	220
Total Analysis Volume [veh/h]	252	475	535	534	358	169	126	1420	168	603	1679	878
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.14	0.31	0.21	0.16	0.16	0.04	0.23	0.23	0.18	0.33	0.31
Intersection LOS	E											
Intersection V/C	0.981											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	510	0	691	0	1805	963	0	2338	336
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	510	0	691	0	1805	963	0	2338	336
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	128	0	173	0	451	241	0	585	84
Total Analysis Volume [veh/h]	0	0	0	510	0	691	0	1805	963	0	2338	336
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.15	0.00	0.24	0.00	0.35	0.00	0.00	0.46	0.00
Intersection LOS	C											
Intersection V/C	0.744											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.724

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1201	149	526	0	0	225	247	1645	528	0	1687	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1201	149	526	0	0	225	247	1645	528	0	1687	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	300	37	132	0	0	56	62	411	132	0	422	8
Total Analysis Volume [veh/h]	1201	149	526	0	0	225	247	1645	528	0	1687	30
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.28	0.28	0.00	0.00	0.00	0.15	0.32	0.00	0.00	0.25	0.25
Intersection LOS	C											
Intersection V/C	0.724											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	227	172	104	309	222	171	201	1573	228	137	1380	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	172	104	309	222	171	201	1573	228	137	1380	195
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	43	26	77	56	43	50	393	57	34	345	49
Total Analysis Volume [veh/h]	227	172	104	309	222	171	201	1573	228	137	1380	195
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.08	0.08	0.09	0.13	0.10	0.12	0.35	0.35	0.08	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.681											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	147	16	220	24	10	11	23	1730	259	190	1645	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	16	220	24	10	11	23	1730	259	190	1645	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	4	55	6	3	3	6	433	65	48	411	11
Total Analysis Volume [veh/h]	147	16	220	24	10	11	23	1730	259	190	1645	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.13	0.01	0.01	0.01	0.01	0.34	0.15	0.11	0.33	0.33
Intersection LOS	B											
Intersection V/C	0.645											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	279	277	69	260	603	122	158	1046	276	112	1110	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	279	277	69	260	603	122	158	1046	276	112	1110	99
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	69	17	65	151	31	40	262	69	28	278	25
Total Analysis Volume [veh/h]	279	277	69	260	603	122	158	1046	276	112	1110	99
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.10	0.10	0.08	0.18	0.07	0.05	0.26	0.26	0.03	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.602											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	154	268	191	110	325	49	67	586	238	167	419	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	268	191	110	325	49	67	586	238	167	419	64
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	67	48	28	81	12	17	147	60	42	105	16
Total Analysis Volume [veh/h]	154	268	191	110	325	49	67	586	238	167	419	64
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.14	0.14	0.06	0.11	0.11	0.04	0.24	0.24	0.10	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.591											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	95	476	56	58	787	157	151	582	159	86	405	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	476	56	58	787	157	151	582	159	86	405	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	119	14	15	197	39	38	146	40	22	101	14
Total Analysis Volume [veh/h]	95	476	56	58	787	157	151	582	159	86	405	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.16	0.16	0.03	0.19	0.19	0.04	0.22	0.22	0.05	0.09	0.09
Intersection LOS	A											
Intersection V/C	0.532											

APPENDIX C-II

EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	51	147	95	145	318	73	81	1159	126	111	1101	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	147	95	145	318	73	81	1159	126	111	1101	55
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	37	24	36	80	18	20	290	32	28	275	14
Total Analysis Volume [veh/h]	51	147	95	145	318	73	81	1159	126	111	1101	55
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.07	0.07	0.09	0.12	0.12	0.05	0.25	0.25	0.07	0.23	0.23
Intersection LOS	A											
Intersection V/C	0.524											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	198	322	137	107	847	246	84	1118	279	188	1148	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	198	322	137	107	847	246	84	1118	279	188	1148	133
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	81	34	27	212	62	21	280	70	47	287	33
Total Analysis Volume [veh/h]	198	322	137	107	847	246	84	1118	279	188	1148	133
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.09	0.08	0.06	0.25	0.14	0.05	0.22	0.16	0.11	0.25	0.25
Intersection LOS	B											
Intersection V/C	0.687											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	144	186	133	824	558	8	13	1162	187	418	1447	509
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	186	133	824	558	8	13	1162	187	418	1447	509
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	47	33	206	140	2	3	291	47	105	362	127
Total Analysis Volume [veh/h]	144	186	133	824	558	8	13	1162	187	418	1447	509
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.24	0.17	0.17	0.00	0.20	0.20	0.12	0.28	0.06
Intersection LOS	B											
Intersection V/C	0.676											

Intersection Level Of Service Report
Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.717

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	977	0	494	0	1586	538	207	1933	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	977	0	494	0	1586	538	207	1933	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	244	0	124	0	397	135	52	483	0
Total Analysis Volume [veh/h]	0	0	0	977	0	494	0	1586	538	207	1933	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.29	0.00	0.29	0.00	0.31	0.31	0.06	0.38	0.00
Intersection LOS	C											
Intersection V/C	0.717											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.784

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	970	0	459	0	0	0	266	2287	0	0	1181	452
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	970	0	459	0	0	0	266	2287	0	0	1181	452
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	243	0	115	0	0	0	67	572	0	0	295	113
Total Analysis Volume [veh/h]	970	0	459	0	0	0	266	2287	0	0	1181	452
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.00	0.27	0.00	0.00	0.00	0.08	0.45	0.00	0.00	0.24	0.24
Intersection LOS	C											
Intersection V/C	0.784											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.593

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	272	105	32	18	200	302	90	602	988	253	677	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	105	32	18	200	302	90	602	988	253	677	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	26	8	5	50	76	23	151	247	63	169	3
Total Analysis Volume [veh/h]	272	105	32	18	200	302	90	602	988	253	677	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.06	0.00	0.01	0.12	0.18	0.05	0.18	0.21	0.07	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.593											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.381

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	26	404	181	328	950	57	46	66	11	247	68	222
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	404	181	328	950	57	46	66	11	247	68	222
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	101	45	82	238	14	12	17	3	62	17	56
Total Analysis Volume [veh/h]	26	404	181	328	950	57	46	66	11	247	68	222
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.11	0.11	0.10	0.20	0.20	0.03	0.05	0.05	0.07	0.04	0.03
Intersection LOS	A											
Intersection V/C	0.381											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.343

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	32	40	83	35	34	24	37	528	95	68	446	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	40	83	35	34	24	37	528	95	68	446	41
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	10	21	9	9	6	9	132	24	17	112	10
Total Analysis Volume [veh/h]	32	40	83	35	34	24	37	528	95	68	446	41
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.05	0.02	0.03	0.03	0.02	0.18	0.18	0.04	0.13	0.02
Intersection LOS	A											
Intersection V/C	0.343											

Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.510

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	72	124	94	598	754	138	71	480	45	78	530	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	124	94	598	754	138	71	480	45	78	530	260
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	31	24	150	189	35	18	120	11	20	133	65
Total Analysis Volume [veh/h]	72	124	94	598	754	138	71	480	45	78	530	260
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.04	0.06	0.18	0.26	0.26	0.02	0.14	0.03	0.02	0.16	0.15
Intersection LOS	A											
Intersection V/C	0.510											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.594

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	223	6	292	52	27	8	2	872	288	325	716	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	6	292	52	27	8	2	872	288	325	716	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	2	73	13	7	2	1	218	72	81	179	3
Total Analysis Volume [veh/h]	223	6	292	52	27	8	2	872	288	325	716	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.34	0.34	0.10	0.21	0.21
Intersection LOS	A											
Intersection V/C	0.594											

Intersection Level Of Service Report
Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	5	149	2	428	303	800	16	8	689	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	5	149	2	428	303	800	16	8	689	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	37	1	107	76	200	4	2	172	19
Total Analysis Volume [veh/h]	3	3	5	149	2	428	303	800	16	8	689	77
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.07	0.18	0.24	0.24	0.00	0.20	0.05
Intersection LOS	A											
Intersection V/C	0.521											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.533

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	127	205	87	419	939	173	38	525	328	59	404	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	205	87	419	939	173	38	525	328	59	404	205
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	51	22	105	235	43	10	131	82	15	101	51
Total Analysis Volume [veh/h]	127	205	87	419	939	173	38	525	328	59	404	205
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.12	0.22	0.22	0.02	0.15	0.19	0.03	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.533											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.137

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	24	138	8	6	124	13	30	2	54	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	138	8	6	124	13	30	2	54	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	35	2	2	31	3	8	1	14	0	0	0
Total Analysis Volume [veh/h]	24	138	8	6	124	13	30	2	54	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.04	0.04	0.00	0.04	0.04	0.02	0.03	0.03	0.00	0.00	0.00
Intersection LOS	A											
Intersection V/C	0.137											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.183

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	12	155	124	25	134	6	1	0	1	103	0	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	155	124	25	134	6	1	0	1	103	0	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	39	31	6	34	2	0	0	0	26	0	5
Total Analysis Volume [veh/h]	12	155	124	25	134	6	1	0	1	103	0	19
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.08	0.08	0.01	0.04	0.04	0.00	0.00	0.00	0.03	0.00	0.05
Intersection LOS	A											
Intersection V/C	0.183											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.211

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	30	5	14	16	2	70	150	227	14	26	304	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	5	14	16	2	70	150	227	14	26	304	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	4	4	1	18	38	57	4	7	76	7
Total Analysis Volume [veh/h]	30	5	14	16	2	70	150	227	14	26	304	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.07	0.07	0.02	0.10	0.10
Intersection LOS	A											
Intersection V/C	0.211											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	288	572	247	141	1182	266	174	1248	344	269	1101	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	572	247	141	1182	266	174	1248	344	269	1101	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	143	62	35	296	67	44	312	86	67	275	25
Total Analysis Volume [veh/h]	288	572	247	141	1182	266	174	1248	344	269	1101	98
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.11	0.15	0.04	0.23	0.16	0.05	0.31	0.31	0.08	0.22	0.06
Intersection LOS	C											
Intersection V/C	0.758											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	56	108	149	119	80	127	208	1270	74	49	1155	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	108	149	119	80	127	208	1270	74	49	1155	152
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	27	37	30	20	32	52	318	19	12	289	38
Total Analysis Volume [veh/h]	56	108	149	119	80	127	208	1270	74	49	1155	152
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.06	0.09	0.07	0.02	0.07	0.12	0.26	0.26	0.03	0.23	0.09
Intersection LOS	A											
Intersection V/C	0.556											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	406	430	151	120	899	155	124	1437	329	156	1365	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	430	151	120	899	155	124	1437	329	156	1365	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	102	108	38	30	225	39	31	359	82	39	341	15
Total Analysis Volume [veh/h]	406	430	151	120	899	155	124	1437	329	156	1365	60
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.08	0.09	0.04	0.26	0.09	0.04	0.28	0.19	0.05	0.27	0.04
Intersection LOS	C											
Intersection V/C	0.761											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.420

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	50	161	13	64	102	1444	9	23	1396	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	50	161	13	64	102	1444	9	23	1396	150
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	13	40	3	16	26	361	2	6	349	38
Total Analysis Volume [veh/h]	14	13	50	161	13	64	102	1444	9	23	1396	150
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.02	0.05	0.05	0.05	0.03	0.28	0.28	0.01	0.27	0.09
Intersection LOS	A											
Intersection V/C	0.420											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.678

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	95	150	378	109	341	25	31	1480	171	410	1456	186
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	150	378	109	341	25	31	1480	171	410	1456	186
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	38	95	27	85	6	8	370	43	103	364	47
Total Analysis Volume [veh/h]	95	150	378	109	341	25	31	1480	171	410	1456	186
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.22	0.04	0.11	0.11	0.01	0.24	0.24	0.12	0.29	0.07
Intersection LOS	B											
Intersection V/C	0.678											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↲		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	547	0	447	0	1383	631	0	1626	171
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	547	0	447	0	1383	631	0	1626	171
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	137	0	112	0	346	158	0	407	43
Total Analysis Volume [veh/h]	0	0	0	547	0	447	0	1383	631	0	1626	171
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.16	0.00	0.19	0.00	0.27	0.00	0.00	0.32	0.00
Intersection LOS	A											
Intersection V/C	0.564											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.611

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	817	167	746	0	0	91	154	1250	514	0	1366	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	817	167	746	0	0	91	154	1250	514	0	1366	6
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	204	42	187	0	0	23	39	313	129	0	342	2
Total Analysis Volume [veh/h]	817	167	746	0	0	91	154	1250	514	0	1366	6
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.25	0.25	0.00	0.00	0.00	0.09	0.25	0.00	0.00	0.20	0.20
Intersection LOS	B											
Intersection V/C	0.611											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.680

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	141	192	66	138	305	139	139	1734	95	85	1492	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	192	66	138	305	139	139	1734	95	85	1492	78
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	48	17	35	76	35	35	434	24	21	373	20
Total Analysis Volume [veh/h]	141	192	66	138	305	139	139	1734	95	85	1492	78
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.08	0.04	0.18	0.08	0.08	0.36	0.36	0.05	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.680											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	171	11	134	23	26	13	12	1688	339	162	1354	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	11	134	23	26	13	12	1688	339	162	1354	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	3	34	6	7	3	3	422	85	41	339	8
Total Analysis Volume [veh/h]	171	11	134	23	26	13	12	1688	339	162	1354	30
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.08	0.01	0.02	0.02	0.01	0.33	0.20	0.10	0.27	0.27
Intersection LOS	A											
Intersection V/C	0.578											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.566

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T L T			T L T			T L T			T L T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	160	226	79	302	596	103	125	1178	223	66	979	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	226	79	302	596	103	125	1178	223	66	979	82
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	57	20	76	149	26	31	295	56	17	245	21
Total Analysis Volume [veh/h]	160	226	79	302	596	103	125	1178	223	66	979	82
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.09	0.09	0.09	0.18	0.06	0.04	0.27	0.27	0.02	0.21	0.21
Intersection LOS	A											
Intersection V/C	0.566											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	96	216	136	119	378	21	64	678	153	296	721	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	216	136	119	378	21	64	678	153	296	721	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	54	34	30	95	5	16	170	38	74	180	23
Total Analysis Volume [veh/h]	96	216	136	119	378	21	64	678	153	296	721	92
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.10	0.10	0.07	0.12	0.12	0.04	0.24	0.24	0.17	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.642											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	150	504	135	60	751	187	203	631	148	143	772	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	504	135	60	751	187	203	631	148	143	772	69
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	126	34	15	188	47	51	158	37	36	193	17
Total Analysis Volume [veh/h]	150	504	135	60	751	187	203	631	148	143	772	69
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.19	0.19	0.04	0.18	0.18	0.06	0.23	0.23	0.08	0.16	0.16
Intersection LOS	A											
Intersection V/C	0.591											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.592

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	112	364	129	85	155	123	80	1057	71	76	1400	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	364	129	85	155	123	80	1057	71	76	1400	128
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	91	32	21	39	31	20	264	18	19	350	32
Total Analysis Volume [veh/h]	112	364	129	85	155	123	80	1057	71	76	1400	128
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.15	0.15	0.05	0.08	0.08	0.05	0.22	0.22	0.04	0.30	0.30
Intersection LOS	A											
Intersection V/C	0.592											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	400	653	171	66	305	91	150	1117	357	204	1173	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	400	653	171	66	305	91	150	1117	357	204	1173	74
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	163	43	17	76	23	38	279	89	51	293	19
Total Analysis Volume [veh/h]	400	653	171	66	305	91	150	1117	357	204	1173	74
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.19	0.10	0.04	0.09	0.05	0.09	0.22	0.21	0.12	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.620											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.652

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	288	552	248	519	360	14	36	1086	233	315	960	653
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	552	248	519	360	14	36	1086	233	315	960	653
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	138	62	130	90	4	9	272	58	79	240	163
Total Analysis Volume [veh/h]	288	552	248	519	360	14	36	1086	233	315	960	653
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.16	0.15	0.15	0.11	0.11	0.01	0.19	0.19	0.09	0.19	0.23
Intersection LOS	B											
Intersection V/C	0.652											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	422	0	672	0	1069	710	215	1538	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	422	0	672	0	1069	710	215	1538	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	106	0	168	0	267	178	54	385	0
Total Analysis Volume [veh/h]	0	0	0	422	0	672	0	1069	710	215	1538	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.12	0.00	0.21	0.00	0.26	0.26	0.06	0.30	0.00
Intersection LOS	A											
Intersection V/C	0.589											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.545

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	606	0	248	0	0	0	343	1342	0	0	980	487
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	606	0	248	0	0	0	343	1342	0	0	980	487
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	0	62	0	0	0	86	336	0	0	245	122
Total Analysis Volume [veh/h]	606	0	248	0	0	0	343	1342	0	0	980	487
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.00	0.15	0.00	0.00	0.00	0.10	0.26	0.00	0.00	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.545											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.500

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	左/右/左			左/右			左/右/左			左/右/左		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	465	274	208	4	92	106	169	772	438	81	306	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	465	274	208	4	92	106	169	772	438	81	306	25
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	116	69	52	1	23	27	42	193	110	20	77	6
Total Analysis Volume [veh/h]	465	274	208	4	92	106	169	772	438	81	306	25
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.16	0.10	0.00	0.05	0.06	0.10	0.23	0.00	0.02	0.06	0.06
Intersection LOS	A											
Intersection V/C	0.500											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.607

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	61	743	281	381	611	53	63	86	30	325	141	542
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	743	281	381	611	53	63	86	30	325	141	542
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	186	70	95	153	13	16	22	8	81	35	136
Total Analysis Volume [veh/h]	61	743	281	381	611	53	63	86	30	325	141	542
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.20	0.20	0.11	0.13	0.13	0.04	0.07	0.07	0.10	0.08	0.21
Intersection LOS	B											
Intersection V/C	0.607											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	132	54	155	48	47	101	73	579	106	175	985	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	54	155	48	47	101	73	579	106	175	985	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	14	39	12	12	25	18	145	27	44	246	9
Total Analysis Volume [veh/h]	132	54	155	48	47	101	73	579	106	175	985	36
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.03	0.09	0.03	0.09	0.09	0.04	0.20	0.20	0.10	0.29	0.02
Intersection LOS	A											
Intersection V/C	0.547											

Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	132	346	152	295	329	245	185	707	147	140	905	573
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	346	152	295	329	245	185	707	147	140	905	573
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	87	38	74	82	61	46	177	37	35	226	143
Total Analysis Volume [veh/h]	132	346	152	295	329	245	185	707	147	140	905	573
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.10	0.09	0.09	0.17	0.17	0.05	0.21	0.09	0.04	0.27	0.34
Intersection LOS	B											
Intersection V/C	0.649											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.593

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	438	30	326	10	18	6	12	818	273	270	1163	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	438	30	326	10	18	6	12	818	273	270	1163	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	8	82	3	5	2	3	205	68	68	291	4
Total Analysis Volume [veh/h]	438	30	326	10	18	6	12	818	273	270	1163	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.02	0.11	0.01	0.01	0.01	0.01	0.32	0.32	0.08	0.35	0.35
Intersection LOS	A											
Intersection V/C	0.593											

Intersection Level Of Service Report
Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	94	3	270	260	853	11	5	1200	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	94	3	270	260	853	11	5	1200	124
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	3	24	1	68	65	213	3	1	300	31
Total Analysis Volume [veh/h]	12	2	10	94	3	270	260	853	11	5	1200	124
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.06	0.00	0.01	0.15	0.25	0.25	0.00	0.35	0.07
Intersection LOS	B											
Intersection V/C	0.618											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.608

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	552	683	115	200	346	103	205	666	273	72	635	197
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	552	683	115	200	346	103	205	666	273	72	635	197
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	138	171	29	50	87	26	51	167	68	18	159	49
Total Analysis Volume [veh/h]	552	683	115	200	346	103	205	666	273	72	635	197
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.16	0.16	0.16	0.06	0.09	0.09	0.12	0.20	0.16	0.04	0.19	0.12
Intersection LOS	B											
Intersection V/C	0.608											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.237

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	44	304	39	26	252	26	57	4	48	69	4	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	304	39	26	252	26	57	4	48	69	4	35
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	76	10	7	63	7	14	1	12	17	1	9
Total Analysis Volume [veh/h]	44	304	39	26	252	26	57	4	48	69	4	35
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.10	0.10	0.02	0.08	0.08	0.03	0.03	0.03	0.04	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.237											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.404

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	299	398	53	329	18	16	3	11	306	3	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	299	398	53	329	18	16	3	11	306	3	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	75	100	13	82	5	4	1	3	77	1	14
Total Analysis Volume [veh/h]	15	299	398	53	329	18	16	3	11	306	3	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.21	0.21	0.03	0.10	0.10	0.01	0.01	0.01	0.09	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.404											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.468

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	131	18	61	54	12	414	586	470	21	90	394	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	18	61	54	12	414	586	470	21	90	394	50
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	5	15	14	3	104	147	118	5	23	99	13
Total Analysis Volume [veh/h]	131	18	61	54	12	414	586	470	21	90	394	50
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.04	0.04	0.03	0.01	0.07	0.17	0.14	0.14	0.05	0.13	0.13
Intersection LOS	A											
Intersection V/C	0.468											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	406	1039	201	195	811	291	255	1156	273	405	1439	213
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	1039	201	195	811	291	255	1156	273	405	1439	213
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	102	260	50	49	203	73	64	289	68	101	360	53
Total Analysis Volume [veh/h]	406	1039	201	195	811	291	255	1156	273	405	1439	213
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.20	0.12	0.06	0.16	0.17	0.08	0.28	0.28	0.12	0.28	0.13
Intersection LOS	C											
Intersection V/C	0.740											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	33	45	83	164	99	194	119	1386	35	101	1581	245
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	45	83	164	99	194	119	1386	35	101	1581	245
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	11	21	41	25	49	30	347	9	25	395	61
Total Analysis Volume [veh/h]	33	45	83	164	99	194	119	1386	35	101	1581	245
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.05	0.10	0.03	0.11	0.07	0.28	0.28	0.06	0.31	0.14
Intersection LOS	A											
Intersection V/C	0.575											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	480	764	258	195	599	167	178	1619	386	226	1631	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	480	764	258	195	599	167	178	1619	386	226	1631	131
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	191	65	49	150	42	45	405	97	57	408	33
Total Analysis Volume [veh/h]	480	764	258	195	599	167	178	1619	386	226	1631	131
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.15	0.15	0.06	0.18	0.10	0.05	0.32	0.23	0.07	0.32	0.08
Intersection LOS	C											
Intersection V/C	0.751											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.665

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	41	31	56	315	23	238	313	1517	26	53	1753	330
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	31	56	315	23	238	313	1517	26	53	1753	330
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	8	14	79	6	60	78	379	7	13	438	83
Total Analysis Volume [veh/h]	41	31	56	315	23	238	313	1517	26	53	1753	330
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.03	0.09	0.15	0.15	0.09	0.30	0.30	0.03	0.34	0.19
Intersection LOS	B											
Intersection V/C	0.665											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	339	545	328	444	279	89	102	1688	90	418	1720	542
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	339	545	328	444	279	89	102	1688	90	418	1720	542
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	136	82	111	70	22	26	422	23	105	430	136
Total Analysis Volume [veh/h]	339	545	328	444	279	89	102	1688	90	418	1720	542
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.16	0.19	0.17	0.11	0.11	0.03	0.26	0.26	0.12	0.34	0.15
Intersection LOS	C											
Intersection V/C	0.798											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↲		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	620	0	513	0	1596	881	0	2168	368
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	620	0	513	0	1596	881	0	2168	368
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	155	0	128	0	399	220	0	542	92
Total Analysis Volume [veh/h]	0	0	0	620	0	513	0	1596	881	0	2168	368
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.18	0.00	0.22	0.00	0.31	0.00	0.00	0.43	0.00
Intersection LOS	B											
Intersection V/C	0.697											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	888	59	389	0	0	245	183	1683	352	0	2215	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	888	59	389	0	0	245	183	1683	352	0	2215	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	222	15	97	0	0	61	46	421	88	0	554	11
Total Analysis Volume [veh/h]	888	59	389	0	0	245	183	1683	352	0	2215	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.20	0.20	0.00	0.00	0.00	0.11	0.33	0.00	0.00	0.33	0.33
Intersection LOS	B											
Intersection V/C	0.686											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	207	240	78	270	323	213	237	1685	133	162	1609	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	207	240	78	270	323	213	237	1685	133	162	1609	158
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	60	20	68	81	53	59	421	33	41	402	40
Total Analysis Volume [veh/h]	207	240	78	270	323	213	237	1685	133	162	1609	158
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.09	0.09	0.08	0.19	0.13	0.14	0.36	0.36	0.10	0.26	0.26
Intersection LOS	C											
Intersection V/C	0.753											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.670

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	243	44	246	23	21	13	17	1685	271	213	1746	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	44	246	23	21	13	17	1685	271	213	1746	52
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	11	62	6	5	3	4	421	68	53	437	13
Total Analysis Volume [veh/h]	243	44	246	23	21	13	17	1685	271	213	1746	52
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.08	0.14	0.01	0.02	0.02	0.01	0.33	0.16	0.13	0.35	0.35
Intersection LOS	B											
Intersection V/C	0.670											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	331	569	95	246	436	105	198	1267	194	171	1410	297
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	331	569	95	246	436	105	198	1267	194	171	1410	297
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	83	142	24	62	109	26	50	317	49	43	353	74
Total Analysis Volume [veh/h]	331	569	95	246	436	105	198	1267	194	171	1410	297
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.20	0.20	0.07	0.13	0.06	0.06	0.29	0.29	0.05	0.33	0.33
Intersection LOS	C											
Intersection V/C	0.711											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	189	325	295	163	386	49	72	859	177	259	825	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	189	325	295	163	386	49	72	859	177	259	825	96
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	81	74	41	97	12	18	215	44	65	206	24
Total Analysis Volume [veh/h]	189	325	295	163	386	49	72	859	177	259	825	96
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.18	0.18	0.10	0.13	0.13	0.04	0.30	0.30	0.15	0.27	0.27
Intersection LOS	C											
Intersection V/C	0.785											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	194	678	109	70	670	309	171	869	211	95	706	64
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	678	109	70	670	309	171	869	211	95	706	64
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	170	27	18	168	77	43	217	53	24	177	16
Total Analysis Volume [veh/h]	194	678	109	70	670	309	171	869	211	95	706	64
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.23	0.23	0.04	0.19	0.19	0.05	0.32	0.32	0.06	0.15	0.15
Intersection LOS	B											
Intersection V/C	0.696											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	69	114	50	85	117	70	63	989	50	42	1058	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	114	50	85	117	70	63	989	50	42	1058	61
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	29	13	21	29	18	16	247	13	11	265	15
Total Analysis Volume [veh/h]	69	114	50	85	117	70	63	989	50	42	1058	61
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.05	0.05	0.06	0.06	0.04	0.20	0.20	0.02	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.405											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	252	348	148	134	677	136	61	914	249	204	861	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	252	348	148	134	677	136	61	914	249	204	861	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	87	37	34	169	34	15	229	62	51	215	11
Total Analysis Volume [veh/h]	252	348	148	134	677	136	61	914	249	204	861	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.10	0.09	0.08	0.20	0.08	0.04	0.18	0.15	0.12	0.18	0.18
Intersection LOS	B											
Intersection V/C	0.622											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	122	241	316	472	338	5	17	924	247	627	1270	656
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	241	316	472	338	5	17	924	247	627	1270	656
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	60	79	118	85	1	4	231	62	157	318	164
Total Analysis Volume [veh/h]	122	241	316	472	338	5	17	924	247	627	1270	656
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.11	0.11	0.14	0.10	0.10	0.01	0.17	0.17	0.18	0.25	0.25
Intersection LOS	B											
Intersection V/C	0.655											

Intersection Level Of Service Report
Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.699

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	756	0	976	0	1203	495	157	1578	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	756	0	976	0	1203	495	157	1578	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	189	0	244	0	301	124	39	395	0
Total Analysis Volume [veh/h]	0	0	0	756	0	976	0	1203	495	157	1578	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.22	0.00	0.34	0.00	0.25	0.25	0.05	0.31	0.00
Intersection LOS	B											
Intersection V/C	0.699											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	982	0	401	0	0	0	521	1443	0	0	753	380
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	982	0	401	0	0	0	521	1443	0	0	753	380
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	246	0	100	0	0	0	130	361	0	0	188	95
Total Analysis Volume [veh/h]	982	0	401	0	0	0	521	1443	0	0	753	380
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.00	0.24	0.00	0.00	0.00	0.15	0.28	0.00	0.00	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.659											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.445

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	208	140	81	1	137	171	145	705	588	87	534	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	140	81	1	137	171	145	705	588	87	534	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	35	20	0	34	43	36	176	147	22	134	2
Total Analysis Volume [veh/h]	208	140	81	1	137	171	145	705	588	87	534	7
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.08	0.02	0.00	0.08	0.10	0.09	0.21	0.11	0.03	0.11	0.11
Intersection LOS	A											
Intersection V/C	0.445											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.435

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	77	383	218	327	813	93	81	112	37	254	124	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	383	218	327	813	93	81	112	37	254	124	312
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	96	55	82	203	23	20	28	9	64	31	78
Total Analysis Volume [veh/h]	77	383	218	327	813	93	81	112	37	254	124	312
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.12	0.12	0.10	0.18	0.18	0.05	0.09	0.09	0.07	0.07	0.09
Intersection LOS	A											
Intersection V/C	0.435											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.455

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	108	71	161	51	36	73	82	537	126	140	676	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	71	161	51	36	73	82	537	126	140	676	24
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	18	40	13	9	18	21	134	32	35	169	6
Total Analysis Volume [veh/h]	108	71	161	51	36	73	82	537	126	140	676	24
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.04	0.09	0.03	0.06	0.06	0.05	0.20	0.20	0.08	0.20	0.01
Intersection LOS	A											
Intersection V/C	0.455											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.609

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	117	268	174	240	535	409	214	659	154	160	626	206
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	117	268	174	240	535	409	214	659	154	160	626	206
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	67	44	60	134	102	54	165	39	40	157	52
Total Analysis Volume [veh/h]	117	268	174	240	535	409	214	659	154	160	626	206
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.08	0.10	0.07	0.28	0.28	0.06	0.19	0.09	0.05	0.18	0.12
Intersection LOS	B											
Intersection V/C	0.609											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.494

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	303	18	159	11	20	12	8	678	318	145	661	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	303	18	159	11	20	12	8	678	318	145	661	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	5	40	3	5	3	2	170	80	36	165	3
Total Analysis Volume [veh/h]	303	18	159	11	20	12	8	678	318	145	661	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.01	0.05	0.01	0.02	0.02	0.00	0.29	0.29	0.04	0.20	0.20
Intersection LOS	A											
Intersection V/C	0.494											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.371

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	90	4	191	156	725	5	11	580	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	90	4	191	156	725	5	11	580	70
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	2	23	1	48	39	181	1	3	145	18
Total Analysis Volume [veh/h]	10	2	8	90	4	191	156	725	5	11	580	70
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.05	0.00	0.02	0.09	0.21	0.21	0.01	0.17	0.04
Intersection LOS	A											
Intersection V/C	0.371											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.449

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	220	297	58	153	588	103	112	408	285	53	347	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	297	58	153	588	103	112	408	285	53	347	85
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	74	15	38	147	26	28	102	71	13	87	21
Total Analysis Volume [veh/h]	220	297	58	153	588	103	112	408	285	53	347	85
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.07	0.07	0.05	0.14	0.14	0.07	0.12	0.17	0.03	0.10	0.05
Intersection LOS	A											
Intersection V/C	0.449											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.285

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	20	279	106	66	259	19	32	10	55	76	4	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	279	106	66	259	19	32	10	55	76	4	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	70	27	17	65	5	8	3	14	19	1	14
Total Analysis Volume [veh/h]	20	279	106	66	259	19	32	10	55	76	4	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.11	0.11	0.04	0.08	0.08	0.02	0.04	0.04	0.04	0.03	0.03
Intersection LOS	A											
Intersection V/C	0.285											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.536

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	21	309	461	51	278	20	23	13	25	459	6	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	309	461	51	278	20	23	13	25	459	6	90
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	77	115	13	70	5	6	3	6	115	2	23
Total Analysis Volume [veh/h]	21	309	461	51	278	20	23	13	25	459	6	90
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.23	0.23	0.03	0.09	0.09	0.01	0.02	0.01	0.14	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.536											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	160	23	86	82	18	613	698	333	28	82	555	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	23	86	82	18	613	698	333	28	82	555	48
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	6	22	21	5	153	175	83	7	21	139	12
Total Analysis Volume [veh/h]	160	23	86	82	18	613	698	333	28	82	555	48
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.05	0.05	0.01	0.16	0.21	0.11	0.11	0.05	0.18	0.18
Intersection LOS	B											
Intersection V/C	0.642											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	327	710	189	205	738	257	300	1067	259	329	1173	175
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	710	189	205	738	257	300	1067	259	329	1173	175
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	178	47	51	185	64	75	267	65	82	293	44
Total Analysis Volume [veh/h]	327	710	189	205	738	257	300	1067	259	329	1173	175
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.14	0.11	0.06	0.14	0.15	0.09	0.26	0.26	0.10	0.23	0.10
Intersection LOS	B											
Intersection V/C	0.654											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.469

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	25	29	93	120	40	109	66	1229	34	79	1278	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	29	93	120	40	109	66	1229	34	79	1278	150
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	7	23	30	10	27	17	307	9	20	320	38
Total Analysis Volume [veh/h]	25	29	93	120	40	109	66	1229	34	79	1278	150
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.05	0.07	0.01	0.06	0.04	0.25	0.25	0.05	0.25	0.09
Intersection LOS	A											
Intersection V/C	0.469											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	380	449	265	247	787	165	168	1342	243	343	1289	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	380	449	265	247	787	165	168	1342	243	343	1289	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	112	66	62	197	41	42	336	61	86	322	35
Total Analysis Volume [veh/h]	380	449	265	247	787	165	168	1342	243	343	1289	138
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.09	0.16	0.07	0.23	0.10	0.05	0.26	0.14	0.10	0.25	0.08
Intersection LOS	C											
Intersection V/C	0.757											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.747

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	64	36	164	400	72	347	340	1354	30	104	1487	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	36	164	400	72	347	340	1354	30	104	1487	447
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	9	41	100	18	87	85	339	8	26	372	112
Total Analysis Volume [veh/h]	64	36	164	400	72	347	340	1354	30	104	1487	447
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.12	0.25	0.25	0.10	0.27	0.27	0.06	0.29	0.26
Intersection LOS	C											
Intersection V/C	0.747											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.021

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	256	496	535	630	391	169	126	1437	172	603	1694	935
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	256	496	535	630	391	169	126	1437	172	603	1694	935
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	124	134	158	98	42	32	359	43	151	424	234
Total Analysis Volume [veh/h]	256	496	535	630	391	169	126	1437	172	603	1694	935
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.15	0.31	0.24	0.16	0.16	0.04	0.24	0.24	0.18	0.33	0.31
Intersection LOS	F											
Intersection V/C	1.021											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	510	0	701	0	1875	1005	0	2400	336
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	510	0	701	0	1875	1005	0	2400	336
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	128	0	175	0	469	251	0	600	84
Total Analysis Volume [veh/h]	0	0	0	510	0	701	0	1875	1005	0	2400	336
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.15	0.00	0.24	0.00	0.37	0.00	0.00	0.47	0.00
Intersection LOS	C											
Intersection V/C	0.758											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1228	149	526	0	0	226	248	1699	544	0	1721	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1228	149	526	0	0	226	248	1699	544	0	1721	30
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	307	37	132	0	0	57	62	425	136	0	430	8
Total Analysis Volume [veh/h]	1228	149	526	0	0	226	248	1699	544	0	1721	30
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.24	0.28	0.28	0.00	0.00	0.00	0.15	0.33	0.00	0.00	0.26	0.26
Intersection LOS	C											
Intersection V/C	0.733											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	231	172	104	309	222	174	206	1616	234	137	1408	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	231	172	104	309	222	174	206	1616	234	137	1408	195
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	43	26	77	56	44	52	404	59	34	352	49
Total Analysis Volume [veh/h]	231	172	104	309	222	174	206	1616	234	137	1408	195
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.08	0.08	0.09	0.13	0.10	0.12	0.36	0.36	0.08	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.692											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	159	16	220	24	10	11	23	1756	277	190	1661	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	16	220	24	10	11	23	1756	277	190	1661	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	4	55	6	3	3	6	439	69	48	415	11
Total Analysis Volume [veh/h]	159	16	220	24	10	11	23	1756	277	190	1661	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.13	0.01	0.01	0.01	0.01	0.34	0.16	0.11	0.33	0.33
Intersection LOS	B											
Intersection V/C	0.650											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	279	277	69	260	603	122	158	1070	276	112	1125	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	279	277	69	260	603	122	158	1070	276	112	1125	99
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	69	17	65	151	31	40	268	69	28	281	25
Total Analysis Volume [veh/h]	279	277	69	260	603	122	158	1070	276	112	1125	99
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.10	0.10	0.08	0.18	0.07	0.05	0.26	0.26	0.03	0.24	0.24
Intersection LOS	B											
Intersection V/C	0.606											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.595

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	154	273	191	116	333	49	67	586	238	167	419	68
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	273	191	116	333	49	67	586	238	167	419	68
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	68	48	29	83	12	17	147	60	42	105	17
Total Analysis Volume [veh/h]	154	273	191	116	333	49	67	586	238	167	419	68
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.14	0.14	0.07	0.11	0.11	0.04	0.24	0.24	0.10	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.595											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.535

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	99	476	56	58	787	157	151	582	165	86	405	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	476	56	58	787	157	151	582	165	86	405	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	119	14	15	197	39	38	146	41	22	101	14
Total Analysis Volume [veh/h]	99	476	56	58	787	157	151	582	165	86	405	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.16	0.16	0.03	0.19	0.19	0.04	0.22	0.22	0.05	0.09	0.09
Intersection LOS	A											
Intersection V/C	0.535											

APPENDIX C-III

EXISTING PLUS PROJECT WITH MITIGATION
TRAFFIC CONDITIONS

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	95	150	378	109	341	25	31	1480	171	410	1456	186
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	150	378	109	341	25	31	1480	171	410	1456	186
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	38	95	27	85	6	8	370	43	103	364	47
Total Analysis Volume [veh/h]	95	150	378	109	341	25	31	1480	171	410	1456	186
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.22	0.03	0.10	0.01	0.01	0.24	0.24	0.12	0.29	0.08
Intersection LOS	B											
Intersection V/C	0.668											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	339	545	328	444	279	89	102	1688	90	418	1720	542
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	339	545	328	444	279	89	102	1688	90	418	1720	542
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	85	136	82	111	70	22	26	422	23	105	430	136
Total Analysis Volume [veh/h]	339	545	328	444	279	89	102	1688	90	418	1720	542
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.16	0.19	0.13	0.08	0.05	0.03	0.26	0.26	0.12	0.34	0.19
Intersection LOS	C											
Intersection V/C	0.758											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.964

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	256	496	535	630	391	169	126	1437	172	603	1694	935
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	256	496	535	630	391	169	126	1437	172	603	1694	935
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	124	134	158	98	42	32	359	43	151	424	234
Total Analysis Volume [veh/h]	256	496	535	630	391	169	126	1437	172	603	1694	935
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.15	0.31	0.19	0.12	0.10	0.04	0.24	0.24	0.18	0.33	0.36
Intersection LOS	E											
Intersection V/C	0.964											

APPENDIX C-IV

YEAR 2022 CUMULATIVE TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	52	148	98	155	323	75	83	1278	127	114	1321	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	148	98	155	323	75	83	1278	127	114	1321	63
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	37	25	39	81	19	21	320	32	29	330	16
Total Analysis Volume [veh/h]	52	148	98	155	323	75	83	1278	127	114	1321	63
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.07	0.07	0.09	0.12	0.12	0.05	0.28	0.28	0.07	0.27	0.27
Intersection LOS	A											
Intersection V/C	0.556											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	224	339	150	122	866	253	87	1257	288	209	1361	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	224	339	150	122	866	253	87	1257	288	209	1361	137
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	85	38	31	217	63	22	314	72	52	340	34
Total Analysis Volume [veh/h]	224	339	150	122	866	253	87	1257	288	209	1361	137
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.10	0.09	0.07	0.25	0.15	0.05	0.25	0.17	0.12	0.29	0.29
Intersection LOS	C											
Intersection V/C	0.740											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	179	188	209	849	571	8	13	1279	206	455	1653	524
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	188	209	849	571	8	13	1279	206	455	1653	524
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	47	52	212	143	2	3	320	52	114	413	131
Total Analysis Volume [veh/h]	179	188	209	849	571	8	13	1279	206	455	1653	524
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.08	0.08	0.25	0.17	0.17	0.00	0.22	0.22	0.13	0.32	0.06
Intersection LOS	C											
Intersection V/C	0.730											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1006	0	657	0	1764	577	213	2031	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1006	0	657	0	1764	577	213	2031	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	252	0	164	0	441	144	53	508	0
Total Analysis Volume [veh/h]	0	0	0	1006	0	657	0	1764	577	213	2031	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.30	0.00	0.33	0.00	0.35	0.34	0.06	0.40	0.00
Intersection LOS	C											
Intersection V/C	0.785											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.811

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	999	0	473	0	0	0	379	2382	0	0	1256	466
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	999	0	473	0	0	0	379	2382	0	0	1256	466
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	250	0	118	0	0	0	95	596	0	0	314	117
Total Analysis Volume [veh/h]	999	0	473	0	0	0	379	2382	0	0	1256	466
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.00	0.28	0.00	0.00	0.00	0.11	0.47	0.00	0.00	0.25	0.25
Intersection LOS	D											
Intersection V/C	0.811											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.609

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	左/右/左			左/右			左/右/左			左/右/左		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	280	108	34	19	206	311	93	648	1018	259	740	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	280	108	34	19	206	311	93	648	1018	259	740	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	27	9	5	52	78	23	162	255	65	185	3
Total Analysis Volume [veh/h]	280	108	34	19	206	311	93	648	1018	259	740	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.06	0.00	0.01	0.12	0.18	0.05	0.19	0.22	0.08	0.15	0.15
Intersection LOS	B											
Intersection V/C	0.609											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.421

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	35	457	214	342	1008	59	47	67	11	317	68	225
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	457	214	342	1008	59	47	67	11	317	68	225
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	114	54	86	252	15	12	17	3	79	17	56
Total Analysis Volume [veh/h]	35	457	214	342	1008	59	47	67	11	317	68	225
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.13	0.13	0.10	0.21	0.21	0.03	0.05	0.05	0.09	0.04	0.03
Intersection LOS	A											
Intersection V/C	0.421											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.356

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	23	39	83	36	34	25	38	575	88	69	525	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	39	83	36	34	25	38	575	88	69	525	42
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	10	21	9	9	6	10	144	22	17	131	11
Total Analysis Volume [veh/h]	23	39	83	36	34	25	38	575	88	69	525	42
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.05	0.02	0.03	0.03	0.02	0.20	0.20	0.04	0.15	0.02
Intersection LOS	A											
Intersection V/C	0.356											

Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	74	169	94	632	888	204	99	497	46	76	549	275
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	169	94	632	888	204	99	497	46	76	549	275
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	42	24	158	222	51	25	124	12	19	137	69
Total Analysis Volume [veh/h]	74	169	94	632	888	204	99	497	46	76	549	275
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.05	0.06	0.19	0.32	0.32	0.03	0.15	0.03	0.02	0.16	0.16
Intersection LOS	A											
Intersection V/C	0.584											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	230	6	309	54	28	8	2	913	297	342	743	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	6	309	54	28	8	2	913	297	342	743	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	2	77	14	7	2	1	228	74	86	186	3
Total Analysis Volume [veh/h]	230	6	309	54	28	8	2	913	297	342	743	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.36	0.36	0.10	0.22	0.22
Intersection LOS	B											
Intersection V/C	0.619											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	5	153	2	441	312	847	16	8	723	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	5	153	2	441	312	847	16	8	723	79
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	38	1	110	78	212	4	2	181	20
Total Analysis Volume [veh/h]	3	3	5	153	2	441	312	847	16	8	723	79
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.08	0.18	0.25	0.25	0.00	0.21	0.05
Intersection LOS	A											
Intersection V/C	0.539											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	131	211	90	432	967	177	40	564	338	61	429	211
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	211	90	432	967	177	40	564	338	61	429	211
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	53	23	108	242	44	10	141	85	15	107	53
Total Analysis Volume [veh/h]	131	211	90	432	967	177	40	564	338	61	429	211
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.13	0.22	0.22	0.02	0.17	0.20	0.04	0.13	0.12
Intersection LOS	A											
Intersection V/C	0.548											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.137

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	25	128	8	6	116	13	31	2	56	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	128	8	6	116	13	31	2	56	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	32	2	2	29	3	8	1	14	0	0	0
Total Analysis Volume [veh/h]	25	128	8	6	116	13	31	2	56	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.04	0.04	0.00	0.04	0.04	0.02	0.03	0.03	0.00	0.00	0.00
Intersection LOS	A											
Intersection V/C	0.137											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.134

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	12	160	65	14	138	6	1	0	1	26	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	160	65	14	138	6	1	0	1	26	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	40	16	4	35	2	0	0	0	7	0	1
Total Analysis Volume [veh/h]	12	160	65	14	138	6	1	0	1	26	0	5
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.07	0.07	0.01	0.04	0.04	0.00	0.00	0.00	0.01	0.00	0.01
Intersection LOS	A											
Intersection V/C	0.134											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.216

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	31	5	14	3	2	27	75	286	14	27	437	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	5	14	3	2	27	75	286	14	27	437	11
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	4	1	1	7	19	72	4	7	109	3
Total Analysis Volume [veh/h]	31	5	14	3	2	27	75	286	14	27	437	11
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.09	0.09	0.02	0.13	0.13
Intersection LOS	A											
Intersection V/C	0.216											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	297	687	254	154	1238	299	293	1300	354	277	1171	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	297	687	254	154	1238	299	293	1300	354	277	1171	162
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	172	64	39	310	75	73	325	89	69	293	41
Total Analysis Volume [veh/h]	297	687	254	154	1238	299	293	1300	354	277	1171	162
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.13	0.15	0.05	0.24	0.18	0.09	0.32	0.32	0.08	0.23	0.10
Intersection LOS	C											
Intersection V/C	0.786											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	58	111	155	117	82	131	214	1332	76	53	1418	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	111	155	117	82	131	214	1332	76	53	1418	153
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	28	39	29	21	33	54	333	19	13	355	38
Total Analysis Volume [veh/h]	58	111	155	117	82	131	214	1332	76	53	1418	153
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.07	0.09	0.07	0.02	0.08	0.13	0.28	0.28	0.03	0.28	0.09
Intersection LOS	B											
Intersection V/C	0.614											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	419	473	139	141	970	200	157	1481	342	153	1595	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	419	473	139	141	970	200	157	1481	342	153	1595	73
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	118	35	35	243	50	39	370	86	38	399	18
Total Analysis Volume [veh/h]	419	473	139	141	970	200	157	1481	342	153	1595	73
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.09	0.08	0.04	0.29	0.12	0.05	0.29	0.20	0.05	0.31	0.04
Intersection LOS	D											
Intersection V/C	0.817											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.450

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	52	123	13	29	57	1538	9	24	1671	140
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	52	123	13	29	57	1538	9	24	1671	140
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	13	31	3	7	14	385	2	6	418	35
Total Analysis Volume [veh/h]	14	13	52	123	13	29	57	1538	9	24	1671	140
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.02	0.04	0.02	0.02	0.02	0.30	0.30	0.01	0.33	0.08
Intersection LOS	A											
Intersection V/C	0.450											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	104	147	389	175	366	26	32	1533	177	422	1712	171
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	147	389	175	366	26	32	1533	177	422	1712	171
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	37	97	44	92	7	8	383	44	106	428	43
Total Analysis Volume [veh/h]	104	147	389	175	366	26	32	1533	177	422	1712	171
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.04	0.23	0.07	0.12	0.12	0.01	0.25	0.25	0.12	0.34	0.03
Intersection LOS	C											
Intersection V/C	0.722											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	577	0	484	0	1400	746	0	1844	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	577	0	484	0	1400	746	0	1844	195
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	144	0	121	0	350	187	0	461	49
Total Analysis Volume [veh/h]	0	0	0	577	0	484	0	1400	746	0	1844	195
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.00	0.21	0.00	0.27	0.00	0.00	0.36	0.00
Intersection LOS	B											
Intersection V/C	0.620											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.653

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1003	189	768	0	0	135	178	1267	521	0	1407	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1003	189	768	0	0	135	178	1267	521	0	1407	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	251	47	192	0	0	34	45	317	130	0	352	5
Total Analysis Volume [veh/h]	1003	189	768	0	0	135	178	1267	521	0	1407	20
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.29	0.29	0.00	0.00	0.00	0.10	0.25	0.00	0.00	0.21	0.21
Intersection LOS	B											
Intersection V/C	0.653											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	141	208	68	157	325	140	142	1770	95	88	1557	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	208	68	157	325	140	142	1770	95	88	1557	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	52	17	39	81	35	36	443	24	22	389	20
Total Analysis Volume [veh/h]	141	208	68	157	325	140	142	1770	95	88	1557	80
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.08	0.05	0.19	0.08	0.08	0.37	0.37	0.05	0.24	0.24
Intersection LOS	C											
Intersection V/C	0.700											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.595

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	168	11	138	24	27	13	12	1743	344	167	1423	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	168	11	138	24	27	13	12	1743	344	167	1423	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	3	35	6	7	3	3	436	86	42	356	8
Total Analysis Volume [veh/h]	168	11	138	24	27	13	12	1743	344	167	1423	31
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.08	0.01	0.02	0.02	0.01	0.34	0.20	0.10	0.29	0.29
Intersection LOS	A											
Intersection V/C	0.595											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.585

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T L T			T L T			T L T			T L T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	168	233	81	311	614	106	129	1218	234	68	1035	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	168	233	81	311	614	106	129	1218	234	68	1035	84
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	58	20	78	154	27	32	305	59	17	259	21
Total Analysis Volume [veh/h]	168	233	81	311	614	106	129	1218	234	68	1035	84
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.09	0.09	0.09	0.18	0.06	0.04	0.28	0.28	0.02	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.585											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	99	220	140	119	389	22	66	698	158	305	743	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	220	140	119	389	22	66	698	158	305	743	91
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	55	35	30	97	6	17	175	40	76	186	23
Total Analysis Volume [veh/h]	99	220	140	119	389	22	66	698	158	305	743	91
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.11	0.11	0.07	0.12	0.12	0.04	0.25	0.25	0.18	0.25	0.25
Intersection LOS	B											
Intersection V/C	0.660											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	150	522	139	62	778	193	209	650	149	147	795	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	150	522	139	62	778	193	209	650	149	147	795	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	131	35	16	195	48	52	163	37	37	199	18
Total Analysis Volume [veh/h]	150	522	139	62	778	193	209	650	149	147	795	71
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.19	0.19	0.04	0.19	0.19	0.06	0.24	0.24	0.09	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.606											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	113	372	133	94	153	127	82	1377	68	78	1517	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	372	133	94	153	127	82	1377	68	78	1517	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	93	33	24	38	32	21	344	17	20	379	35
Total Analysis Volume [veh/h]	113	372	133	94	153	127	82	1377	68	78	1517	138
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.15	0.15	0.06	0.08	0.08	0.05	0.28	0.28	0.05	0.32	0.32
Intersection LOS	B											
Intersection V/C	0.627											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.714

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	434	679	186	80	304	94	155	1455	368	225	1281	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	434	679	186	80	304	94	155	1455	368	225	1281	76
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	109	170	47	20	76	24	39	364	92	56	320	19
Total Analysis Volume [veh/h]	434	679	186	80	304	94	155	1455	368	225	1281	76
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.20	0.11	0.05	0.09	0.06	0.09	0.29	0.22	0.13	0.27	0.27
Intersection LOS	C											
Intersection V/C	0.714											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	318	565	301	535	365	14	37	1381	273	391	1056	673
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	565	301	535	365	14	37	1381	273	391	1056	673
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	141	75	134	91	4	9	345	68	98	264	168
Total Analysis Volume [veh/h]	318	565	301	535	365	14	37	1381	273	391	1056	673
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.17	0.17	0.16	0.11	0.11	0.01	0.24	0.24	0.12	0.21	0.24
Intersection LOS	C											
Intersection V/C	0.735											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	435	0	801	0	1332	808	221	1610	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	435	0	801	0	1332	808	221	1610	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	109	0	200	0	333	202	55	403	0
Total Analysis Volume [veh/h]	0	0	0	435	0	801	0	1332	808	221	1610	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.13	0.00	0.24	0.00	0.31	0.31	0.07	0.32	0.00
Intersection LOS	B											
Intersection V/C	0.672											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.618

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	624	0	255	0	0	0	540	1428	0	0	1035	502
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	624	0	255	0	0	0	540	1428	0	0	1035	502
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	156	0	64	0	0	0	135	357	0	0	259	126
Total Analysis Volume [veh/h]	624	0	255	0	0	0	540	1428	0	0	1035	502
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.00	0.15	0.00	0.00	0.00	0.16	0.28	0.00	0.00	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.618											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	←←←			←←			←←←			←←←		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	479	282	214	4	95	109	174	843	451	80	346	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	479	282	214	4	95	109	174	843	451	80	346	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	71	54	1	24	27	44	211	113	20	87	7
Total Analysis Volume [veh/h]	479	282	214	4	95	109	174	843	451	80	346	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.17	0.10	0.00	0.06	0.06	0.10	0.25	0.00	0.02	0.07	0.07
Intersection LOS	A											
Intersection V/C	0.526											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.642

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	73	806	355	390	660	55	65	88	31	380	144	554
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	806	355	390	660	55	65	88	31	380	144	554
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	202	89	98	165	14	16	22	8	95	36	139
Total Analysis Volume [veh/h]	73	806	355	390	660	55	65	88	31	380	144	554
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.23	0.23	0.11	0.14	0.14	0.04	0.07	0.07	0.11	0.08	0.21
Intersection LOS	B											
Intersection V/C	0.642											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.570

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	127	55	159	49	47	104	75	665	92	179	1063	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	55	159	49	47	104	75	665	92	179	1063	37
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	14	40	12	12	26	19	166	23	45	266	9
Total Analysis Volume [veh/h]	127	55	159	49	47	104	75	665	92	179	1063	37
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.03	0.09	0.03	0.09	0.09	0.04	0.22	0.22	0.11	0.31	0.02
Intersection LOS	A											
Intersection V/C	0.570											

Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.727

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	476	153	315	403	295	256	731	151	138	936	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	476	153	315	403	295	256	731	151	138	936	606
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	119	38	79	101	74	64	183	38	35	234	152
Total Analysis Volume [veh/h]	136	476	153	315	403	295	256	731	151	138	936	606
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.14	0.09	0.09	0.21	0.21	0.08	0.22	0.09	0.04	0.28	0.36
Intersection LOS	C											
Intersection V/C	0.727											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.614

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	451	31	341	10	19	6	12	853	281	284	1211	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	451	31	341	10	19	6	12	853	281	284	1211	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	8	85	3	5	2	3	213	70	71	303	4
Total Analysis Volume [veh/h]	451	31	341	10	19	6	12	853	281	284	1211	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.02	0.12	0.01	0.01	0.01	0.01	0.33	0.33	0.08	0.36	0.36
Intersection LOS	B											
Intersection V/C	0.614											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	97	3	278	268	894	11	5	1255	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	97	3	278	268	894	11	5	1255	128
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	3	24	1	70	67	224	3	1	314	32
Total Analysis Volume [veh/h]	12	2	10	97	3	278	268	894	11	5	1255	128
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.06	0.00	0.01	0.16	0.27	0.27	0.00	0.37	0.08
Intersection LOS	B											
Intersection V/C	0.641											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.631

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	569	703	118	206	356	103	211	703	281	74	677	203
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	569	703	118	206	356	103	211	703	281	74	677	203
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	176	30	52	89	26	53	176	70	19	169	51
Total Analysis Volume [veh/h]	569	703	118	206	356	103	211	703	281	74	677	203
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.16	0.16	0.06	0.09	0.09	0.12	0.21	0.17	0.04	0.20	0.12
Intersection LOS	B											
Intersection V/C	0.631											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.239

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	45	302	40	27	240	27	59	4	49	71	4	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	302	40	27	240	27	59	4	49	71	4	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	76	10	7	60	7	15	1	12	18	1	9
Total Analysis Volume [veh/h]	45	302	40	27	240	27	59	4	49	71	4	36
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.10	0.10	0.02	0.08	0.08	0.03	0.03	0.03	0.04	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.239											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.351

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	308	304	35	339	19	16	3	11	258	3	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	308	304	35	339	19	16	3	11	258	3	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	77	76	9	85	5	4	1	3	65	1	11
Total Analysis Volume [veh/h]	15	308	304	35	339	19	16	3	11	258	3	44
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.18	0.18	0.02	0.11	0.11	0.01	0.01	0.01	0.08	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.351											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.460

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	135	19	63	42	12	361	466	614	22	93	491	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	19	63	42	12	361	466	614	22	93	491	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	5	16	11	3	90	117	154	6	23	123	7
Total Analysis Volume [veh/h]	135	19	63	42	12	361	466	614	22	93	491	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.04	0.02	0.01	0.08	0.14	0.19	0.19	0.05	0.15	0.15
Intersection LOS	A											
Intersection V/C	0.460											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	418	1099	207	255	923	401	296	1217	281	417	1505	235
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	418	1099	207	255	923	401	296	1217	281	417	1505	235
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	275	52	64	231	100	74	304	70	104	376	59
Total Analysis Volume [veh/h]	418	1099	207	255	923	401	296	1217	281	417	1505	235
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.22	0.12	0.08	0.18	0.24	0.09	0.29	0.29	0.12	0.30	0.14
Intersection LOS	D											
Intersection V/C	0.825											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.600

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	34	46	85	160	102	200	123	1507	36	107	1703	248
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	46	85	160	102	200	123	1507	36	107	1703	248
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	12	21	40	26	50	31	377	9	27	426	62
Total Analysis Volume [veh/h]	34	46	85	160	102	200	123	1507	36	107	1703	248
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.05	0.09	0.03	0.12	0.07	0.30	0.30	0.06	0.33	0.15
Intersection LOS	B											
Intersection V/C	0.600											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	497	837	238	221	652	203	235	1688	400	225	1731	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	497	837	238	221	652	203	235	1688	400	225	1731	145
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	209	60	55	163	51	59	422	100	56	433	36
Total Analysis Volume [veh/h]	497	837	238	221	652	203	235	1688	400	225	1731	145
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.16	0.14	0.07	0.19	0.12	0.07	0.33	0.24	0.07	0.34	0.09
Intersection LOS	C											
Intersection V/C	0.796											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	42	32	58	308	24	204	240	1659	27	55	1902	316
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	32	58	308	24	204	240	1659	27	55	1902	316
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	8	15	77	6	51	60	415	7	14	476	79
Total Analysis Volume [veh/h]	42	32	58	308	24	204	240	1659	27	55	1902	316
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.03	0.09	0.13	0.13	0.07	0.33	0.33	0.03	0.37	0.19
Intersection LOS	B											
Intersection V/C	0.654											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	354	558	338	473	291	92	105	1813	98	431	1840	554
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	354	558	338	473	291	92	105	1813	98	431	1840	554
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	140	85	118	73	23	26	453	25	108	460	139
Total Analysis Volume [veh/h]	354	558	338	473	291	92	105	1813	98	431	1840	554
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.16	0.20	0.18	0.11	0.11	0.03	0.28	0.28	0.13	0.36	0.14
Intersection LOS	D											
Intersection V/C	0.839											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	652	0	521	0	1643	1000	0	2305	393
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	652	0	521	0	1643	1000	0	2305	393
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	163	0	130	0	411	250	0	576	98
Total Analysis Volume [veh/h]	0	0	0	652	0	521	0	1643	1000	0	2305	393
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.19	0.00	0.23	0.00	0.32	0.00	0.00	0.45	0.00
Intersection LOS	C											
Intersection V/C	0.732											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.730

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1027	77	401	0	0	281	206	1736	353	0	2237	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1027	77	401	0	0	281	206	1736	353	0	2237	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	257	19	100	0	0	70	52	434	88	0	559	14
Total Analysis Volume [veh/h]	1027	77	401	0	0	281	206	1736	353	0	2237	57
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.22	0.22	0.00	0.00	0.00	0.12	0.34	0.00	0.00	0.34	0.34
Intersection LOS	C											
Intersection V/C	0.730											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	207	257	80	289	341	214	242	1743	134	167	1636	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	207	257	80	289	341	214	242	1743	134	167	1636	163
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	64	20	72	85	54	61	436	34	42	409	41
Total Analysis Volume [veh/h]	207	257	80	289	341	214	242	1743	134	167	1636	163
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.10	0.10	0.09	0.20	0.13	0.14	0.37	0.37	0.10	0.26	0.26
Intersection LOS	C											
Intersection V/C	0.778											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.693

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	234	45	253	24	22	13	18	1760	272	219	1795	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	45	253	24	22	13	18	1760	272	219	1795	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	11	63	6	6	3	5	440	68	55	449	14
Total Analysis Volume [veh/h]	234	45	253	24	22	13	18	1760	272	219	1795	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.08	0.15	0.01	0.02	0.02	0.01	0.35	0.16	0.13	0.36	0.36
Intersection LOS	B											
Intersection V/C	0.693											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	344	586	98	253	449	108	204	1329	203	176	1446	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	344	586	98	253	449	108	204	1329	203	176	1446	306
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	147	25	63	112	27	51	332	51	44	362	77
Total Analysis Volume [veh/h]	344	586	98	253	449	108	204	1329	203	176	1446	306
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.20	0.20	0.07	0.13	0.06	0.06	0.30	0.30	0.05	0.34	0.34
Intersection LOS	C											
Intersection V/C	0.729											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	195	330	304	165	396	50	74	885	182	267	850	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	330	304	165	396	50	74	885	182	267	850	93
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	83	76	41	99	13	19	221	46	67	213	23
Total Analysis Volume [veh/h]	195	330	304	165	396	50	74	885	182	267	850	93
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.19	0.19	0.10	0.13	0.13	0.04	0.31	0.31	0.16	0.28	0.28
Intersection LOS	D											
Intersection V/C	0.804											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	194	701	112	72	693	318	176	895	214	98	727	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	194	701	112	72	693	318	176	895	214	98	727	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	175	28	18	173	80	44	224	54	25	182	17
Total Analysis Volume [veh/h]	194	701	112	72	693	318	176	895	214	98	727	66
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.24	0.24	0.04	0.20	0.20	0.05	0.33	0.33	0.06	0.16	0.16
Intersection LOS	C											
Intersection V/C	0.715											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.441

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	66	111	52	97	116	72	65	1181	48	43	1192	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	111	52	97	116	72	65	1181	48	43	1192	72
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	28	13	24	29	18	16	295	12	11	298	18
Total Analysis Volume [veh/h]	66	111	52	97	116	72	65	1181	48	43	1192	72
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.05	0.06	0.06	0.06	0.04	0.24	0.24	0.03	0.25	0.25
Intersection LOS	A											
Intersection V/C	0.441											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	291	365	165	155	691	140	63	1125	258	230	981	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	291	365	165	155	691	140	63	1125	258	230	981	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	91	41	39	173	35	16	281	65	58	245	11
Total Analysis Volume [veh/h]	291	365	165	155	691	140	63	1125	258	230	981	44
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.11	0.10	0.09	0.20	0.08	0.04	0.22	0.15	0.14	0.20	0.20
Intersection LOS	B											
Intersection V/C	0.695											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	159	242	395	486	344	5	18	1090	287	721	1389	676
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	242	395	486	344	5	18	1090	287	721	1389	676
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	61	99	122	86	1	5	273	72	180	347	169
Total Analysis Volume [veh/h]	159	242	395	486	344	5	18	1090	287	721	1389	676
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.12	0.12	0.14	0.10	0.10	0.01	0.20	0.20	0.21	0.27	0.25
Intersection LOS	C											
Intersection V/C	0.732											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.760

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	779	0	1129	0	1405	552	162	1656	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	779	0	1129	0	1405	552	162	1656	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	195	0	282	0	351	138	41	414	0
Total Analysis Volume [veh/h]	0	0	0	779	0	1129	0	1405	552	162	1656	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.23	0.00	0.37	0.00	0.29	0.29	0.05	0.32	0.00
Intersection LOS	C											
Intersection V/C	0.760											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1011	0	413	0	0	0	671	1516	0	0	807	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1011	0	413	0	0	0	671	1516	0	0	807	391
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	253	0	103	0	0	0	168	379	0	0	202	98
Total Analysis Volume [veh/h]	1011	0	413	0	0	0	671	1516	0	0	807	391
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.00	0.24	0.00	0.00	0.00	0.20	0.30	0.00	0.00	0.18	0.18
Intersection LOS	C											
Intersection V/C	0.721											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.466

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	214	144	79	1	141	176	149	761	606	88	584	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	144	79	1	141	176	149	761	606	88	584	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	36	20	0	35	44	37	190	152	22	146	2
Total Analysis Volume [veh/h]	214	144	79	1	141	176	149	761	606	88	584	7
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.08	0.02	0.00	0.08	0.10	0.09	0.22	0.12	0.03	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.466											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.484

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	94	451	292	346	880	96	83	114	38	329	127	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	451	292	346	880	96	83	114	38	329	127	312
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	113	73	87	220	24	21	29	10	82	32	78
Total Analysis Volume [veh/h]	94	451	292	346	880	96	83	114	38	329	127	312
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.15	0.15	0.10	0.19	0.19	0.05	0.09	0.09	0.10	0.07	0.08
Intersection LOS	A											
Intersection V/C	0.484											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.481

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	94	72	165	53	36	75	84	624	118	143	767	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	72	165	53	36	75	84	624	118	143	767	25
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	18	41	13	9	19	21	156	30	36	192	6
Total Analysis Volume [veh/h]	94	72	165	53	36	75	84	624	118	143	767	25
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.04	0.10	0.03	0.07	0.07	0.05	0.22	0.22	0.08	0.23	0.01
Intersection LOS	A											
Intersection V/C	0.481											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	121	391	173	264	672	487	286	683	159	161	649	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	391	173	264	672	487	286	683	159	161	649	229
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	98	43	66	168	122	72	171	40	40	162	57
Total Analysis Volume [veh/h]	121	391	173	264	672	487	286	683	159	161	649	229
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.12	0.10	0.08	0.34	0.34	0.08	0.20	0.09	0.05	0.19	0.13
Intersection LOS	C											
Intersection V/C	0.701											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.513

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	312	19	169	11	21	12	8	713	328	155	698	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	19	169	11	21	12	8	713	328	155	698	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	5	42	3	5	3	2	178	82	39	175	3
Total Analysis Volume [veh/h]	312	19	169	11	21	12	8	713	328	155	698	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.01	0.05	0.01	0.02	0.02	0.00	0.31	0.31	0.05	0.21	0.21
Intersection LOS	A											
Intersection V/C	0.513											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.388

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	93	4	197	161	767	5	11	620	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	93	4	197	161	767	5	11	620	72
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	2	23	1	49	40	192	1	3	155	18
Total Analysis Volume [veh/h]	10	2	8	93	4	197	161	767	5	11	620	72
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.05	0.00	0.02	0.09	0.23	0.23	0.01	0.18	0.04
Intersection LOS	A											
Intersection V/C	0.388											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.461

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	227	306	60	158	606	105	111	443	294	55	381	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	306	60	158	606	105	111	443	294	55	381	88
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	77	15	40	152	26	28	111	74	14	95	22
Total Analysis Volume [veh/h]	227	306	60	158	606	105	111	443	294	55	381	88
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.07	0.07	0.05	0.14	0.14	0.07	0.13	0.17	0.03	0.11	0.05
Intersection LOS	A											
Intersection V/C	0.461											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.286

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	21	268	109	68	254	20	33	10	57	78	4	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	268	109	68	254	20	33	10	57	78	4	56
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	67	27	17	64	5	8	3	14	20	1	14
Total Analysis Volume [veh/h]	21	268	109	68	254	20	33	10	57	78	4	56
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.11	0.11	0.04	0.08	0.08	0.02	0.04	0.04	0.05	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.286											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.467

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	22	318	406	40	286	21	24	13	26	373	6	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	318	406	40	286	21	24	13	26	373	6	73
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	80	102	10	72	5	6	3	7	93	2	18
Total Analysis Volume [veh/h]	22	318	406	40	286	21	24	13	26	373	6	73
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.21	0.21	0.02	0.09	0.09	0.01	0.02	0.02	0.11	0.18	0.18
Intersection LOS	A											
Intersection V/C	0.467											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.617

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	165	24	89	59	19	500	639	476	29	84	705	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	165	24	89	59	19	500	639	476	29	84	705	34
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	6	22	15	5	125	160	119	7	21	176	9
Total Analysis Volume [veh/h]	165	24	89	59	19	500	639	476	29	84	705	34
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.05	0.03	0.01	0.11	0.19	0.15	0.15	0.05	0.22	0.22
Intersection LOS	B											
Intersection V/C	0.617											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	337	768	195	232	800	312	352	1137	267	339	1233	196
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	337	768	195	232	800	312	352	1137	267	339	1233	196
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	192	49	58	200	78	88	284	67	85	308	49
Total Analysis Volume [veh/h]	337	768	195	232	800	312	352	1137	267	339	1233	196
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.15	0.11	0.07	0.16	0.18	0.10	0.28	0.28	0.10	0.24	0.12
Intersection LOS	C											
Intersection V/C	0.708											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	26	30	101	118	41	112	68	1324	35	84	1407	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	30	101	118	41	112	68	1324	35	84	1407	145
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	8	25	30	10	28	17	331	9	21	352	36
Total Analysis Volume [veh/h]	26	30	101	118	41	112	68	1324	35	84	1407	145
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.06	0.07	0.01	0.07	0.04	0.27	0.27	0.05	0.28	0.09
Intersection LOS	A											
Intersection V/C	0.495											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	394	518	255	282	863	216	231	1388	253	335	1373	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	518	255	282	863	216	231	1388	253	335	1373	156
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	99	130	64	71	216	54	58	347	63	84	343	39
Total Analysis Volume [veh/h]	394	518	255	282	863	216	231	1388	253	335	1373	156
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.10	0.15	0.08	0.25	0.13	0.07	0.27	0.15	0.10	0.27	0.09
Intersection LOS	C											
Intersection V/C	0.790											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	37	169	390	74	279	301	1464	31	107	1653	442
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	37	169	390	74	279	301	1464	31	107	1653	442
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	9	42	98	19	70	75	366	8	27	413	111
Total Analysis Volume [veh/h]	66	37	169	390	74	279	301	1464	31	107	1653	442
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.11	0.21	0.21	0.09	0.29	0.29	0.06	0.32	0.26
Intersection LOS	C											
Intersection V/C	0.731											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.058

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	271	522	551	650	402	174	130	1522	183	621	1838	1004
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	271	522	551	650	402	174	130	1522	183	621	1838	1004
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	131	138	163	101	44	33	381	46	155	460	251
Total Analysis Volume [veh/h]	271	522	551	650	402	174	130	1522	183	621	1838	1004
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.15	0.32	0.25	0.17	0.17	0.04	0.25	0.25	0.18	0.36	0.34
Intersection LOS	F											
Intersection V/C	1.058											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.808

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	537	0	725	0	1881	1129	0	2605	358
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	537	0	725	0	1881	1129	0	2605	358
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	134	0	181	0	470	282	0	651	90
Total Analysis Volume [veh/h]	0	0	0	537	0	725	0	1881	1129	0	2605	358
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.16	0.00	0.25	0.00	0.37	0.00	0.00	0.51	0.00
Intersection LOS	D											
Intersection V/C	0.808											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1414	168	542	0	0	258	272	1710	544	0	1753	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1414	168	542	0	0	258	272	1710	544	0	1753	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	354	42	136	0	0	65	68	428	136	0	438	11
Total Analysis Volume [veh/h]	1414	168	542	0	0	258	272	1710	544	0	1753	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.28	0.31	0.31	0.00	0.00	0.00	0.16	0.34	0.00	0.00	0.26	0.26
Intersection LOS	C											
Intersection V/C	0.786											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	234	186	107	327	236	176	207	1636	235	141	1448	201
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	186	107	327	236	176	207	1636	235	141	1448	201
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	47	27	82	59	44	52	409	59	35	362	50
Total Analysis Volume [veh/h]	234	186	107	327	236	176	207	1636	235	141	1448	201
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.09	0.09	0.10	0.14	0.10	0.12	0.37	0.37	0.08	0.24	0.24
Intersection LOS	C											
Intersection V/C	0.707											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	154	16	227	25	10	11	24	1805	269	196	1718	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	16	227	25	10	11	24	1805	269	196	1718	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	4	57	6	3	3	6	451	67	49	430	11
Total Analysis Volume [veh/h]	154	16	227	25	10	11	24	1805	269	196	1718	44
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.13	0.01	0.01	0.01	0.01	0.35	0.16	0.12	0.35	0.35
Intersection LOS	B											
Intersection V/C	0.667											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	290	285	71	268	621	126	163	1098	286	115	1164	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	290	285	71	268	621	126	163	1098	286	115	1164	102
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	71	18	67	155	32	41	275	72	29	291	26
Total Analysis Volume [veh/h]	290	285	71	268	621	126	163	1098	286	115	1164	102
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.10	0.10	0.08	0.18	0.07	0.05	0.27	0.27	0.03	0.25	0.25
Intersection LOS	B											
Intersection V/C	0.623											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.608

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	159	279	197	113	337	50	69	604	245	172	432	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	279	197	113	337	50	69	604	245	172	432	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	70	49	28	84	13	17	151	61	43	108	17
Total Analysis Volume [veh/h]	159	279	197	113	337	50	69	604	245	172	432	66
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.14	0.14	0.07	0.11	0.11	0.04	0.25	0.25	0.10	0.15	0.15
Intersection LOS	B											
Intersection V/C	0.608											

Intersection Level Of Service Report
Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.547

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	98	493	58	60	813	162	156	599	164	89	417	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	98	493	58	60	813	162	156	599	164	89	417	56
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	123	15	15	203	41	39	150	41	22	104	14
Total Analysis Volume [veh/h]	98	493	58	60	813	162	156	599	164	89	417	56
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.16	0.16	0.04	0.19	0.19	0.05	0.22	0.22	0.05	0.09	0.09
Intersection LOS	A											
Intersection V/C	0.547											

APPENDIX C-V

YEAR 2022 CUMULATIVE PLUS PROJECT
TRAFFIC CONDITIONS

Intersection Level Of Service Report
Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.558

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	53	151	98	155	327	75	83	1278	130	114	1321	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	151	98	155	327	75	83	1278	130	114	1321	63
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	38	25	39	82	19	21	320	33	29	330	16
Total Analysis Volume [veh/h]	53	151	98	155	327	75	83	1278	130	114	1321	63
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.07	0.07	0.09	0.12	0.12	0.05	0.28	0.28	0.07	0.27	0.27
Intersection LOS	A											
Intersection V/C	0.558											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	226	344	150	122	872	253	87	1257	289	209	1361	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	226	344	150	122	872	253	87	1257	289	209	1361	137
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	86	38	31	218	63	22	314	72	52	340	34
Total Analysis Volume [veh/h]	226	344	150	122	872	253	87	1257	289	209	1361	137
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.10	0.09	0.07	0.26	0.15	0.05	0.25	0.17	0.12	0.29	0.29
Intersection LOS	C											
Intersection V/C	0.742											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	179	191	215	849	575	8	13	1279	206	463	1653	524
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	191	215	849	575	8	13	1279	206	463	1653	524
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	48	54	212	144	2	3	320	52	116	413	131
Total Analysis Volume [veh/h]	179	191	215	849	575	8	13	1279	206	463	1653	524
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.08	0.08	0.25	0.17	0.17	0.00	0.22	0.22	0.14	0.32	0.06
Intersection LOS	C											
Intersection V/C	0.734											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1006	0	662	0	1770	577	213	2034	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1006	0	662	0	1770	577	213	2034	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	252	0	166	0	443	144	53	509	0
Total Analysis Volume [veh/h]	0	0	0	1006	0	662	0	1770	577	213	2034	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.30	0.00	0.33	0.00	0.35	0.34	0.06	0.40	0.00
Intersection LOS	C											
Intersection V/C	0.787											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.811

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	999	0	473	0	0	0	383	2384	0	0	1259	466
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	999	0	473	0	0	0	383	2384	0	0	1259	466
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	250	0	118	0	0	0	96	596	0	0	315	117
Total Analysis Volume [veh/h]	999	0	473	0	0	0	383	2384	0	0	1259	466
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.00	0.28	0.00	0.00	0.00	0.11	0.47	0.00	0.00	0.25	0.25
Intersection LOS	D											
Intersection V/C	0.811											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.610

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	280	108	37	19	206	311	93	648	1018	263	740	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	280	108	37	19	206	311	93	648	1018	263	740	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	27	9	5	52	78	23	162	255	66	185	3
Total Analysis Volume [veh/h]	280	108	37	19	206	311	93	648	1018	263	740	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.06	0.00	0.01	0.12	0.18	0.05	0.19	0.22	0.08	0.15	0.15
Intersection LOS	B											
Intersection V/C	0.610											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.424

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	35	457	214	350	1008	59	47	68	11	317	70	231
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	457	214	350	1008	59	47	68	11	317	70	231
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	114	54	88	252	15	12	17	3	79	18	58
Total Analysis Volume [veh/h]	35	457	214	350	1008	59	47	68	11	317	70	231
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.13	0.13	0.10	0.21	0.21	0.03	0.05	0.05	0.09	0.04	0.03
Intersection LOS	A											
Intersection V/C	0.424											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.360

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	33	41	85	36	35	25	38	575	98	70	525	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	41	85	36	35	25	38	575	98	70	525	42
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	10	21	9	9	6	10	144	25	18	131	11
Total Analysis Volume [veh/h]	33	41	85	36	35	25	38	575	98	70	525	42
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.05	0.02	0.04	0.04	0.02	0.20	0.20	0.04	0.15	0.02
Intersection LOS	A											
Intersection V/C	0.360											

Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	74	179	97	632	900	204	99	499	46	80	550	275
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	179	97	632	900	204	99	499	46	80	550	275
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	45	24	158	225	51	25	125	12	20	138	69
Total Analysis Volume [veh/h]	74	179	97	632	900	204	99	499	46	80	550	275
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.05	0.06	0.19	0.32	0.32	0.03	0.15	0.03	0.02	0.16	0.16
Intersection LOS	A											
Intersection V/C	0.587											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.621

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	230	6	309	54	28	8	2	919	297	342	748	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	6	309	54	28	8	2	919	297	342	748	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	58	2	77	14	7	2	1	230	74	86	187	3
Total Analysis Volume [veh/h]	230	6	309	54	28	8	2	919	297	342	748	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.08	0.03	0.02	0.02	0.00	0.36	0.36	0.10	0.22	0.22
Intersection LOS	B											
Intersection V/C	0.621											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.541

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	5	153	2	441	312	853	16	8	728	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	5	153	2	441	312	853	16	8	728	79
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	1	38	1	110	78	213	4	2	182	20
Total Analysis Volume [veh/h]	3	3	5	153	2	441	312	853	16	8	728	79
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.09	0.00	0.08	0.18	0.26	0.26	0.00	0.21	0.05
Intersection LOS	A											
Intersection V/C	0.541											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.548

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	131	211	90	432	967	181	43	566	338	61	430	211
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	211	90	432	967	181	43	566	338	61	430	211
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	53	23	108	242	45	11	142	85	15	108	53
Total Analysis Volume [veh/h]	131	211	90	432	967	181	43	566	338	61	430	211
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.13	0.23	0.23	0.03	0.17	0.20	0.04	0.13	0.12
Intersection LOS	A											
Intersection V/C	0.548											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.140

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	25	142	8	6	127	13	31	2	56	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	142	8	6	127	13	31	2	56	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	36	2	2	32	3	8	1	14	0	0	0
Total Analysis Volume [veh/h]	25	142	8	6	127	13	31	2	56	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.04	0.04	0.00	0.04	0.04	0.02	0.03	0.03	0.00	0.00	0.00
Intersection LOS	A											
Intersection V/C	0.140											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.186

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	12	160	126	25	138	6	1	0	1	104	0	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	160	126	25	138	6	1	0	1	104	0	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	40	32	6	35	2	0	0	0	26	0	5
Total Analysis Volume [veh/h]	12	160	126	25	138	6	1	0	1	104	0	19
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.08	0.08	0.01	0.04	0.04	0.00	0.00	0.00	0.03	0.00	0.05
Intersection LOS	A											
Intersection V/C	0.186											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.251

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	31	5	14	16	2	71	152	286	14	27	437	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	5	14	16	2	71	152	286	14	27	437	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	4	4	1	18	38	72	4	7	109	7
Total Analysis Volume [veh/h]	31	5	14	16	2	71	152	286	14	27	437	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.01	0.00	0.00	0.04	0.09	0.09	0.02	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.251											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.789

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	297	687	254	159	1238	299	293	1314	354	277	1183	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	297	687	254	159	1238	299	293	1314	354	277	1183	166
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	172	64	40	310	75	73	329	89	69	296	42
Total Analysis Volume [veh/h]	297	687	254	159	1238	299	293	1314	354	277	1183	166
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.13	0.15	0.05	0.24	0.18	0.09	0.33	0.33	0.08	0.23	0.10
Intersection LOS	C											
Intersection V/C	0.789											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.623

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	58	111	159	122	82	131	214	1351	76	56	1435	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	111	159	122	82	131	214	1351	76	56	1435	156
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	28	40	31	21	33	54	338	19	14	359	39
Total Analysis Volume [veh/h]	58	111	159	122	82	131	214	1351	76	56	1435	156
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.07	0.09	0.07	0.02	0.08	0.13	0.28	0.28	0.03	0.28	0.09
Intersection LOS	B											
Intersection V/C	0.623											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	419	473	155	141	970	200	157	1510	342	166	1618	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	419	473	155	141	970	200	157	1510	342	166	1618	73
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	118	39	35	243	50	39	378	86	42	405	18
Total Analysis Volume [veh/h]	419	473	155	141	970	200	157	1510	342	166	1618	73
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.09	0.09	0.04	0.29	0.12	0.05	0.30	0.20	0.05	0.32	0.04
Intersection LOS	D											
Intersection V/C	0.822											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.476

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	52	165	13	65	104	1538	9	24	1671	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	52	165	13	65	104	1538	9	24	1671	154
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	3	13	41	3	16	26	385	2	6	418	39
Total Analysis Volume [veh/h]	14	13	52	165	13	65	104	1538	9	24	1671	154
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.02	0.05	0.05	0.05	0.03	0.30	0.30	0.01	0.33	0.09
Intersection LOS	A											
Intersection V/C	0.476											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	42	97	51	96	7	8	392	46	106	431	57
Total Analysis Volume [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.05	0.23	0.08	0.12	0.12	0.01	0.26	0.26	0.12	0.34	0.06
Intersection LOS	C											
Intersection V/C	0.739											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.633

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↲		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	577	0	493	0	1440	768	0	1903	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	577	0	493	0	1440	768	0	1903	195
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	144	0	123	0	360	192	0	476	49
Total Analysis Volume [veh/h]	0	0	0	577	0	493	0	1440	768	0	1903	195
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.00	0.21	0.00	0.28	0.00	0.00	0.37	0.00
Intersection LOS	B											
Intersection V/C	0.633											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1029	189	768	0	0	136	180	1297	529	0	1440	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1029	189	768	0	0	136	180	1297	529	0	1440	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	257	47	192	0	0	34	45	324	132	0	360	5
Total Analysis Volume [veh/h]	1029	189	768	0	0	136	180	1297	529	0	1440	20
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.20	0.29	0.29	0.00	0.00	0.00	0.11	0.25	0.00	0.00	0.21	0.21
Intersection LOS	B											
Intersection V/C	0.663											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	145	208	68	157	325	143	143	1795	98	88	1584	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	208	68	157	325	143	143	1795	98	88	1584	80
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	52	17	39	81	36	36	449	25	22	396	20
Total Analysis Volume [veh/h]	145	208	68	157	325	143	143	1795	98	88	1584	80
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.08	0.05	0.19	0.08	0.08	0.37	0.37	0.05	0.24	0.24
Intersection LOS	C											
Intersection V/C	0.707											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.598

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	179	11	138	24	27	13	12	1759	353	167	1438	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	11	138	24	27	13	12	1759	353	167	1438	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	45	3	35	6	7	3	3	440	88	42	360	8
Total Analysis Volume [veh/h]	179	11	138	24	27	13	12	1759	353	167	1438	31
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.08	0.01	0.02	0.02	0.01	0.34	0.21	0.10	0.29	0.29
Intersection LOS	A											
Intersection V/C	0.598											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	168	233	81	311	614	106	129	1231	234	68	1049	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	168	233	81	311	614	106	129	1231	234	68	1049	84
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	58	20	78	154	27	32	308	59	17	262	21
Total Analysis Volume [veh/h]	168	233	81	311	614	106	129	1231	234	68	1049	84
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.09	0.09	0.09	0.18	0.06	0.04	0.29	0.29	0.02	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.587											

Intersection Level Of Service Report

Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	99	225	140	122	393	22	66	698	158	305	743	95
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	225	140	122	393	22	66	698	158	305	743	95
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	56	35	31	98	6	17	175	40	76	186	24
Total Analysis Volume [veh/h]	99	225	140	122	393	22	66	698	158	305	743	95
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.11	0.11	0.07	0.12	0.12	0.04	0.25	0.25	0.18	0.25	0.25
Intersection LOS	B											
Intersection V/C	0.661											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.608

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	154	522	139	62	778	193	209	650	152	147	795	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	522	139	62	778	193	209	650	152	147	795	71
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	131	35	16	195	48	52	163	38	37	199	18
Total Analysis Volume [veh/h]	154	522	139	62	778	193	209	650	152	147	795	71
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.19	0.19	0.04	0.19	0.19	0.06	0.24	0.24	0.09	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.608											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.627

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	115	375	133	94	159	127	82	1377	73	78	1517	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	375	133	94	159	127	82	1377	73	78	1517	138
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	94	33	24	40	32	21	344	18	20	379	35
Total Analysis Volume [veh/h]	115	375	133	94	159	127	82	1377	73	78	1517	138
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.15	0.15	0.06	0.08	0.08	0.05	0.28	0.28	0.05	0.32	0.32
Intersection LOS	B											
Intersection V/C	0.627											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	435	684	186	80	314	94	155	1455	370	225	1281	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	435	684	186	80	314	94	155	1455	370	225	1281	76
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	109	171	47	20	79	24	39	364	93	56	320	19
Total Analysis Volume [veh/h]	435	684	186	80	314	94	155	1455	370	225	1281	76
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.20	0.11	0.05	0.09	0.06	0.09	0.29	0.22	0.13	0.27	0.27
Intersection LOS	C											
Intersection V/C	0.716											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	318	568	308	535	371	14	37	1381	273	405	1056	673
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	568	308	535	371	14	37	1381	273	405	1056	673
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	80	142	77	134	93	4	9	345	68	101	264	168
Total Analysis Volume [veh/h]	318	568	308	535	371	14	37	1381	273	405	1056	673
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.17	0.17	0.16	0.11	0.11	0.01	0.24	0.24	0.12	0.21	0.24
Intersection LOS	C											
Intersection V/C	0.741											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	109	0	202	0	335	202	55	404	0
Total Analysis Volume [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.13	0.00	0.24	0.00	0.32	0.32	0.07	0.32	0.00
Intersection LOS	B											
Intersection V/C	0.675											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.620

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	624	0	255	0	0	0	544	1430	0	0	1040	502
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	624	0	255	0	0	0	544	1430	0	0	1040	502
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	156	0	64	0	0	0	136	358	0	0	260	126
Total Analysis Volume [veh/h]	624	0	255	0	0	0	544	1430	0	0	1040	502
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.00	0.15	0.00	0.00	0.00	0.16	0.28	0.00	0.00	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.620											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.528

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	479	282	217	4	95	109	174	843	451	86	346	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	479	282	217	4	95	109	174	843	451	86	346	26
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	71	54	1	24	27	44	211	113	22	87	7
Total Analysis Volume [veh/h]	479	282	217	4	95	109	174	843	451	86	346	26
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.14	0.17	0.10	0.00	0.06	0.06	0.10	0.25	0.00	0.03	0.07	0.07
Intersection LOS	A											
Intersection V/C	0.528											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	73	806	355	404	660	55	65	89	31	380	145	561
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	806	355	404	660	55	65	89	31	380	145	561
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	202	89	101	165	14	16	22	8	95	36	140
Total Analysis Volume [veh/h]	73	806	355	404	660	55	65	89	31	380	145	561
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.23	0.23	0.12	0.14	0.14	0.04	0.07	0.07	0.11	0.09	0.21
Intersection LOS	B											
Intersection V/C	0.646											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	56	160	49	48	104	75	665	109	180	1063	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	56	160	49	48	104	75	665	109	180	1063	37
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	14	40	12	12	26	19	166	27	45	266	9
Total Analysis Volume [veh/h]	136	56	160	49	48	104	75	665	109	180	1063	37
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.03	0.09	0.03	0.09	0.09	0.04	0.23	0.23	0.11	0.31	0.02
Intersection LOS	A											
Intersection V/C	0.576											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	486	156	315	423	295	256	732	151	144	937	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	486	156	315	423	295	256	732	151	144	937	606
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	122	39	79	106	74	64	183	38	36	234	152
Total Analysis Volume [veh/h]	136	486	156	315	423	295	256	732	151	144	937	606
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.14	0.09	0.09	0.21	0.21	0.08	0.22	0.09	0.04	0.28	0.36
Intersection LOS	C											
Intersection V/C	0.733											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	451	31	341	10	19	6	12	857	281	284	1219	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	451	31	341	10	19	6	12	857	281	284	1219	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	113	8	85	3	5	2	3	214	70	71	305	4
Total Analysis Volume [veh/h]	451	31	341	10	19	6	12	857	281	284	1219	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.02	0.12	0.01	0.01	0.01	0.01	0.33	0.33	0.08	0.36	0.36
Intersection LOS	B											
Intersection V/C	0.616											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	97	3	278	268	898	11	5	1263	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	97	3	278	268	898	11	5	1263	128
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	3	24	1	70	67	225	3	1	316	32
Total Analysis Volume [veh/h]	12	2	10	97	3	278	268	898	11	5	1263	128
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.06	0.00	0.01	0.16	0.27	0.27	0.00	0.37	0.08
Intersection LOS	B											
Intersection V/C	0.643											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.634

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	569	703	118	206	356	109	214	704	281	74	678	203
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	569	703	118	206	356	109	214	704	281	74	678	203
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	142	176	30	52	89	27	54	176	70	19	170	51
Total Analysis Volume [veh/h]	569	703	118	206	356	109	214	704	281	74	678	203
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.16	0.16	0.06	0.09	0.09	0.13	0.21	0.17	0.04	0.20	0.12
Intersection LOS	B											
Intersection V/C	0.634											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.243

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	45	313	40	27	259	27	59	4	49	71	4	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	313	40	27	259	27	59	4	49	71	4	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	78	10	7	65	7	15	1	12	18	1	9
Total Analysis Volume [veh/h]	45	313	40	27	259	27	59	4	49	71	4	36
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.10	0.10	0.02	0.08	0.08	0.03	0.03	0.03	0.04	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.243											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.442

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	308	407	54	339	19	16	3	11	314	3	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	308	407	54	339	19	16	3	11	314	3	55
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	77	102	14	85	5	4	1	3	79	1	14
Total Analysis Volume [veh/h]	15	308	407	54	339	19	16	3	11	314	3	55
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.21	0.21	0.03	0.11	0.11	0.01	0.01	0.01	0.09	0.15	0.15
Intersection LOS	A											
Intersection V/C	0.442											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	135	19	63	55	12	425	600	614	22	93	491	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	19	63	55	12	425	600	614	22	93	491	51
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	5	16	14	3	106	150	154	6	23	123	13
Total Analysis Volume [veh/h]	135	19	63	55	12	425	600	614	22	93	491	51
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.04	0.03	0.01	0.07	0.18	0.19	0.19	0.05	0.16	0.16
Intersection LOS	A											
Intersection V/C	0.505											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	418	1099	207	263	923	401	296	1241	281	417	1517	239
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	418	1099	207	263	923	401	296	1241	281	417	1517	239
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	275	52	66	231	100	74	310	70	104	379	60
Total Analysis Volume [veh/h]	418	1099	207	263	923	401	296	1241	281	417	1517	239
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.22	0.12	0.08	0.18	0.24	0.09	0.30	0.30	0.12	0.30	0.14
Intersection LOS	D											
Intersection V/C	0.830											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	34	46	91	169	102	200	123	1540	36	110	1719	252
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	46	91	169	102	200	123	1540	36	110	1719	252
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	12	23	42	26	50	31	385	9	28	430	63
Total Analysis Volume [veh/h]	34	46	91	169	102	200	123	1540	36	110	1719	252
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.05	0.10	0.03	0.12	0.07	0.31	0.31	0.06	0.34	0.15
Intersection LOS	B											
Intersection V/C	0.612											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	497	837	265	221	652	203	235	1736	400	238	1755	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	497	837	265	221	652	203	235	1736	400	238	1755	145
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	124	209	66	55	163	51	59	434	100	60	439	36
Total Analysis Volume [veh/h]	497	837	265	221	652	203	235	1736	400	238	1755	145
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.16	0.16	0.07	0.19	0.12	0.07	0.34	0.24	0.07	0.34	0.09
Intersection LOS	D											
Intersection V/C	0.801											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	42	32	58	324	24	244	320	1659	27	55	1902	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	32	58	324	24	244	320	1659	27	55	1902	339
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	8	15	81	6	61	80	415	7	14	476	85
Total Analysis Volume [veh/h]	42	32	58	324	24	244	320	1659	27	55	1902	339
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.03	0.10	0.16	0.16	0.09	0.33	0.33	0.03	0.37	0.20
Intersection LOS	C											
Intersection V/C	0.701											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.859

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	148	85	130	77	23	26	457	25	108	465	163
Total Analysis Volume [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.17	0.20	0.20	0.12	0.12	0.03	0.28	0.28	0.13	0.36	0.18
Intersection LOS	D											
Intersection V/C	0.859											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.755

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	652	0	537	0	1680	1022	0	2406	393
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	652	0	537	0	1680	1022	0	2406	393
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	163	0	134	0	420	256	0	602	98
Total Analysis Volume [veh/h]	0	0	0	652	0	537	0	1680	1022	0	2406	393
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.19	0.00	0.23	0.00	0.33	0.00	0.00	0.47	0.00
Intersection LOS	C											
Intersection V/C	0.755											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.745

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1071	77	401	0	0	282	207	1764	362	0	2293	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1071	77	401	0	0	282	207	1764	362	0	2293	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	268	19	100	0	0	71	52	441	91	0	573	14
Total Analysis Volume [veh/h]	1071	77	401	0	0	282	207	1764	362	0	2293	57
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.23	0.23	0.00	0.00	0.00	0.12	0.35	0.00	0.00	0.35	0.35
Intersection LOS	C											
Intersection V/C	0.745											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	213	257	80	289	341	219	244	1766	137	167	1682	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	213	257	80	289	341	219	244	1766	137	167	1682	163
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	53	64	20	72	85	55	61	442	34	42	421	41
Total Analysis Volume [veh/h]	213	257	80	289	341	219	244	1766	137	167	1682	163
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.10	0.10	0.09	0.20	0.13	0.14	0.37	0.37	0.10	0.27	0.27
Intersection LOS	C											
Intersection V/C	0.785											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	253	45	253	24	22	13	18	1774	282	219	1821	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	253	45	253	24	22	13	18	1774	282	219	1821	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	11	63	6	6	3	5	444	71	55	455	14
Total Analysis Volume [veh/h]	253	45	253	24	22	13	18	1774	282	219	1821	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.09	0.15	0.01	0.02	0.02	0.01	0.35	0.17	0.13	0.37	0.37
Intersection LOS	B											
Intersection V/C	0.696											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	344	586	98	253	449	108	204	1341	203	176	1471	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	344	586	98	253	449	108	204	1341	203	176	1471	306
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	147	25	63	112	27	51	335	51	44	368	77
Total Analysis Volume [veh/h]	344	586	98	253	449	108	204	1341	203	176	1471	306
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.20	0.20	0.07	0.13	0.06	0.06	0.30	0.30	0.05	0.35	0.35
Intersection LOS	C											
Intersection V/C	0.734											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.809

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	195	338	304	168	400	50	74	885	182	267	850	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	338	304	168	400	50	74	885	182	267	850	99
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	85	76	42	100	13	19	221	46	67	213	25
Total Analysis Volume [veh/h]	195	338	304	168	400	50	74	885	182	267	850	99
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.19	0.19	0.10	0.13	0.13	0.04	0.31	0.31	0.16	0.28	0.28
Intersection LOS	D											
Intersection V/C	0.809											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.716

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	200	701	112	72	693	318	176	895	217	98	727	66
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	200	701	112	72	693	318	176	895	217	98	727	66
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	175	28	18	173	80	44	224	54	25	182	17
Total Analysis Volume [veh/h]	200	701	112	72	693	318	176	895	217	98	727	66
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.24	0.24	0.04	0.20	0.20	0.05	0.33	0.33	0.06	0.16	0.16
Intersection LOS	C											
Intersection V/C	0.716											

Intersection Level Of Service Report
Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.443

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	71	117	52	97	120	72	65	1181	51	43	1192	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	117	52	97	120	72	65	1181	51	43	1192	72
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	29	13	24	30	18	16	295	13	11	298	18
Total Analysis Volume [veh/h]	71	117	52	97	120	72	65	1181	51	43	1192	72
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.05	0.06	0.06	0.06	0.04	0.24	0.24	0.03	0.25	0.25
Intersection LOS	A											
Intersection V/C	0.443											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	293	375	165	155	697	140	63	1125	259	230	981	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	375	165	155	697	140	63	1125	259	230	981	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	94	41	39	174	35	16	281	65	58	245	11
Total Analysis Volume [veh/h]	293	375	165	155	697	140	63	1125	259	230	981	44
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.11	0.10	0.09	0.21	0.08	0.04	0.22	0.15	0.14	0.20	0.20
Intersection LOS	B											
Intersection V/C	0.697											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	159	248	408	486	348	5	18	1090	287	729	1389	676
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	248	408	486	348	5	18	1090	287	729	1389	676
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	62	102	122	87	1	5	273	72	182	347	169
Total Analysis Volume [veh/h]	159	248	408	486	348	5	18	1090	287	729	1389	676
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.13	0.13	0.14	0.10	0.10	0.01	0.20	0.20	0.21	0.27	0.25
Intersection LOS	C											
Intersection V/C	0.738											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	195	0	284	0	355	138	41	415	0
Total Analysis Volume [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.23	0.00	0.38	0.00	0.29	0.29	0.05	0.33	0.00
Intersection LOS	C											
Intersection V/C	0.762											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.724

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1011	0	413	0	0	0	679	1521	0	0	810	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1011	0	413	0	0	0	679	1521	0	0	810	391
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	253	0	103	0	0	0	170	380	0	0	203	98
Total Analysis Volume [veh/h]	1011	0	413	0	0	0	679	1521	0	0	810	391
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.00	0.24	0.00	0.00	0.00	0.20	0.30	0.00	0.00	0.18	0.18
Intersection LOS	C											
Intersection V/C	0.724											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.467

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	左/直/右			左/直/右			左/直/右			左/直/右		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	214	144	85	1	141	176	149	761	606	92	584	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	144	85	1	141	176	149	761	606	92	584	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	36	21	0	35	44	37	190	152	23	146	2
Total Analysis Volume [veh/h]	214	144	85	1	141	176	149	761	606	92	584	7
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.08	0.02	0.00	0.08	0.10	0.09	0.22	0.12	0.03	0.12	0.12
Intersection LOS	A											
Intersection V/C	0.467											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.487

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	94	451	292	354	880	96	83	115	38	329	128	325
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	451	292	354	880	96	83	115	38	329	128	325
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	113	73	89	220	24	21	29	10	82	32	81
Total Analysis Volume [veh/h]	94	451	292	354	880	96	83	115	38	329	128	325
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.15	0.15	0.10	0.19	0.19	0.05	0.09	0.09	0.10	0.08	0.09
Intersection LOS	A											
Intersection V/C	0.487											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.487

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	111	73	166	53	37	75	84	624	129	144	767	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	73	166	53	37	75	84	624	129	144	767	25
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	18	42	13	9	19	21	156	32	36	192	6
Total Analysis Volume [veh/h]	111	73	166	53	37	75	84	624	129	144	767	25
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.04	0.10	0.03	0.07	0.07	0.05	0.22	0.22	0.08	0.23	0.01
Intersection LOS	A											
Intersection V/C	0.487											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.705

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	121	409	179	264	684	487	286	684	159	165	650	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	409	179	264	684	487	286	684	159	165	650	229
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	102	45	66	171	122	72	171	40	41	163	57
Total Analysis Volume [veh/h]	121	409	179	264	684	487	286	684	159	165	650	229
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.12	0.11	0.08	0.34	0.34	0.08	0.20	0.09	0.05	0.19	0.13
Intersection LOS	C											
Intersection V/C	0.705											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.515

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	312	19	169	11	21	12	8	720	328	155	703	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	19	169	11	21	12	8	720	328	155	703	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	5	42	3	5	3	2	180	82	39	176	3
Total Analysis Volume [veh/h]	312	19	169	11	21	12	8	720	328	155	703	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.01	0.05	0.01	0.02	0.02	0.00	0.31	0.31	0.05	0.21	0.21
Intersection LOS	A											
Intersection V/C	0.515											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.389

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	93	4	197	161	774	5	11	625	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	93	4	197	161	774	5	11	625	72
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	2	23	1	49	40	194	1	3	156	18
Total Analysis Volume [veh/h]	10	2	8	93	4	197	161	774	5	11	625	72
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.05	0.00	0.02	0.09	0.23	0.23	0.01	0.18	0.04
Intersection LOS	A											
Intersection V/C	0.389											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.462

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	227	306	60	158	606	109	117	444	294	55	382	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	306	60	158	606	109	117	444	294	55	382	88
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	77	15	40	152	27	29	111	74	14	96	22
Total Analysis Volume [veh/h]	227	306	60	158	606	109	117	444	294	55	382	88
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.07	0.07	0.05	0.14	0.14	0.07	0.13	0.17	0.03	0.11	0.05
Intersection LOS	A											
Intersection V/C	0.462											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.292

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	21	287	109	68	266	20	33	10	57	78	4	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	287	109	68	266	20	33	10	57	78	4	56
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	72	27	17	67	5	8	3	14	20	1	14
Total Analysis Volume [veh/h]	21	287	109	68	266	20	33	10	57	78	4	56
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.12	0.12	0.04	0.08	0.08	0.02	0.04	0.04	0.05	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.292											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.502

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	22	318	473	52	286	21	24	13	26	470	6	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	318	473	52	286	21	24	13	26	470	6	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	80	118	13	72	5	6	3	7	118	2	23
Total Analysis Volume [veh/h]	22	318	473	52	286	21	24	13	26	470	6	92
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.23	0.23	0.03	0.09	0.09	0.01	0.02	0.02	0.14	0.23	0.23
Intersection LOS	A											
Intersection V/C	0.502											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.697

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	165	24	89	84	19	628	717	476	29	84	705	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	165	24	89	84	19	628	717	476	29	84	705	49
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	6	22	21	5	157	179	119	7	21	176	12
Total Analysis Volume [veh/h]	165	24	89	84	19	628	717	476	29	84	705	49
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.05	0.05	0.01	0.16	0.21	0.15	0.15	0.05	0.22	0.22
Intersection LOS	B											
Intersection V/C	0.697											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	337	768	195	237	800	312	352	1152	267	339	1257	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	337	768	195	237	800	312	352	1152	267	339	1257	204
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	192	49	59	200	78	88	288	67	85	314	51
Total Analysis Volume [veh/h]	337	768	195	237	800	312	352	1152	267	339	1257	204
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.15	0.11	0.07	0.16	0.18	0.10	0.28	0.28	0.10	0.25	0.12
Intersection LOS	C											
Intersection V/C	0.711											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.507

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	26	30	105	123	41	112	68	1344	35	90	1439	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	30	105	123	41	112	68	1344	35	90	1439	154
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	8	26	31	10	28	17	336	9	23	360	39
Total Analysis Volume [veh/h]	26	30	105	123	41	112	68	1344	35	90	1439	154
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.06	0.07	0.01	0.07	0.04	0.27	0.27	0.05	0.28	0.09
Intersection LOS	A											
Intersection V/C	0.507											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	394	518	272	282	863	216	231	1417	253	361	1419	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	518	272	282	863	216	231	1417	253	361	1419	156
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	99	130	68	71	216	54	58	354	63	90	355	39
Total Analysis Volume [veh/h]	394	518	272	282	863	216	231	1417	253	361	1419	156
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.12	0.10	0.16	0.08	0.25	0.13	0.07	0.28	0.15	0.11	0.28	0.09
Intersection LOS	D											
Intersection V/C	0.804											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	37	169	411	74	355	349	1464	31	107	1653	460
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	37	169	411	74	355	349	1464	31	107	1653	460
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	9	42	103	19	89	87	366	8	27	413	115
Total Analysis Volume [veh/h]	66	37	169	411	74	355	349	1464	31	107	1653	460
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.12	0.25	0.25	0.10	0.29	0.29	0.06	0.32	0.27
Intersection LOS	C											
Intersection V/C	0.790											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.098

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	136	138	187	109	44	33	385	47	155	463	265
Total Analysis Volume [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.16	0.32	0.29	0.18	0.18	0.04	0.25	0.25	0.18	0.36	0.34
Intersection LOS	F											
Intersection V/C	1.098											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↲		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	537	0	735	0	1951	1171	0	2667	358
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	537	0	735	0	1951	1171	0	2667	358
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	134	0	184	0	488	293	0	667	90
Total Analysis Volume [veh/h]	0	0	0	537	0	735	0	1951	1171	0	2667	358
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.16	0.00	0.25	0.00	0.38	0.00	0.00	0.52	0.00
Intersection LOS	D											
Intersection V/C	0.822											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1441	168	542	0	0	259	273	1764	560	0	1787	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1441	168	542	0	0	259	273	1764	560	0	1787	43
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	360	42	136	0	0	65	68	441	140	0	447	11
Total Analysis Volume [veh/h]	1441	168	542	0	0	259	273	1764	560	0	1787	43
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.28	0.32	0.32	0.00	0.00	0.00	0.16	0.35	0.00	0.00	0.27	0.27
Intersection LOS	C											
Intersection V/C	0.796											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.718

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	238	186	107	327	236	179	212	1679	241	141	1476	201
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	238	186	107	327	236	179	212	1679	241	141	1476	201
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	47	27	82	59	45	53	420	60	35	369	50
Total Analysis Volume [veh/h]	238	186	107	327	236	179	212	1679	241	141	1476	201
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.09	0.09	0.10	0.14	0.11	0.12	0.38	0.38	0.08	0.25	0.25
Intersection LOS	C											
Intersection V/C	0.718											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.673

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	166	16	227	25	10	11	24	1831	287	196	1734	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	16	227	25	10	11	24	1831	287	196	1734	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	4	57	6	3	3	6	458	72	49	434	11
Total Analysis Volume [veh/h]	166	16	227	25	10	11	24	1831	287	196	1734	44
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.05	0.13	0.01	0.01	0.01	0.01	0.36	0.17	0.12	0.35	0.35
Intersection LOS	B											
Intersection V/C	0.673											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.628

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TLO			TLO			TLO			TLO		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	290	285	71	268	621	126	163	1122	286	115	1179	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	290	285	71	268	621	126	163	1122	286	115	1179	102
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	71	18	67	155	32	41	281	72	29	295	26
Total Analysis Volume [veh/h]	290	285	71	268	621	126	163	1122	286	115	1179	102
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.10	0.10	0.08	0.18	0.07	0.05	0.28	0.28	0.03	0.25	0.25
Intersection LOS	B											
Intersection V/C	0.628											

Intersection Level Of Service Report

Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	159	284	197	119	345	50	69	604	245	172	432	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	284	197	119	345	50	69	604	245	172	432	70
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	71	49	30	86	13	17	151	61	43	108	18
Total Analysis Volume [veh/h]	159	284	197	119	345	50	69	604	245	172	432	70
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.14	0.14	0.07	0.12	0.12	0.04	0.25	0.25	0.10	0.15	0.15
Intersection LOS	B											
Intersection V/C	0.612											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	102	493	58	60	813	162	156	599	170	89	417	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	102	493	58	60	813	162	156	599	170	89	417	56
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	123	15	15	203	41	39	150	43	22	104	14
Total Analysis Volume [veh/h]	102	493	58	60	813	162	156	599	170	89	417	56
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.16	0.16	0.04	0.19	0.19	0.05	0.23	0.23	0.05	0.09	0.09
Intersection LOS	A											
Intersection V/C	0.550											

APPENDIX C-VI

YEAR 2022 CUMULATIVE PLUS PROJECT
WITH MITIGATION TRAFFIC CONDITIONS

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.30	0.00	0.19	0.00	0.35	0.17	0.06	0.40	0.00
Intersection LOS	C											
Intersection V/C	0.756											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.811

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	999	0	473	0	0	0	0	2384	0	0	1259	466
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	999	0	473	0	0	0	0	2384	0	0	1259	466
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	250	0	118	0	0	0	0	596	0	0	315	117
Total Analysis Volume [veh/h]	999	0	473	0	0	0	0	2384	0	0	1259	466
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.00	0.28	0.00	0.00	0.00	0.00	0.47	0.00	0.00	0.25	0.00	
Intersection LOS	D												
Intersection V/C	0.811												

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.721

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	42	97	51	96	7	8	392	46	106	431	57
Total Analysis Volume [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.05	0.23	0.06	0.11	0.02	0.01	0.26	0.26	0.12	0.34	0.07
Intersection LOS	C											
Intersection V/C	0.721											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	109	0	202	0	335	202	55	404	0
Total Analysis Volume [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.13	0.00	0.24	0.00	0.26	0.24	0.07	0.32	0.00
Intersection LOS	B											
Intersection V/C	0.615											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.514

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	624	0	255	0	0	0	0	1430	0	0	1040	502
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	624	0	255	0	0	0	0	1430	0	0	1040	502
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	156	0	64	0	0	0	0	358	0	0	260	126
Total Analysis Volume [veh/h]	624	0	255	0	0	0	0	1430	0	0	1040	502
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.00	0.15	0.00	0.00	0.00	0.00	0.28	0.00	0.00	0.20	0.00	
Intersection LOS	A												
Intersection V/C	0.514												

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.812

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	148	85	130	77	23	26	457	25	108	465	163
Total Analysis Volume [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.17	0.20	0.15	0.09	0.05	0.03	0.28	0.28	0.13	0.36	0.23
Intersection LOS	D											
Intersection V/C	0.812											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	195	0	284	0	355	138	41	415	0
Total Analysis Volume [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.23	0.00	0.33	0.00	0.28	0.16	0.05	0.33	0.00
Intersection LOS	C											
Intersection V/C	0.709											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1011	0	413	0	0	0	0	1521	0	0	810	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1011	0	413	0	0	0	0	1521	0	0	810	391
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	253	0	103	0	0	0	0	380	0	0	203	98
Total Analysis Volume [veh/h]	1011	0	413	0	0	0	0	1521	0	0	810	391
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.00	0.24	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.16	0.00	
Intersection LOS	B												
Intersection V/C	0.646												

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.036

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	136	138	187	109	44	33	385	47	155	463	265
Total Analysis Volume [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.16	0.32	0.22	0.13	0.10	0.04	0.25	0.25	0.18	0.36	0.40
Intersection LOS	F											
Intersection V/C	1.036											

APPENDIX C-VII

YEAR 2040 TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	55	190	141	214	458	79	87	1326	139	150	1403	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	190	141	214	458	79	87	1326	139	150	1403	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	48	35	54	115	20	22	332	35	38	351	17
Total Analysis Volume [veh/h]	55	190	141	214	458	79	87	1326	139	150	1403	67
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.10	0.10	0.13	0.16	0.16	0.05	0.29	0.29	0.09	0.29	0.29
Intersection LOS	B											
Intersection V/C	0.649											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.811

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	235	356	158	128	976	259	112	1409	440	219	1445	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	356	158	128	976	259	112	1409	440	219	1445	144
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	89	40	32	244	65	28	352	110	55	361	36
Total Analysis Volume [veh/h]	235	356	158	128	976	259	112	1409	440	219	1445	144
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.10	0.09	0.08	0.29	0.15	0.07	0.28	0.26	0.13	0.31	0.31
Intersection LOS	D											
Intersection V/C	0.811											

Intersection Level Of Service Report
Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	188	197	219	858	709	9	15	1350	266	490	1752	550
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	197	219	858	709	9	15	1350	266	490	1752	550
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	49	55	215	177	2	4	338	67	123	438	138
Total Analysis Volume [veh/h]	188	197	219	858	709	9	15	1350	266	490	1752	550
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.08	0.08	0.25	0.21	0.21	0.00	0.24	0.24	0.14	0.34	0.07
Intersection LOS	C											
Intersection V/C	0.766											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1090	0	690	0	1862	606	234	2149	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1090	0	690	0	1862	606	234	2149	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	273	0	173	0	466	152	59	537	0
Total Analysis Volume [veh/h]	0	0	0	1090	0	690	0	1862	606	234	2149	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.32	0.00	0.20	0.00	0.37	0.18	0.07	0.42	0.00
Intersection LOS	D											
Intersection V/C	0.805											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.880

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐						⇐⇐⇐			⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1080	0	500	0	0	0	0	2614	398	0	1347	518
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1080	0	500	0	0	0	0	2614	398	0	1347	518
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	0	125	0	0	0	0	654	100	0	337	130
Total Analysis Volume [veh/h]	1080	0	500	0	0	0	0	2614	398	0	1347	518
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.00	0.29	0.00	0.00	0.00	0.00	0.51	0.23	0.00	0.26	0.00
Intersection LOS	D											
Intersection V/C	0.880											

Intersection Level Of Service Report

Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	左/直/右			左/直/右			左/直/右			左/直/右		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	292	113	48	19	231	327	135	711	1252	342	833	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	292	113	48	19	231	327	135	711	1252	342	833	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	28	12	5	58	82	34	178	313	86	208	4
Total Analysis Volume [veh/h]	292	113	48	19	231	327	135	711	1252	342	833	17
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.07	0.00	0.01	0.14	0.19	0.08	0.21	0.28	0.10	0.17	0.17
Intersection LOS	C											
Intersection V/C	0.711											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.485

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	30	480	253	477	1086	60	49	78	12	333	77	236
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	480	253	477	1086	60	49	78	12	333	77	236
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	120	63	119	272	15	12	20	3	83	19	59
Total Analysis Volume [veh/h]	30	480	253	477	1086	60	49	78	12	333	77	236
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.14	0.14	0.14	0.22	0.22	0.03	0.05	0.05	0.10	0.05	0.00
Intersection LOS	A											
Intersection V/C	0.485											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.437

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	24	41	87	38	51	26	40	647	208	105	557	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	41	87	38	51	26	40	647	208	105	557	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	10	22	10	13	7	10	162	52	26	139	11
Total Analysis Volume [veh/h]	24	41	87	38	51	26	40	647	208	105	557	44
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.05	0.02	0.05	0.05	0.02	0.25	0.25	0.06	0.16	0.03
Intersection LOS	A											
Intersection V/C	0.437											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.612

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	78	177	101	792	932	214	104	580	48	83	582	289
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	177	101	792	932	214	104	580	48	83	582	289
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	44	25	198	233	54	26	145	12	21	146	72
Total Analysis Volume [veh/h]	78	177	101	792	932	214	104	580	48	83	582	289
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.05	0.06	0.23	0.34	0.34	0.03	0.17	0.03	0.02	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.612											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.696

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	242	6	325	57	30	8	2	1041	393	446	765	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	6	325	57	30	8	2	1041	393	446	765	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	2	81	14	8	2	1	260	98	112	191	3
Total Analysis Volume [veh/h]	242	6	325	57	30	8	2	1041	393	446	765	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.06	0.03	0.02	0.02	0.00	0.42	0.42	0.13	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.696											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	6	261	2	489	328	1006	17	10	796	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	6	261	2	489	328	1006	17	10	796	101
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	2	65	1	122	82	252	4	3	199	25
Total Analysis Volume [veh/h]	3	3	6	261	2	489	328	1006	17	10	796	101
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.08	0.09	0.19	0.30	0.30	0.01	0.23	0.06
Intersection LOS	A											
Intersection V/C	0.575											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	138	230	95	450	1307	263	46	673	533	64	451	220
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	230	95	450	1307	263	46	673	533	64	451	220
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	58	24	113	327	66	12	168	133	16	113	55
Total Analysis Volume [veh/h]	138	230	95	450	1307	263	46	673	533	64	451	220
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.13	0.31	0.31	0.03	0.20	0.31	0.04	0.13	0.13
Intersection LOS	C											
Intersection V/C	0.750											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.192

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	26	134	8	9	285	19	33	2	61	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	134	8	9	285	19	33	2	61	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	34	2	2	71	5	8	1	15	0	0	0
Total Analysis Volume [veh/h]	26	134	8	9	285	19	33	2	61	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.04	0.04	0.01	0.09	0.09	0.02	0.04	0.04	0.00	0.00	0.00
Intersection LOS	A											
Intersection V/C	0.192											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.144

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	13	168	68	21	145	8	1	0	3	32	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	168	68	21	145	8	1	0	3	32	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	42	17	5	36	2	0	0	1	8	0	1
Total Analysis Volume [veh/h]	13	168	68	21	145	8	1	0	3	32	0	5
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.07	0.07	0.01	0.05	0.05	0.00	0.00	0.00	0.01	0.00	0.01
Intersection LOS	A											
Intersection V/C	0.144											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.225

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	32	5	15	3	2	27	79	300	15	28	459	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	5	15	3	2	27	79	300	15	28	459	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	4	1	1	7	20	75	4	7	115	3
Total Analysis Volume [veh/h]	32	5	15	3	2	27	79	300	15	28	459	13
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.00	0.00	0.00	0.02	0.09	0.09	0.02	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.225											

Intersection Level Of Service Report
Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.901

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	312	721	282	244	1395	314	308	1636	372	312	1233	170
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	721	282	244	1395	314	308	1636	372	312	1233	170
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	180	71	61	349	79	77	409	93	78	308	43
Total Analysis Volume [veh/h]	312	721	282	244	1395	314	308	1636	372	312	1233	170
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.14	0.17	0.07	0.27	0.18	0.09	0.39	0.39	0.09	0.24	0.10
Intersection LOS	E											
Intersection V/C	0.901											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	132	164	170	96	198	285	1589	80	56	1492	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	132	164	170	96	198	285	1589	80	56	1492	172
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	33	41	43	24	50	71	397	20	14	373	43
Total Analysis Volume [veh/h]	66	132	164	170	96	198	285	1589	80	56	1492	172
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.10	0.10	0.03	0.12	0.17	0.33	0.33	0.03	0.29	0.10
Intersection LOS	C											
Intersection V/C	0.707											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	440	497	146	148	1029	210	165	1633	391	169	1678	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	497	146	148	1029	210	165	1633	391	169	1678	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	124	37	37	257	53	41	408	98	42	420	19
Total Analysis Volume [veh/h]	440	497	146	148	1029	210	165	1633	391	169	1678	77
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.10	0.09	0.04	0.30	0.12	0.05	0.32	0.23	0.05	0.33	0.05
Intersection LOS	D											
Intersection V/C	0.860											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	15	14	64	138	14	30	60	1817	9	33	1758	147
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	14	64	138	14	30	60	1817	9	33	1758	147
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	4	16	35	4	8	15	454	2	8	440	37
Total Analysis Volume [veh/h]	15	14	64	138	14	30	60	1817	9	33	1758	147
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.02	0.04	0.03	0.03	0.02	0.36	0.36	0.02	0.34	0.09
Intersection LOS	A											
Intersection V/C	0.491											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.780

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	136	154	398	184	397	33	33	1746	256	443	1801	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	154	398	184	397	33	33	1746	256	443	1801	180
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	39	100	46	99	8	8	437	64	111	450	45
Total Analysis Volume [veh/h]	136	154	398	184	397	33	33	1746	256	443	1801	180
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.23	0.07	0.13	0.13	0.01	0.29	0.29	0.13	0.35	0.04
Intersection LOS	C											
Intersection V/C	0.780											

Intersection Level Of Service Report
Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.685

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	792	0	508	0	1689	783	0	1939	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	792	0	508	0	1689	783	0	1939	205
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	198	0	127	0	422	196	0	485	51
Total Analysis Volume [veh/h]	0	0	0	792	0	508	0	1689	783	0	1939	205
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.23	0.00	0.25	0.00	0.33	0.00	0.00	0.38	0.00
Intersection LOS	B											
Intersection V/C	0.685											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1053	198	848	0	0	142	187	1790	532	0	1413	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1053	198	848	0	0	142	187	1790	532	0	1413	21
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	263	50	212	0	0	36	47	448	133	0	353	5
Total Analysis Volume [veh/h]	1053	198	848	0	0	142	187	1790	532	0	1413	21
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.31	0.31	0.00	0.00	0.00	0.11	0.35	0.00	0.00	0.21	0.21
Intersection LOS	C											
Intersection V/C	0.710											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	148	221	68	166	497	158	172	2278	164	123	1637	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	221	68	166	497	158	172	2278	164	123	1637	84
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	55	17	42	124	40	43	570	41	31	409	21
Total Analysis Volume [veh/h]	148	221	68	166	497	158	172	2278	164	123	1637	84
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.09	0.09	0.05	0.29	0.09	0.10	0.48	0.48	0.07	0.25	0.25
Intersection LOS	E											
Intersection V/C	0.937											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	176	12	145	25	28	14	13	2145	461	209	1467	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	12	145	25	28	14	13	2145	461	209	1467	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	3	36	6	7	4	3	536	115	52	367	8
Total Analysis Volume [veh/h]	176	12	145	25	28	14	13	2145	461	209	1467	31
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.09	0.01	0.02	0.02	0.01	0.42	0.27	0.12	0.29	0.29
Intersection LOS	C											
Intersection V/C	0.704											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.747

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TLO			TLO			TLO			TLO		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	176	252	85	437	900	181	168	1536	298	71	1097	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	252	85	437	900	181	168	1536	298	71	1097	88
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	63	21	109	225	45	42	384	75	18	274	22
Total Analysis Volume [veh/h]	176	252	85	437	900	181	168	1536	298	71	1097	88
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.10	0.10	0.13	0.26	0.11	0.05	0.36	0.36	0.02	0.23	0.23
Intersection LOS	C											
Intersection V/C	0.747											

Intersection Level Of Service Report

Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	106	231	149	134	473	27	69	757	186	332	839	96
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	231	149	134	473	27	69	757	186	332	839	96
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	58	37	34	118	7	17	189	47	83	210	24
Total Analysis Volume [veh/h]	106	231	149	134	473	27	69	757	186	332	839	96
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.11	0.11	0.08	0.15	0.15	0.04	0.28	0.28	0.20	0.28	0.28
Intersection LOS	C											
Intersection V/C	0.732											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	158	551	145	70	1028	235	215	674	179	182	877	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	158	551	145	70	1028	235	215	674	179	182	877	74
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	138	36	18	257	59	54	169	45	46	219	19
Total Analysis Volume [veh/h]	158	551	145	70	1028	235	215	674	179	182	877	74
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.20	0.20	0.04	0.25	0.25	0.06	0.25	0.25	0.11	0.19	0.19
Intersection LOS	C											
Intersection V/C	0.702											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	119	437	140	104	189	155	100	1461	71	84	1546	198
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	437	140	104	189	155	100	1461	71	84	1546	198
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	109	35	26	47	39	25	365	18	21	387	50
Total Analysis Volume [veh/h]	119	437	140	104	189	155	100	1461	71	84	1546	198
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.17	0.17	0.06	0.10	0.10	0.06	0.30	0.30	0.05	0.34	0.34
Intersection LOS	B											
Intersection V/C	0.682											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.765

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	456	761	195	84	321	115	164	1543	386	236	1438	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	456	761	195	84	321	115	164	1543	386	236	1438	93
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	190	49	21	80	29	41	386	97	59	360	23
Total Analysis Volume [veh/h]	456	761	195	84	321	115	164	1543	386	236	1438	93
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.22	0.11	0.05	0.09	0.07	0.10	0.30	0.23	0.14	0.30	0.30
Intersection LOS	C											
Intersection V/C	0.765											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	350	597	316	562	383	16	39	1465	287	411	1211	732
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	350	597	316	562	383	16	39	1465	287	411	1211	732
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	149	79	141	96	4	10	366	72	103	303	183
Total Analysis Volume [veh/h]	350	597	316	562	383	16	39	1465	287	411	1211	732
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.18	0.18	0.17	0.12	0.12	0.01	0.26	0.26	0.12	0.24	0.27
Intersection LOS	C											
Intersection V/C	0.773											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				⇐⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	485	0	841	0	1414	848	249	1855	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	485	0	841	0	1414	848	249	1855	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	121	0	210	0	354	212	62	464	0
Total Analysis Volume [veh/h]	0	0	0	485	0	841	0	1414	848	249	1855	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.14	0.00	0.25	0.00	0.28	0.25	0.07	0.36	0.00
Intersection LOS	B											
Intersection V/C	0.661											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	709	0	310	0	0	0	0	1541	567	0	1229	541
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	709	0	310	0	0	0	0	1541	567	0	1229	541
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	177	0	78	0	0	0	0	385	142	0	307	135
Total Analysis Volume [veh/h]	709	0	310	0	0	0	0	1541	567	0	1229	541
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.00	0.18	0.00	0.00	0.00	0.00	0.31	0.31	0.00	0.24	0.00
Intersection LOS	A											
Intersection V/C	0.569											

Intersection Level Of Service Report

Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	734	297	288	4	100	116	183	942	470	108	403	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	734	297	288	4	100	116	183	942	470	108	403	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	74	72	1	25	29	46	236	118	27	101	7
Total Analysis Volume [veh/h]	734	297	288	4	100	116	183	942	470	108	403	27
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.17	0.14	0.00	0.06	0.07	0.11	0.28	0.00	0.03	0.08	0.08
Intersection LOS	B											
Intersection V/C	0.643											

Intersection Level Of Service Report
Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.671

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	77	848	373	410	693	58	68	97	31	399	154	581
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	848	373	410	693	58	68	97	31	399	154	581
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	212	93	103	173	15	17	24	8	100	39	145
Total Analysis Volume [veh/h]	77	848	373	410	693	58	68	97	31	399	154	581
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.24	0.24	0.12	0.15	0.15	0.04	0.08	0.08	0.12	0.09	0.22
Intersection LOS	B											
Intersection V/C	0.671											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.578

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	129	57	170	50	47	109	79	703	97	194	1066	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	57	170	50	47	109	79	703	97	194	1066	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	14	43	13	12	27	20	176	24	49	267	10
Total Analysis Volume [veh/h]	129	57	170	50	47	109	79	703	97	194	1066	40
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.03	0.10	0.03	0.09	0.09	0.05	0.24	0.24	0.11	0.31	0.02
Intersection LOS	A											
Intersection V/C	0.578											

Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	500	160	331	423	310	269	773	159	145	995	654
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	500	160	331	423	310	269	773	159	145	995	654
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	125	40	83	106	78	67	193	40	36	249	164
Total Analysis Volume [veh/h]	136	500	160	331	423	310	269	773	159	145	995	654
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.15	0.09	0.10	0.22	0.22	0.08	0.23	0.09	0.04	0.29	0.38
Intersection LOS	C											
Intersection V/C	0.769											

Intersection Level Of Service Report
Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	522	32	427	10	20	6	13	863	282	313	1255	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	522	32	427	10	20	6	13	863	282	313	1255	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	131	8	107	3	5	2	3	216	71	78	314	4
Total Analysis Volume [veh/h]	522	32	427	10	20	6	13	863	282	313	1255	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.02	0.16	0.01	0.02	0.02	0.01	0.34	0.34	0.09	0.37	0.37
Intersection LOS	B											
Intersection V/C	0.648											

Intersection Level Of Service Report
Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.674

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	98	3	292	286	975	11	5	1328	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	98	3	292	286	975	11	5	1328	137
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	3	25	1	73	72	244	3	1	332	34
Total Analysis Volume [veh/h]	12	2	10	98	3	292	286	975	11	5	1328	137
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.06	0.00	0.00	0.17	0.29	0.29	0.00	0.39	0.08
Intersection LOS	B											
Intersection V/C	0.674											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	612	958	124	213	391	121	310	742	295	78	702	265
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	612	958	124	213	391	121	310	742	295	78	702	265
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	153	240	31	53	98	30	78	186	74	20	176	66
Total Analysis Volume [veh/h]	612	958	124	213	391	121	310	742	295	78	702	265
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.21	0.21	0.06	0.10	0.10	0.18	0.22	0.17	0.05	0.21	0.16
Intersection LOS	C											
Intersection V/C	0.719											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.249

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	47	319	42	28	254	28	62	4	51	75	4	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	319	42	28	254	28	62	4	51	75	4	38
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	80	11	7	64	7	16	1	13	19	1	10
Total Analysis Volume [veh/h]	47	319	42	28	254	28	62	4	51	75	4	38
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.11	0.11	0.02	0.08	0.08	0.04	0.03	0.03	0.04	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.249											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.367

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	323	319	37	356	20	17	4	11	271	4	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	323	319	37	356	20	17	4	11	271	4	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	81	80	9	89	5	4	1	3	68	1	12
Total Analysis Volume [veh/h]	15	323	319	37	356	20	17	4	11	271	4	46
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.19	0.19	0.02	0.11	0.11	0.01	0.01	0.01	0.08	0.13	0.13
Intersection LOS	A											
Intersection V/C	0.367											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.480

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	142	20	66	42	12	379	489	645	23	98	516	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	20	66	42	12	379	489	645	23	98	516	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	5	17	11	3	95	122	161	6	25	129	7
Total Analysis Volume [veh/h]	142	20	66	42	12	379	489	645	23	98	516	27
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.04	0.02	0.01	0.08	0.14	0.20	0.20	0.06	0.16	0.16
Intersection LOS	A											
Intersection V/C	0.480											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.874

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	439	1181	231	268	969	421	311	1281	295	471	1685	309
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	439	1181	231	268	969	421	311	1281	295	471	1685	309
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	295	58	67	242	105	78	320	74	118	421	77
Total Analysis Volume [veh/h]	439	1181	231	268	969	421	311	1281	295	471	1685	309
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.23	0.14	0.08	0.19	0.25	0.09	0.31	0.31	0.14	0.33	0.18
Intersection LOS	D											
Intersection V/C	0.874											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.646

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	36	48	89	174	126	219	129	1585	44	132	1865	265
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	48	89	174	126	219	129	1585	44	132	1865	265
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	12	22	44	32	55	32	396	11	33	466	66
Total Analysis Volume [veh/h]	36	48	89	174	126	219	129	1585	44	132	1865	265
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.05	0.10	0.04	0.13	0.08	0.32	0.32	0.08	0.37	0.16
Intersection LOS	B											
Intersection V/C	0.646											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	561	861	250	232	685	213	247	1775	420	236	1820	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	861	250	232	685	213	247	1775	420	236	1820	152
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	215	63	58	171	53	62	444	105	59	455	38
Total Analysis Volume [veh/h]	561	861	250	232	685	213	247	1775	420	236	1820	152
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.17	0.15	0.07	0.20	0.13	0.07	0.35	0.25	0.07	0.36	0.09
Intersection LOS	D											
Intersection V/C	0.846											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	44	34	61	323	25	214	252	1745	28	57	2011	332
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	34	61	323	25	214	252	1745	28	57	2011	332
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	9	15	81	6	54	63	436	7	14	503	83
Total Analysis Volume [veh/h]	44	34	61	323	25	214	252	1745	28	57	2011	332
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.03	0.03	0.10	0.14	0.14	0.07	0.35	0.35	0.03	0.39	0.20
Intersection LOS	B											
Intersection V/C	0.695											

Intersection Level Of Service Report
Intersection 20: State College Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	359	586	355	497	306	97	107	1907	103	431	1905	582
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	586	355	497	306	97	107	1907	103	431	1905	582
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	147	89	124	77	24	27	477	26	108	476	146
Total Analysis Volume [veh/h]	359	586	355	497	306	97	107	1907	103	431	1905	582
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.17	0.21	0.19	0.12	0.12	0.03	0.30	0.30	0.13	0.37	0.15
Intersection LOS	D											
Intersection V/C	0.872											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.764

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	682	0	537	0	1728	1050	0	2421	446
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	682	0	537	0	1728	1050	0	2421	446
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	171	0	134	0	432	263	0	605	112
Total Analysis Volume [veh/h]	0	0	0	682	0	537	0	1728	1050	0	2421	446
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.20	0.00	0.24	0.00	0.34	0.00	0.00	0.47	0.00
Intersection LOS	C											
Intersection V/C	0.764											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1078	81	453	0	0	295	216	1824	425	0	2480	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1078	81	453	0	0	295	216	1824	425	0	2480	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	20	113	0	0	74	54	456	106	0	620	15
Total Analysis Volume [veh/h]	1078	81	453	0	0	295	216	1824	425	0	2480	60
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.24	0.24	0.00	0.00	0.00	0.13	0.36	0.00	0.00	0.37	0.37
Intersection LOS	C											
Intersection V/C	0.788											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	260	310	112	320	361	221	254	1748	141	184	1839	183
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	260	310	112	320	361	221	254	1748	141	184	1839	183
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	78	28	80	90	55	64	437	35	46	460	46
Total Analysis Volume [veh/h]	260	310	112	320	361	221	254	1748	141	184	1839	183
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.12	0.12	0.09	0.21	0.13	0.15	0.37	0.37	0.11	0.30	0.30
Intersection LOS	D											
Intersection V/C	0.817											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.731

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	293	47	285	25	23	14	19	1817	279	230	1975	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	47	285	25	23	14	19	1817	279	230	1975	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	12	71	6	6	4	5	454	70	58	494	14
Total Analysis Volume [veh/h]	293	47	285	25	23	14	19	1817	279	230	1975	57
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.10	0.17	0.01	0.02	0.02	0.01	0.36	0.16	0.14	0.40	0.40
Intersection LOS	C											
Intersection V/C	0.731											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	367	738	111	266	484	114	230	1341	213	203	1641	399
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	367	738	111	266	484	114	230	1341	213	203	1641	399
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	92	185	28	67	121	29	58	335	53	51	410	100
Total Analysis Volume [veh/h]	367	738	111	266	484	114	230	1341	213	203	1641	399
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.25	0.25	0.08	0.14	0.07	0.07	0.30	0.30	0.06	0.40	0.40
Intersection LOS	D											
Intersection V/C	0.846											

Intersection Level Of Service Report
Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	229	336	347	173	416	51	78	961	197	288	943	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	229	336	347	173	416	51	78	961	197	288	943	98
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	84	87	43	104	13	20	240	49	72	236	25
Total Analysis Volume [veh/h]	229	336	347	173	416	51	78	961	197	288	943	98
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.20	0.20	0.10	0.14	0.14	0.05	0.34	0.34	0.17	0.31	0.31
Intersection LOS	D											
Intersection V/C	0.863											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	240	831	124	76	736	333	209	952	244	100	778	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	831	124	76	736	333	209	952	244	100	778	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	208	31	19	184	83	52	238	61	25	195	17
Total Analysis Volume [veh/h]	240	831	124	76	736	333	209	952	244	100	778	67
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.28	0.28	0.04	0.21	0.21	0.06	0.35	0.35	0.06	0.17	0.17
Intersection LOS	C											
Intersection V/C	0.786											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.477

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	69	133	55	103	142	86	76	1256	50	47	1268	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	133	55	103	142	86	76	1256	50	47	1268	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	33	14	26	36	22	19	314	13	12	317	23
Total Analysis Volume [veh/h]	69	133	55	103	142	86	76	1256	50	47	1268	92
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.06	0.07	0.07	0.04	0.26	0.26	0.03	0.27	0.27
Intersection LOS	A											
Intersection V/C	0.477											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	306	394	173	163	711	175	68	1197	271	242	1057	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	306	394	173	163	711	175	68	1197	271	242	1057	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	99	43	41	178	44	17	299	68	61	264	14
Total Analysis Volume [veh/h]	306	394	173	163	711	175	68	1197	271	242	1057	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.12	0.10	0.10	0.21	0.10	0.04	0.23	0.16	0.14	0.22	0.22
Intersection LOS	C											
Intersection V/C	0.726											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	167	256	415	510	361	6	19	1161	301	757	1598	728
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	167	256	415	510	361	6	19	1161	301	757	1598	728
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	64	104	128	90	2	5	290	75	189	400	182
Total Analysis Volume [veh/h]	167	256	415	510	361	6	19	1161	301	757	1598	728
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.13	0.13	0.15	0.11	0.11	0.01	0.22	0.22	0.22	0.31	0.28
Intersection LOS	C											
Intersection V/C	0.769											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	844	0	1185	0	1491	580	185	1923	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	844	0	1185	0	1491	580	185	1923	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	211	0	296	0	373	145	46	481	0
Total Analysis Volume [veh/h]	0	0	0	844	0	1185	0	1491	580	185	1923	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.25	0.00	0.35	0.00	0.29	0.17	0.05	0.38	0.00
Intersection LOS	C											
Intersection V/C	0.776											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1169	0	477	0	0	0	0	1631	705	0	960	438
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1169	0	477	0	0	0	0	1631	705	0	960	438
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	292	0	119	0	0	0	0	408	176	0	240	110
Total Analysis Volume [veh/h]	1169	0	477	0	0	0	0	1631	705	0	960	438
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.00	0.28	0.00	0.00	0.00	0.00	0.34	0.34	0.00	0.19	0.00
Intersection LOS	C											
Intersection V/C	0.737											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	378	147	123	1	148	213	156	853	656	130	732	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	147	123	1	148	213	156	853	656	130	732	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	37	31	0	37	53	39	213	164	33	183	2
Total Analysis Volume [veh/h]	378	147	123	1	148	213	156	853	656	130	732	7
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.09	0.03	0.00	0.09	0.13	0.09	0.25	0.08	0.04	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.576											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	99	474	307	363	924	101	87	125	39	345	139	325
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	474	307	363	924	101	87	125	39	345	139	325
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	119	77	91	231	25	22	31	10	86	35	81
Total Analysis Volume [veh/h]	99	474	307	363	924	101	87	125	39	345	139	325
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.15	0.15	0.11	0.20	0.20	0.05	0.10	0.10	0.10	0.08	0.08
Intersection LOS	A											
Intersection V/C	0.508											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.508

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	96	76	176	53	36	79	88	660	124	157	811	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	76	176	53	36	79	88	660	124	157	811	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	19	44	13	9	20	22	165	31	39	203	7
Total Analysis Volume [veh/h]	96	76	176	53	36	79	88	660	124	157	811	27
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.04	0.10	0.03	0.07	0.07	0.05	0.23	0.23	0.09	0.24	0.02
Intersection LOS	A											
Intersection V/C	0.508											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.737

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	121	411	179	277	706	511	300	722	167	172	698	240
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	411	179	277	706	511	300	722	167	172	698	240
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	103	45	69	177	128	75	181	42	43	175	60
Total Analysis Volume [veh/h]	121	411	179	277	706	511	300	722	167	172	698	240
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.12	0.11	0.08	0.36	0.36	0.09	0.21	0.10	0.05	0.21	0.14
Intersection LOS	C											
Intersection V/C	0.737											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	359	19	222	12	21	13	8	724	330	181	719	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	19	222	12	21	13	8	724	330	181	719	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	5	56	3	5	3	2	181	83	45	180	3
Total Analysis Volume [veh/h]	359	19	222	12	21	13	8	724	330	181	719	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.01	0.08	0.01	0.02	0.02	0.00	0.31	0.31	0.05	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.539											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.405

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	94	4	207	172	828	5	11	656	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	94	4	207	172	828	5	11	656	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	2	24	1	52	43	207	1	3	164	19
Total Analysis Volume [veh/h]	10	2	8	94	4	207	172	828	5	11	656	77
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.06	0.00	0.02	0.10	0.25	0.25	0.01	0.19	0.05
Intersection LOS	A											
Intersection V/C	0.405											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.492

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	240	426	63	164	662	129	171	470	309	58	387	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	426	63	164	662	129	171	470	309	58	387	116
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	107	16	41	166	32	43	118	77	15	97	29
Total Analysis Volume [veh/h]	240	426	63	164	662	129	171	470	309	58	387	116
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.10	0.10	0.05	0.16	0.16	0.10	0.14	0.18	0.03	0.11	0.07
Intersection LOS	A											
Intersection V/C	0.492											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.299

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	22	284	114	71	270	21	35	11	60	82	4	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	284	114	71	270	21	35	11	60	82	4	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	71	29	18	68	5	9	3	15	21	1	15
Total Analysis Volume [veh/h]	22	284	114	71	270	21	35	11	60	82	4	59
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.12	0.12	0.04	0.09	0.09	0.02	0.04	0.04	0.05	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.299											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.463

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	23	334	426	43	300	22	25	18	27	392	8	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	334	426	43	300	22	25	18	27	392	8	73
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	84	107	11	75	6	6	5	7	98	2	18
Total Analysis Volume [veh/h]	23	334	426	43	300	22	25	18	27	392	8	73
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.22	0.22	0.03	0.09	0.09	0.01	0.03	0.02	0.12	0.19	0.19
Intersection LOS	A											
Intersection V/C	0.463											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	173	25	93	62	20	525	671	500	29	88	740	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	25	93	62	20	525	671	500	29	88	740	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	6	23	16	5	131	168	125	7	22	185	9
Total Analysis Volume [veh/h]	173	25	93	62	20	525	671	500	29	88	740	36
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.05	0.04	0.01	0.11	0.20	0.16	0.16	0.05	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.645											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.751

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	354	814	217	263	840	328	370	1199	280	387	1362	248
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	354	814	217	263	840	328	370	1199	280	387	1362	248
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	204	54	66	210	82	93	300	70	97	341	62
Total Analysis Volume [veh/h]	354	814	217	263	840	328	370	1199	280	387	1362	248
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.16	0.13	0.08	0.16	0.19	0.11	0.29	0.29	0.11	0.27	0.15
Intersection LOS	C											
Intersection V/C	0.751											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.521

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	27	32	106	131	51	123	68	1340	42	98	1485	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	32	106	131	51	123	68	1340	42	98	1485	156
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	8	27	33	13	31	17	335	11	25	371	39
Total Analysis Volume [veh/h]	27	32	106	131	51	123	68	1340	42	98	1485	156
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.06	0.08	0.02	0.07	0.04	0.27	0.27	0.06	0.29	0.09
Intersection LOS	A											
Intersection V/C	0.521											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	441	544	268	296	906	227	243	1462	266	352	1415	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	441	544	268	296	906	227	243	1462	266	352	1415	164
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	136	67	74	227	57	61	366	67	88	354	41
Total Analysis Volume [veh/h]	441	544	268	296	906	227	243	1462	266	352	1415	164
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.11	0.16	0.09	0.27	0.13	0.07	0.29	0.16	0.10	0.28	0.10
Intersection LOS	D											
Intersection V/C	0.836											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	69	39	171	410	78	293	316	1542	33	115	1744	464
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	39	171	410	78	293	316	1542	33	115	1744	464
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	10	43	103	20	73	79	386	8	29	436	116
Total Analysis Volume [veh/h]	69	39	171	410	78	293	316	1542	33	115	1744	464
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.12	0.22	0.22	0.09	0.31	0.31	0.07	0.34	0.27
Intersection LOS	D											
Intersection V/C	0.804											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.103

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	285	548	579	683	422	180	137	1603	192	630	1887	1054
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	285	548	579	683	422	180	137	1603	192	630	1887	1054
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	137	145	171	106	45	34	401	48	158	472	264
Total Analysis Volume [veh/h]	285	548	579	683	422	180	137	1603	192	630	1887	1054
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.16	0.34	0.26	0.18	0.18	0.04	0.26	0.26	0.19	0.37	0.36
Intersection LOS	F											
Intersection V/C	1.103											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↲		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	563	0	739	0	1980	1185	0	2739	409
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	563	0	739	0	1980	1185	0	2739	409
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	141	0	185	0	495	296	0	685	102
Total Analysis Volume [veh/h]	0	0	0	563	0	739	0	1980	1185	0	2739	409
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.00	0.26	0.00	0.39	0.00	0.00	0.54	0.00
Intersection LOS	D											
Intersection V/C	0.842											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1485	176	601	0	0	271	286	1800	653	0	1976	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1485	176	601	0	0	271	286	1800	653	0	1976	45
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	371	44	150	0	0	68	72	450	163	0	494	11
Total Analysis Volume [veh/h]	1485	176	601	0	0	271	286	1800	653	0	1976	45
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.29	0.33	0.33	0.00	0.00	0.00	0.17	0.35	0.00	0.00	0.30	0.30
Intersection LOS	D											
Intersection V/C	0.848											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	292	223	146	355	254	179	217	1655	247	159	1626	226
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	292	223	146	355	254	179	217	1655	247	159	1626	226
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	56	37	89	64	45	54	414	62	40	407	57
Total Analysis Volume [veh/h]	292	223	146	355	254	179	217	1655	247	159	1626	226
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.11	0.11	0.10	0.15	0.11	0.13	0.37	0.37	0.09	0.27	0.27
Intersection LOS	C											
Intersection V/C	0.752											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.706

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	195	17	254	26	10	12	24	1888	277	206	1902	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	17	254	26	10	12	24	1888	277	206	1902	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	4	64	7	3	3	6	472	69	52	476	12
Total Analysis Volume [veh/h]	195	17	254	26	10	12	24	1888	277	206	1902	46
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.06	0.15	0.02	0.01	0.01	0.01	0.37	0.16	0.12	0.38	0.38
Intersection LOS	C											
Intersection V/C	0.706											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.681

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	311	378	83	281	673	134	183	1124	287	139	1330	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	378	83	281	673	134	183	1124	287	139	1330	136
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	95	21	70	168	34	46	281	72	35	333	34
Total Analysis Volume [veh/h]	311	378	83	281	673	134	183	1124	287	139	1330	136
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.14	0.14	0.08	0.20	0.08	0.05	0.28	0.28	0.04	0.29	0.29
Intersection LOS	B											
Intersection V/C	0.681											

Intersection Level Of Service Report

Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	186	284	228	119	354	50	72	660	263	187	486	69
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	284	228	119	354	50	72	660	263	187	486	69
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	71	57	30	89	13	18	165	66	47	122	17
Total Analysis Volume [veh/h]	186	284	228	119	354	50	72	660	263	187	486	69
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.15	0.15	0.07	0.12	0.12	0.04	0.27	0.27	0.11	0.16	0.16
Intersection LOS	B											
Intersection V/C	0.660											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.588

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	121	589	65	63	866	175	185	640	186	94	449	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	589	65	63	866	175	185	640	186	94	449	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	147	16	16	217	44	46	160	47	24	112	14
Total Analysis Volume [veh/h]	121	589	65	63	866	175	185	640	186	94	449	57
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.19	0.19	0.04	0.20	0.20	0.05	0.24	0.24	0.06	0.10	0.10
Intersection LOS	A											
Intersection V/C	0.588											

APPENDIX C-VIII

YEAR 2040 PLUS PROJECT
TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.650

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	56	193	141	214	462	79	87	1326	142	150	1403	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	193	141	214	462	79	87	1326	142	150	1403	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	48	35	54	116	20	22	332	36	38	351	17
Total Analysis Volume [veh/h]	56	193	141	214	462	79	87	1326	142	150	1403	67
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.10	0.10	0.13	0.16	0.16	0.05	0.29	0.29	0.09	0.29	0.29
Intersection LOS	B											
Intersection V/C	0.650											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.814

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	237	361	158	128	982	259	112	1409	441	219	1445	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	361	158	128	982	259	112	1409	441	219	1445	144
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	90	40	32	246	65	28	352	110	55	361	36
Total Analysis Volume [veh/h]	237	361	158	128	982	259	112	1409	441	219	1445	144
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.11	0.09	0.08	0.29	0.15	0.07	0.28	0.26	0.13	0.31	0.31
Intersection LOS	D											
Intersection V/C	0.814											

Intersection Level Of Service Report
Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	188	200	225	858	713	9	15	1350	266	498	1752	550
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	200	225	858	713	9	15	1350	266	498	1752	550
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	50	56	215	178	2	4	338	67	125	438	138
Total Analysis Volume [veh/h]	188	200	225	858	713	9	15	1350	266	498	1752	550
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.08	0.08	0.25	0.21	0.21	0.00	0.24	0.24	0.15	0.34	0.07
Intersection LOS	C											
Intersection V/C	0.770											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.806

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1090	0	695	0	1868	606	234	2152	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1090	0	695	0	1868	606	234	2152	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	273	0	174	0	467	152	59	538	0
Total Analysis Volume [veh/h]	0	0	0	1090	0	695	0	1868	606	234	2152	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.32	0.00	0.20	0.00	0.37	0.18	0.07	0.42	0.00
Intersection LOS	D											
Intersection V/C	0.806											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.881

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1080	0	500	0	0	0	0	2616	402	0	1350	518
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1080	0	500	0	0	0	0	2616	402	0	1350	518
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	0	125	0	0	0	0	654	101	0	338	130
Total Analysis Volume [veh/h]	1080	0	500	0	0	0	0	2616	402	0	1350	518
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.32	0.00	0.29	0.00	0.00	0.00	0.00	0.51	0.24	0.00	0.26	0.00
Intersection LOS	D											
Intersection V/C	0.881											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:
Analysis Method:
Analysis Period:

Signalized
ICU 1
15 minutes

Delay (sec / veh): -
Level Of Service: C
Volume to Capacity (v/c): 0.712

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	292	113	51	19	231	327	135	711	1252	346	833	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	292	113	51	19	231	327	135	711	1252	346	833	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	28	13	5	58	82	34	178	313	87	208	4
Total Analysis Volume [veh/h]	292	113	51	19	231	327	135	711	1252	346	833	17
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.07	0.00	0.01	0.14	0.19	0.08	0.21	0.28	0.10	0.17	0.17
Intersection LOS	C											
Intersection V/C	0.712											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.488

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	30	480	253	485	1086	60	49	79	12	333	79	242
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	480	253	485	1086	60	49	79	12	333	79	242
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	120	63	121	272	15	12	20	3	83	20	61
Total Analysis Volume [veh/h]	30	480	253	485	1086	60	49	79	12	333	79	242
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.14	0.14	0.14	0.22	0.22	0.03	0.05	0.05	0.10	0.05	0.00
Intersection LOS	A											
Intersection V/C	0.488											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.441

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	34	43	89	38	52	26	40	647	218	106	557	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	43	89	38	52	26	40	647	218	106	557	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	11	22	10	13	7	10	162	55	27	139	11
Total Analysis Volume [veh/h]	34	43	89	38	52	26	40	647	218	106	557	44
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.05	0.02	0.05	0.05	0.02	0.25	0.25	0.06	0.16	0.03
Intersection LOS	A											
Intersection V/C	0.441											

Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.616

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	78	187	104	792	944	214	104	582	48	87	583	289
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	187	104	792	944	214	104	582	48	87	583	289
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	47	26	198	236	54	26	146	12	22	146	72
Total Analysis Volume [veh/h]	78	187	104	792	944	214	104	582	48	87	583	289
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.06	0.06	0.23	0.34	0.34	0.03	0.17	0.03	0.03	0.17	0.17
Intersection LOS	B											
Intersection V/C	0.616											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	242	6	325	57	30	8	2	1047	393	446	770	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	6	325	57	30	8	2	1047	393	446	770	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	2	81	14	8	2	1	262	98	112	193	3
Total Analysis Volume [veh/h]	242	6	325	57	30	8	2	1047	393	446	770	10
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.00	0.06	0.03	0.02	0.02	0.00	0.42	0.42	0.13	0.23	0.23
Intersection LOS	B											
Intersection V/C	0.698											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.577

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	6	261	2	489	328	1012	17	10	801	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	6	261	2	489	328	1012	17	10	801	101
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	2	65	1	122	82	253	4	3	200	25
Total Analysis Volume [veh/h]	3	3	6	261	2	489	328	1012	17	10	801	101
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.08	0.08	0.09	0.19	0.30	0.30	0.01	0.24	0.06
Intersection LOS	A											
Intersection V/C	0.577											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	138	230	95	450	1307	267	49	675	533	64	452	220
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	230	95	450	1307	267	49	675	533	64	452	220
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	58	24	113	327	67	12	169	133	16	113	55
Total Analysis Volume [veh/h]	138	230	95	450	1307	267	49	675	533	64	452	220
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.13	0.31	0.31	0.03	0.20	0.31	0.04	0.13	0.13
Intersection LOS	C											
Intersection V/C	0.750											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.195

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	26	148	8	9	296	19	33	2	61	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	148	8	9	296	19	33	2	61	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	37	2	2	74	5	8	1	15	0	0	0
Total Analysis Volume [veh/h]	26	148	8	9	296	19	33	2	61	0	0	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.05	0.05	0.01	0.09	0.09	0.02	0.04	0.04	0.00	0.00	0.00
Intersection LOS	A											
Intersection V/C	0.195											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.196

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	13	168	129	32	145	8	1	0	3	110	0	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	168	129	32	145	8	1	0	3	110	0	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	42	32	8	36	2	0	0	1	28	0	5
Total Analysis Volume [veh/h]	13	168	129	32	145	8	1	0	3	110	0	19
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.09	0.09	0.02	0.05	0.05	0.00	0.00	0.00	0.03	0.00	0.05
Intersection LOS	A											
Intersection V/C	0.196											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:
Analysis Method:
Analysis Period:

Signalized
ICU 1
15 minutes

Delay (sec / veh): -
Level Of Service: A
Volume to Capacity (v/c): 0.259

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	32	5	15	16	2	71	156	300	15	28	459	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	5	15	16	2	71	156	300	15	28	459	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	4	4	1	18	39	75	4	7	115	7
Total Analysis Volume [veh/h]	32	5	15	16	2	71	156	300	15	28	459	28
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.01	0.01	0.01	0.00	0.00	0.05	0.09	0.09	0.02	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.259											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.904

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	180	71	62	349	79	77	413	93	78	311	44
Total Analysis Volume [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.14	0.17	0.07	0.27	0.18	0.09	0.40	0.40	0.09	0.24	0.10
Intersection LOS	E											
Intersection V/C	0.904											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	132	168	175	96	198	285	1608	80	59	1509	175
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	132	168	175	96	198	285	1608	80	59	1509	175
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	33	42	44	24	50	71	402	20	15	377	44
Total Analysis Volume [veh/h]	66	132	168	175	96	198	285	1608	80	59	1509	175
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.08	0.10	0.10	0.03	0.12	0.17	0.33	0.33	0.03	0.30	0.10
Intersection LOS	C											
Intersection V/C	0.715											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.864

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	124	41	37	257	53	41	416	98	46	425	19
Total Analysis Volume [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.10	0.10	0.04	0.30	0.12	0.05	0.33	0.23	0.05	0.33	0.05
Intersection LOS	D											
Intersection V/C	0.864											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.503

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	4	16	45	4	17	27	454	2	8	440	40
Total Analysis Volume [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.02	0.02	0.05	0.05	0.05	0.03	0.36	0.36	0.02	0.34	0.09
Intersection LOS	A											
Intersection V/C	0.503											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.797

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	44	100	53	103	8	8	445	66	111	453	60
Total Analysis Volume [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.23	0.08	0.13	0.13	0.01	0.30	0.30	0.13	0.36	0.06
Intersection LOS	C											
Intersection V/C	0.797											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.698

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↱			↱			↱		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	792	0	517	0	1729	805	0	1998	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	792	0	517	0	1729	805	0	1998	205
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	198	0	129	0	432	201	0	500	51
Total Analysis Volume [veh/h]	0	0	0	792	0	517	0	1729	805	0	1998	205
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.23	0.00	0.26	0.00	0.34	0.00	0.00	0.39	0.00
Intersection LOS	B											
Intersection V/C	0.698											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	50	212	0	0	36	47	455	135	0	362	5
Total Analysis Volume [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.31	0.31	0.00	0.00	0.00	0.11	0.36	0.00	0.00	0.22	0.22
Intersection LOS	C											
Intersection V/C	0.719											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.944

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	55	17	42	124	40	43	576	42	31	416	21
Total Analysis Volume [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.09	0.09	0.05	0.29	0.09	0.10	0.48	0.48	0.07	0.26	0.26
Intersection LOS	E											
Intersection V/C	0.944											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.707

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	187	12	145	25	28	14	13	2161	470	209	1482	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	12	145	25	28	14	13	2161	470	209	1482	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	3	36	6	7	4	3	540	118	52	371	8
Total Analysis Volume [veh/h]	187	12	145	25	28	14	13	2161	470	209	1482	31
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.06	0.09	0.01	0.02	0.02	0.01	0.42	0.28	0.12	0.30	0.30
Intersection LOS	C											
Intersection V/C	0.707											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	176	252	85	437	900	181	168	1549	298	71	1111	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	252	85	437	900	181	168	1549	298	71	1111	88
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	63	21	109	225	45	42	387	75	18	278	22
Total Analysis Volume [veh/h]	176	252	85	437	900	181	168	1549	298	71	1111	88
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.10	0.10	0.13	0.26	0.11	0.05	0.36	0.36	0.02	0.24	0.24
Intersection LOS	C											
Intersection V/C	0.750											

Intersection Level Of Service Report

Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.733

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	106	236	149	137	477	27	69	757	186	332	839	100
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	106	236	149	137	477	27	69	757	186	332	839	100
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	59	37	34	119	7	17	189	47	83	210	25
Total Analysis Volume [veh/h]	106	236	149	137	477	27	69	757	186	332	839	100
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.11	0.11	0.08	0.15	0.15	0.04	0.28	0.28	0.20	0.28	0.28
Intersection LOS	C											
Intersection V/C	0.733											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	162	551	145	70	1028	235	215	674	182	182	877	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	162	551	145	70	1028	235	215	674	182	182	877	74
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	138	36	18	257	59	54	169	46	46	219	19
Total Analysis Volume [veh/h]	162	551	145	70	1028	235	215	674	182	182	877	74
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.20	0.20	0.04	0.25	0.25	0.06	0.25	0.25	0.11	0.19	0.19
Intersection LOS	C											
Intersection V/C	0.704											

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.683

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	121	440	140	104	195	155	100	1461	76	84	1546	198
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	440	140	104	195	155	100	1461	76	84	1546	198
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	110	35	26	49	39	25	365	19	21	387	50
Total Analysis Volume [veh/h]	121	440	140	104	195	155	100	1461	76	84	1546	198
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.17	0.17	0.06	0.10	0.10	0.06	0.30	0.30	0.05	0.34	0.34
Intersection LOS	B											
Intersection V/C	0.683											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	457	766	195	84	331	115	164	1543	388	236	1438	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	457	766	195	84	331	115	164	1543	388	236	1438	93
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	192	49	21	83	29	41	386	97	59	360	23
Total Analysis Volume [veh/h]	457	766	195	84	331	115	164	1543	388	236	1438	93
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.23	0.11	0.05	0.10	0.07	0.10	0.30	0.23	0.14	0.30	0.30
Intersection LOS	C											
Intersection V/C	0.766											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.779

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	350	600	323	562	389	16	39	1465	287	425	1211	732
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	350	600	323	562	389	16	39	1465	287	425	1211	732
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	150	81	141	97	4	10	366	72	106	303	183
Total Analysis Volume [veh/h]	350	600	323	562	389	16	39	1465	287	425	1211	732
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.18	0.18	0.17	0.12	0.12	0.01	0.26	0.26	0.13	0.24	0.27
Intersection LOS	C											
Intersection V/C	0.779											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.664

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				⇐⇐⇐⇐			⇐⇐			⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	485	0	849	0	1421	848	249	1860	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	485	0	849	0	1421	848	249	1860	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	121	0	212	0	355	212	62	465	0
Total Analysis Volume [veh/h]	0	0	0	485	0	849	0	1421	848	249	1860	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.14	0.00	0.25	0.00	0.28	0.25	0.07	0.36	0.00
Intersection LOS	B											
Intersection V/C	0.664											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.569

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	709	0	310	0	0	0	0	1543	571	0	1234	541
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	709	0	310	0	0	0	0	1543	571	0	1234	541
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	177	0	78	0	0	0	0	386	143	0	309	135
Total Analysis Volume [veh/h]	709	0	310	0	0	0	0	1543	571	0	1234	541
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.21	0.00	0.18	0.00	0.00	0.00	0.00	0.31	0.31	0.00	0.24	0.00
Intersection LOS	A											
Intersection V/C	0.569											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.645

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	734	297	291	4	100	116	183	942	470	114	403	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	734	297	291	4	100	116	183	942	470	114	403	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	74	73	1	25	29	46	236	118	29	101	7
Total Analysis Volume [veh/h]	734	297	291	4	100	116	183	942	470	114	403	27
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.17	0.14	0.00	0.06	0.07	0.11	0.28	0.00	0.03	0.08	0.08
Intersection LOS	B											
Intersection V/C	0.645											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	77	848	373	424	693	58	68	98	31	399	155	588
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	848	373	424	693	58	68	98	31	399	155	588
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	212	93	106	173	15	17	25	8	100	39	147
Total Analysis Volume [veh/h]	77	848	373	424	693	58	68	98	31	399	155	588
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.24	0.24	0.12	0.15	0.15	0.04	0.08	0.08	0.12	0.09	0.22
Intersection LOS	B											
Intersection V/C	0.675											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.584

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	138	58	171	50	48	109	79	703	114	195	1066	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	58	171	50	48	109	79	703	114	195	1066	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	15	43	13	12	27	20	176	29	49	267	10
Total Analysis Volume [veh/h]	138	58	171	50	48	109	79	703	114	195	1066	40
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.03	0.10	0.03	0.09	0.09	0.05	0.24	0.24	0.11	0.31	0.02
Intersection LOS	A											
Intersection V/C	0.584											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	510	163	331	443	310	269	774	159	151	996	654
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	510	163	331	443	310	269	774	159	151	996	654
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	128	41	83	111	78	67	194	40	38	249	164
Total Analysis Volume [veh/h]	136	510	163	331	443	310	269	774	159	151	996	654
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.15	0.10	0.10	0.22	0.22	0.08	0.23	0.09	0.04	0.29	0.38
Intersection LOS	C											
Intersection V/C	0.775											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	522	32	427	10	20	6	13	867	282	313	1263	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	522	32	427	10	20	6	13	867	282	313	1263	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	131	8	107	3	5	2	3	217	71	78	316	4
Total Analysis Volume [veh/h]	522	32	427	10	20	6	13	867	282	313	1263	16
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.15	0.02	0.16	0.01	0.02	0.02	0.01	0.34	0.34	0.09	0.38	0.38
Intersection LOS	B											
Intersection V/C	0.649											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.676

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	98	3	292	286	979	11	5	1336	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	98	3	292	286	979	11	5	1336	137
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	3	25	1	73	72	245	3	1	334	34
Total Analysis Volume [veh/h]	12	2	10	98	3	292	286	979	11	5	1336	137
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.01	0.06	0.00	0.00	0.17	0.29	0.29	0.00	0.39	0.08
Intersection LOS	B											
Intersection V/C	0.676											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.722

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	612	958	124	213	391	127	313	743	295	78	703	265
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	612	958	124	213	391	127	313	743	295	78	703	265
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	153	240	31	53	98	32	78	186	74	20	176	66
Total Analysis Volume [veh/h]	612	958	124	213	391	127	313	743	295	78	703	265
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.18	0.21	0.21	0.06	0.10	0.10	0.18	0.22	0.17	0.05	0.21	0.16
Intersection LOS	C											
Intersection V/C	0.722											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.252

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	47	330	42	28	273	28	62	4	51	75	4	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	330	42	28	273	28	62	4	51	75	4	38
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	83	11	7	68	7	16	1	13	19	1	10
Total Analysis Volume [veh/h]	47	330	42	28	273	28	62	4	51	75	4	38
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.11	0.11	0.02	0.09	0.09	0.04	0.03	0.03	0.04	0.02	0.02
Intersection LOS	A											
Intersection V/C	0.252											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.429

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	323	422	56	356	20	17	4	11	327	4	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	323	422	56	356	20	17	4	11	327	4	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	81	106	14	89	5	4	1	3	82	1	14
Total Analysis Volume [veh/h]	15	323	422	56	356	20	17	4	11	327	4	57
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.22	0.22	0.03	0.11	0.11	0.01	0.01	0.01	0.10	0.15	0.15
Intersection LOS	A											
Intersection V/C	0.429											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.525

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	142	20	66	55	12	443	623	645	23	98	516	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	20	66	55	12	443	623	645	23	98	516	52
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	5	17	14	3	111	156	161	6	25	129	13
Total Analysis Volume [veh/h]	142	20	66	55	12	443	623	645	23	98	516	52
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.04	0.03	0.01	0.08	0.18	0.20	0.20	0.06	0.17	0.17
Intersection LOS	A											
Intersection V/C	0.525											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.879

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	295	58	69	242	105	78	326	74	118	424	78
Total Analysis Volume [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.23	0.14	0.08	0.19	0.25	0.09	0.31	0.31	0.14	0.33	0.18
Intersection LOS	D											
Intersection V/C	0.879											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.658

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	36	48	95	183	126	219	129	1618	44	135	1881	269
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	48	95	183	126	219	129	1618	44	135	1881	269
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	12	24	46	32	55	32	405	11	34	470	67
Total Analysis Volume [veh/h]	36	48	95	183	126	219	129	1618	44	135	1881	269
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.03	0.06	0.11	0.04	0.13	0.08	0.33	0.33	0.08	0.37	0.16
Intersection LOS	B											
Intersection V/C	0.658											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.851

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	215	69	58	171	53	62	456	105	62	461	38
Total Analysis Volume [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.17	0.17	0.16	0.07	0.20	0.13	0.07	0.36	0.25	0.07	0.36	0.09
Intersection LOS	D											
Intersection V/C	0.851											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.742

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	9	15	85	6	64	83	436	7	14	503	89
Total Analysis Volume [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.03	0.03	0.03	0.10	0.16	0.16	0.10	0.35	0.35	0.03	0.39	0.21
Intersection LOS	C											
Intersection V/C	0.742											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	155	89	136	81	24	27	480	27	108	481	170
Total Analysis Volume [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.18	0.21	0.21	0.12	0.12	0.03	0.30	0.30	0.13	0.38	0.19
Intersection LOS	D											
Intersection V/C	0.893											

Intersection Level Of Service Report
Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	682	0	553	0	1765	1072	0	2522	446
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	682	0	553	0	1765	1072	0	2522	446
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	171	0	138	0	441	268	0	631	112
Total Analysis Volume [veh/h]	0	0	0	682	0	553	0	1765	1072	0	2522	446
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.20	0.00	0.24	0.00	0.35	0.00	0.00	0.49	0.00
Intersection LOS	C											
Intersection V/C	0.787											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.803

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	281	20	113	0	0	74	54	463	109	0	634	15
Total Analysis Volume [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.22	0.24	0.24	0.00	0.00	0.00	0.13	0.36	0.00	0.00	0.38	0.38
Intersection LOS	D											
Intersection V/C	0.803											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.824

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	78	28	80	90	57	64	443	36	46	471	46
Total Analysis Volume [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.08	0.12	0.12	0.09	0.21	0.13	0.15	0.38	0.38	0.11	0.30	0.30
Intersection LOS	D											
Intersection V/C	0.824											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	312	47	285	25	23	14	19	1831	289	230	2001	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	47	285	25	23	14	19	1831	289	230	2001	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	12	71	6	6	4	5	458	72	58	500	14
Total Analysis Volume [veh/h]	312	47	285	25	23	14	19	1831	289	230	2001	57
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.11	0.17	0.01	0.02	0.02	0.01	0.36	0.17	0.14	0.40	0.40
Intersection LOS	C											
Intersection V/C	0.734											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	367	738	111	266	484	114	230	1353	213	203	1666	399
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	367	738	111	266	484	114	230	1353	213	203	1666	399
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	92	185	28	67	121	29	58	338	53	51	417	100
Total Analysis Volume [veh/h]	367	738	111	266	484	114	230	1353	213	203	1666	399
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.25	0.25	0.08	0.14	0.07	0.07	0.31	0.31	0.06	0.40	0.40
Intersection LOS	D											
Intersection V/C	0.850											

Intersection Level Of Service Report

Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.867

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	229	344	347	176	420	51	78	961	197	288	943	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	229	344	347	176	420	51	78	961	197	288	943	104
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	86	87	44	105	13	20	240	49	72	236	26
Total Analysis Volume [veh/h]	229	344	347	176	420	51	78	961	197	288	943	104
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.20	0.20	0.10	0.14	0.14	0.05	0.34	0.34	0.17	0.31	0.31
Intersection LOS	D											
Intersection V/C	0.867											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	246	831	124	76	736	333	209	952	247	100	778	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	246	831	124	76	736	333	209	952	247	100	778	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	208	31	19	184	83	52	238	62	25	195	17
Total Analysis Volume [veh/h]	246	831	124	76	736	333	209	952	247	100	778	67
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.28	0.28	0.04	0.21	0.21	0.06	0.35	0.35	0.06	0.17	0.17
Intersection LOS	C											
Intersection V/C	0.787											

Intersection Level Of Service Report
Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.479

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	74	139	55	103	146	86	76	1256	53	47	1268	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	139	55	103	146	86	76	1256	53	47	1268	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	35	14	26	37	22	19	314	13	12	317	23
Total Analysis Volume [veh/h]	74	139	55	103	146	86	76	1256	53	47	1268	92
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.06	0.07	0.07	0.04	0.26	0.26	0.03	0.27	0.27
Intersection LOS	A											
Intersection V/C	0.479											

Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	308	404	173	163	717	175	68	1197	272	242	1057	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	308	404	173	163	717	175	68	1197	272	242	1057	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	101	43	41	179	44	17	299	68	61	264	14
Total Analysis Volume [veh/h]	308	404	173	163	717	175	68	1197	272	242	1057	54
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.12	0.10	0.10	0.21	0.10	0.04	0.23	0.16	0.14	0.22	0.22
Intersection LOS	C											
Intersection V/C	0.729											

Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.775

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵↵↵			↵↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	167	262	428	510	365	6	19	1161	301	765	1598	728
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	167	262	428	510	365	6	19	1161	301	765	1598	728
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	66	107	128	91	2	5	290	75	191	400	182
Total Analysis Volume [veh/h]	167	262	428	510	365	6	19	1161	301	765	1598	728
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.14	0.14	0.15	0.11	0.11	0.01	0.22	0.22	0.23	0.31	0.28
Intersection LOS	C											
Intersection V/C	0.775											

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	844	0	1190	0	1504	580	185	1926	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	844	0	1190	0	1504	580	185	1926	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	211	0	298	0	376	145	46	482	0
Total Analysis Volume [veh/h]	0	0	0	844	0	1190	0	1504	580	185	1926	0
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.25	0.00	0.35	0.00	0.29	0.17	0.05	0.38	0.00
Intersection LOS	C											
Intersection V/C	0.778											

Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1169	0	477	0	0	0	0	1636	713	0	963	438
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1169	0	477	0	0	0	0	1636	713	0	963	438
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	292	0	119	0	0	0	0	409	178	0	241	110
Total Analysis Volume [veh/h]	1169	0	477	0	0	0	0	1636	713	0	963	438
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.34	0.00	0.28	0.00	0.00	0.00	0.00	0.35	0.35	0.00	0.19	0.00
Intersection LOS	C											
Intersection V/C	0.739											

Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.577

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	378	147	129	1	148	213	156	853	656	134	732	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	147	129	1	148	213	156	853	656	134	732	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	37	32	0	37	53	39	213	164	34	183	2
Total Analysis Volume [veh/h]	378	147	129	1	148	213	156	853	656	134	732	7
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.09	0.04	0.00	0.09	0.13	0.09	0.25	0.08	0.04	0.14	0.14
Intersection LOS	A											
Intersection V/C	0.577											

Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.511

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	99	474	307	371	924	101	87	126	39	345	140	338
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	474	307	371	924	101	87	126	39	345	140	338
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	119	77	93	231	25	22	32	10	86	35	85
Total Analysis Volume [veh/h]	99	474	307	371	924	101	87	126	39	345	140	338
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.15	0.15	0.11	0.20	0.20	0.05	0.10	0.10	0.10	0.08	0.09
Intersection LOS	A											
Intersection V/C	0.511											

Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.512

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	113	77	177	53	37	79	88	660	135	158	811	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	77	177	53	37	79	88	660	135	158	811	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	19	44	13	9	20	22	165	34	40	203	7
Total Analysis Volume [veh/h]	113	77	177	53	37	79	88	660	135	158	811	27
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.05	0.10	0.03	0.07	0.07	0.05	0.23	0.23	0.09	0.24	0.02
Intersection LOS	A											
Intersection V/C	0.512											

Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	◀◀◀			▶▶▶			◀◀◀			▶▶▶		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	121	429	185	277	718	511	300	723	167	176	699	240
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	429	185	277	718	511	300	723	167	176	699	240
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	107	46	69	180	128	75	181	42	44	175	60
Total Analysis Volume [veh/h]	121	429	185	277	718	511	300	723	167	176	699	240
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.13	0.11	0.08	0.36	0.36	0.09	0.21	0.10	0.05	0.21	0.14
Intersection LOS	C											
Intersection V/C	0.741											

Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.541

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	359	19	222	12	21	13	8	731	330	181	724	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	19	222	12	21	13	8	731	330	181	724	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	5	56	3	5	3	2	183	83	45	181	3
Total Analysis Volume [veh/h]	359	19	222	12	21	13	8	731	330	181	724	12
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.01	0.08	0.01	0.02	0.02	0.00	0.31	0.31	0.05	0.22	0.22
Intersection LOS	A											
Intersection V/C	0.541											

Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.407

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	94	4	207	172	835	5	11	661	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	94	4	207	172	835	5	11	661	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	2	24	1	52	43	209	1	3	165	19
Total Analysis Volume [veh/h]	10	2	8	94	4	207	172	835	5	11	661	77
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.00	0.00	0.06	0.00	0.02	0.10	0.25	0.25	0.01	0.19	0.05
Intersection LOS	A											
Intersection V/C	0.407											

Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.495

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	240	426	63	164	662	133	177	471	309	58	388	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	426	63	164	662	133	177	471	309	58	388	116
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	107	16	41	166	33	44	118	77	15	97	29
Total Analysis Volume [veh/h]	240	426	63	164	662	133	177	471	309	58	388	116
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.07	0.10	0.10	0.05	0.16	0.16	0.10	0.14	0.18	0.03	0.11	0.07
Intersection LOS	A											
Intersection V/C	0.495											

Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.304

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	22	303	114	71	282	21	35	11	60	82	4	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	303	114	71	282	21	35	11	60	82	4	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	76	29	18	71	5	9	3	15	21	1	15
Total Analysis Volume [veh/h]	22	303	114	71	282	21	35	11	60	82	4	59
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.12	0.12	0.04	0.09	0.09	0.02	0.04	0.04	0.05	0.04	0.04
Intersection LOS	A											
Intersection V/C	0.304											

Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	23	334	493	55	300	22	25	18	27	489	8	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	334	493	55	300	22	25	18	27	489	8	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	84	123	14	75	6	6	5	7	122	2	23
Total Analysis Volume [veh/h]	23	334	493	55	300	22	25	18	27	489	8	92
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.01	0.24	0.24	0.03	0.09	0.09	0.01	0.03	0.02	0.14	0.23	0.23
Intersection LOS	A											
Intersection V/C	0.524											

Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	173	25	93	87	20	653	749	500	29	88	740	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	25	93	87	20	653	749	500	29	88	740	51
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	6	23	22	5	163	187	125	7	22	185	13
Total Analysis Volume [veh/h]	173	25	93	87	20	653	749	500	29	88	740	51
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.05	0.06	0.05	0.05	0.01	0.16	0.22	0.16	0.16	0.05	0.23	0.23
Intersection LOS	C											
Intersection V/C	0.725											

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	204	54	67	210	82	93	304	70	97	347	64
Total Analysis Volume [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.10	0.16	0.13	0.08	0.16	0.19	0.11	0.29	0.29	0.11	0.27	0.15
Intersection LOS	C											
Intersection V/C	0.754											

Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.532

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	27	32	110	136	51	123	68	1360	42	104	1517	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	32	110	136	51	123	68	1360	42	104	1517	165
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	8	28	34	13	31	17	340	11	26	379	41
Total Analysis Volume [veh/h]	27	32	110	136	51	123	68	1360	42	104	1517	165
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.02	0.02	0.06	0.08	0.02	0.07	0.04	0.27	0.27	0.06	0.30	0.10
Intersection LOS	A											
Intersection V/C	0.532											

Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	136	71	74	227	57	61	373	67	95	365	41
Total Analysis Volume [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.13	0.11	0.17	0.09	0.27	0.13	0.07	0.29	0.16	0.11	0.29	0.10
Intersection LOS	D											
Intersection V/C	0.850											

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	10	43	108	20	92	91	386	8	29	436	121
Total Analysis Volume [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.06	0.06	0.13	0.26	0.26	0.11	0.31	0.31	0.07	0.34	0.28
Intersection LOS	D											
Intersection V/C	0.863											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.143

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	142	145	195	114	45	34	405	49	158	476	278
Total Analysis Volume [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.17	0.34	0.30	0.19	0.19	0.04	0.27	0.27	0.19	0.37	0.35
Intersection LOS	F											
Intersection V/C	1.143											

Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↱			↱			↱		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	563	0	749	0	2050	1227	0	2801	409
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	563	0	749	0	2050	1227	0	2801	409
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	141	0	187	0	513	307	0	700	102
Total Analysis Volume [veh/h]	0	0	0	563	0	749	0	2050	1227	0	2801	409
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.17	0.00	0.26	0.00	0.40	0.00	0.00	0.55	0.00
Intersection LOS	D											
Intersection V/C	0.856											

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.858

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	378	44	150	0	0	68	72	464	167	0	503	11
Total Analysis Volume [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.30	0.34	0.34	0.00	0.00	0.00	0.17	0.36	0.00	0.00	0.30	0.30
Intersection LOS	D											
Intersection V/C	0.858											

Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	56	37	89	64	46	56	425	63	40	414	57
Total Analysis Volume [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.11	0.11	0.10	0.15	0.11	0.13	0.38	0.38	0.09	0.28	0.28
Intersection LOS	C											
Intersection V/C	0.763											

Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	207	17	254	26	10	12	24	1914	295	206	1918	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	207	17	254	26	10	12	24	1914	295	206	1918	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	4	64	7	3	3	6	479	74	52	480	12
Total Analysis Volume [veh/h]	207	17	254	26	10	12	24	1914	295	206	1918	46
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.06	0.07	0.15	0.02	0.01	0.01	0.01	0.38	0.17	0.12	0.39	0.39
Intersection LOS	C											
Intersection V/C	0.711											

Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.684

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	311	378	83	281	673	134	183	1148	287	139	1345	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	378	83	281	673	134	183	1148	287	139	1345	136
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	95	21	70	168	34	46	287	72	35	336	34
Total Analysis Volume [veh/h]	311	378	83	281	673	134	183	1148	287	139	1345	136
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.14	0.14	0.08	0.20	0.08	0.05	0.28	0.28	0.04	0.29	0.29
Intersection LOS	B											
Intersection V/C	0.684											

Intersection Level Of Service Report

Intersection 28: Placentia Avenue at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.662

Intersection Setup

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Placentia Avenue			Placentia Avenue			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	186	289	228	125	362	50	72	660	263	187	486	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	186	289	228	125	362	50	72	660	263	187	486	73
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	72	57	31	91	13	18	165	66	47	122	18
Total Analysis Volume [veh/h]	186	289	228	125	362	50	72	660	263	187	486	73
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.15	0.15	0.07	0.12	0.12	0.04	0.27	0.27	0.11	0.16	0.16
Intersection LOS	B											
Intersection V/C	0.662											

Intersection Level Of Service Report

Intersection 29: Kraemer Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	125	589	65	63	866	175	185	640	192	94	449	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	125	589	65	63	866	175	185	640	192	94	449	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	147	16	16	217	44	46	160	48	24	112	14
Total Analysis Volume [veh/h]	125	589	65	63	866	175	185	640	192	94	449	57
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.19	0.19	0.04	0.20	0.20	0.05	0.24	0.24	0.06	0.10	0.10
Intersection LOS	A											
Intersection V/C	0.591											

APPENDIX C-IX

YEAR 2040 PLUS PROJECT WITH MITIGATION
TRAFFIC CONDITIONS

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	44	100	53	103	8	8	445	66	111	453	60
Total Analysis Volume [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.04	0.05	0.23	0.06	0.12	0.02	0.01	0.30	0.30	0.13	0.36	0.08
Intersection LOS	C											
Intersection V/C	0.778											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.844

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	155	89	136	81	24	27	480	27	108	481	170
Total Analysis Volume [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.11	0.18	0.21	0.16	0.10	0.06	0.03	0.30	0.30	0.13	0.38	0.24
Intersection LOS	D											
Intersection V/C	0.844											

Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	-
Analysis Method:	ICU 1	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.084

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	142	145	195	114	45	34	405	49	158	476	278
Total Analysis Volume [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Cycle Length [s]	100
Lost time [s]	5.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.09	0.17	0.34	0.23	0.13	0.11	0.04	0.27	0.27	0.19	0.37	0.42
Intersection LOS	F											
Intersection V/C	1.084											

APPENDIX D

INTERSECTION LEVEL OF SERVICE CALCULATION WORKSHEETS – HCM

APPENDIX D-1

EXISTING TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.661

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	50	144	95	145	314	73	81	1159	123	111	1101	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	50	144	95	145	314	73	81	1159	123	111	1101	55
Peak Hour Factor	0.8300	0.8300	0.8300	0.8190	0.8190	0.8190	0.8940	0.8940	0.8940	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	43	29	44	96	22	23	324	34	30	302	15
Total Analysis Volume [veh/h]	60	173	114	177	383	89	91	1296	138	122	1210	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	32	0	19	38	0	11	31	0	13	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	11	11	12	18	18	6	48	48	8	50	50
g / C, Green / Cycle	0.05	0.11	0.11	0.12	0.19	0.19	0.07	0.50	0.50	0.09	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.09	0.10	0.14	0.14	0.05	0.28	0.28	0.07	0.25	0.25
s, saturation flow rate [veh/h]	1687	1772	1546	1687	1772	1658	1687	3373	1686	1687	3373	1729
c, Capacity [veh/h]	87	204	178	211	334	313	116	1694	846	151	1764	904
d1, Uniform Delay [s]	44.40	40.68	40.89	40.71	36.29	36.33	43.62	16.46	16.46	42.51	14.41	14.41
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.45	4.99	6.95	8.65	3.02	3.30	10.99	1.37	2.72	9.66	0.92	1.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.73	0.77	0.84	0.73	0.73	0.78	0.56	0.56	0.81	0.48	0.48
d, Delay for Lane Group [s/veh]	53.84	45.67	47.84	49.36	39.31	39.64	54.61	17.83	19.18	52.17	15.33	16.21
Lane Group LOS	D	D	D	D	D	D	D	B	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.61	3.63	3.44	4.51	5.51	5.22	2.44	7.15	7.46	3.19	5.63	5.99
50th-Percentile Queue Length [ft/ln]	40.19	90.68	85.99	112.73	137.63	130.43	61.10	178.65	186.53	79.76	140.84	149.87
95th-Percentile Queue Length [veh/ln]	2.89	6.53	6.19	7.99	9.35	8.96	4.40	11.53	11.94	5.74	9.53	10.01
95th-Percentile Queue Length [ft/ln]	72.34	163.22	154.79	199.80	233.83	224.08	109.98	288.25	298.52	143.57	238.16	250.26

Movement, Approach, & Intersection Results

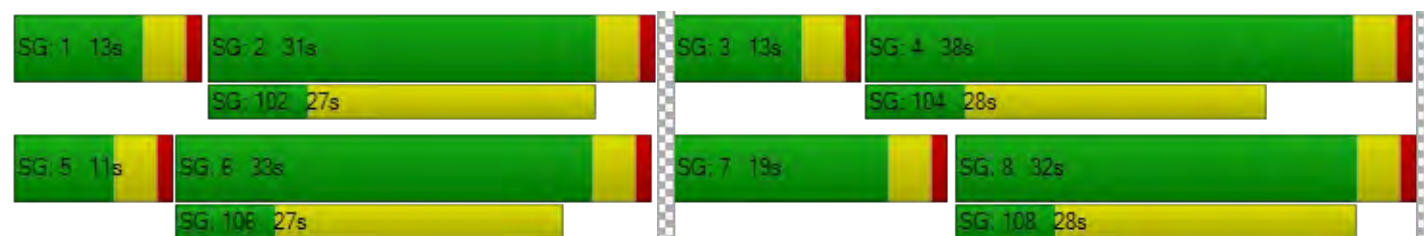
d_M, Delay for Movement [s/veh]	53.84	45.97	47.84	49.36	39.43	39.64	54.61	18.18	19.18	52.17	15.60	16.21
Movement LOS	D	D	D	D	D	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	47.94			42.17			20.45			18.83		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	25.91											
Intersection LOS	C											
Intersection V/C	0.661											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.495			2.492			2.998			3.011		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	589			716			568			611		
d_b, Bicycle Delay [s]	23.63			19.58			24.34			22.93		
I_b,int, Bicycle LOS Score for Intersection	1.846			2.095			2.398			2.325		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	196	317	137	107	841	246	84	1118	278	188	1148	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	196	317	137	107	841	246	84	1118	278	188	1148	133
Peak Hour Factor	0.8680	0.8680	0.8680	0.9380	0.9380	0.9380	0.9390	0.9390	0.9390	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	56	91	39	29	224	66	22	298	74	50	303	35
Total Analysis Volume [veh/h]	226	365	158	114	897	262	89	1191	296	199	1212	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	19	45	0	11	42	0	20	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	34	34	10	35	35	7	44	44	16	53	53
g / C, Green / Cycle	0.08	0.29	0.29	0.08	0.29	0.29	0.06	0.37	0.37	0.13	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.10	0.07	0.27	0.17	0.05	0.25	0.20	0.12	0.27	0.27
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1679
c, Capacity [veh/h]	248	963	430	139	987	440	100	1765	551	224	1483	738
d1, Uniform Delay [s]	55.09	34.36	34.24	54.19	40.94	36.38	56.11	32.07	30.07	51.16	25.74	25.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.37	0.25	0.52	11.06	3.63	1.29	22.31	2.09	3.73	11.17	1.87	3.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.38	0.37	0.82	0.91	0.59	0.89	0.67	0.54	0.89	0.61	0.61
d, Delay for Lane Group [s/veh]	67.46	34.61	34.76	65.25	44.57	37.67	78.42	34.16	33.80	62.34	27.61	29.46
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.82	4.31	3.76	3.82	13.14	6.72	3.30	9.97	7.30	6.57	10.12	10.46
50th-Percentile Queue Length [ft/ln]	95.44	107.86	93.89	95.41	328.44	167.99	82.38	249.23	182.52	164.23	252.97	261.42
95th-Percentile Queue Length [veh/ln]	6.87	7.72	6.76	6.87	19.08	10.97	5.93	15.15	11.73	10.77	15.34	15.76
95th-Percentile Queue Length [ft/ln]	171.80	193.02	169.01	171.74	477.05	274.28	148.29	378.68	293.30	269.31	383.39	394.00

Movement, Approach, & Intersection Results

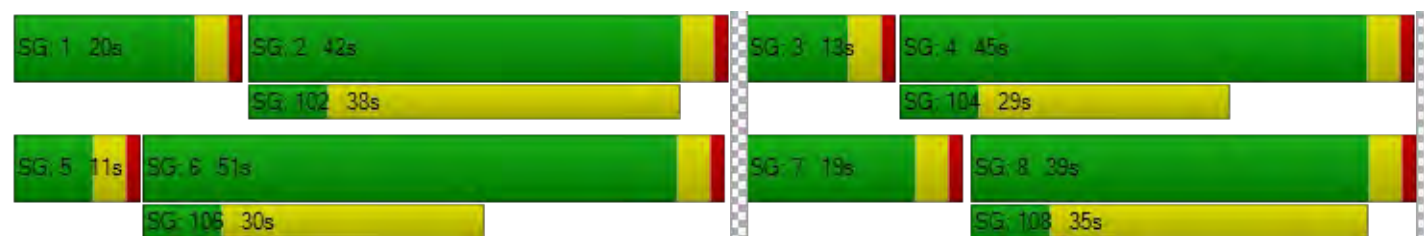
d_M, Delay for Movement [s/veh]	67.46	34.61	34.76	65.25	44.57	37.67	78.42	34.16	33.80	62.34	28.08	29.46
Movement LOS	E	C	C	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	44.55			45.00			36.59			32.60		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	38.63											
Intersection LOS	D											
Intersection V/C	0.807											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.906			2.770			3.138			3.027		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			683			633			783		
d_b, Bicycle Delay [s]	30.10			26.00			28.02			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.178			2.610			2.426			2.413		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	34.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	144	183	127	824	554	8	13	1162	187	410	1447	509
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	183	127	824	554	8	13	1162	187	410	1447	509
Peak Hour Factor	0.9130	0.9130	0.9130	0.9700	0.9700	0.9700	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	50	35	212	143	2	3	305	49	107	379	133
Total Analysis Volume [veh/h]	158	200	139	849	571	8	14	1218	196	430	1517	534
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	11	14	0	41	44	0	10	39	0	21	50	50
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	10	10	10	33	37	37	2	39	39	17	53	91
g / C, Green / Cycle	0.06	0.09	0.09	0.09	0.29	0.32	0.32	0.02	0.34	0.34	0.15	0.46	0.79
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.07	0.07	0.26	0.16	0.16	0.00	0.22	0.22	0.13	0.31	0.35
s, saturation flow rate [veh/h]	3277	1772	1684	1506	3277	1772	1763	3277	4826	1615	3277	4826	1506
c, Capacity [veh/h]	202	158	150	134	950	563	560	65	1615	541	482	2229	1185
d1, Uniform Delay [s]	53.24	51.19	51.23	51.32	39.15	32.04	32.05	55.52	32.62	32.67	48.19	24.29	4.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.51	7.13	7.82	9.54	3.21	0.73	0.74	1.64	2.09	6.19	5.96	1.70	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.76	0.76	0.78	0.89	0.52	0.52	0.22	0.65	0.66	0.89	0.68	0.45
d, Delay for Lane Group [s/veh]	59.74	58.32	59.05	60.86	42.36	32.78	32.79	57.16	34.70	38.86	54.15	25.99	5.29
Lane Group LOS	E	E	E	E	D	C	C	E	C	D	D	C	A
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.43	3.67	3.55	3.32	11.77	6.68	6.66	0.21	8.60	9.32	6.43	10.88	3.64
50th-Percentile Queue Length [ft/ln]	60.83	91.65	88.85	82.99	294.34	166.97	166.39	5.37	215.02	232.92	160.81	272.06	91.00
95th-Percentile Queue Length [veh/ln]	4.38	6.60	6.40	5.98	17.40	10.92	10.89	0.39	13.41	14.32	10.59	16.29	6.55
95th-Percentile Queue Length [ft/ln]	109.4	164.9	159.9	149.3	435.02	272.93	272.16	9.67	335.26	358.07	264.79	407.32	163.80

Movement, Approach, & Intersection Results

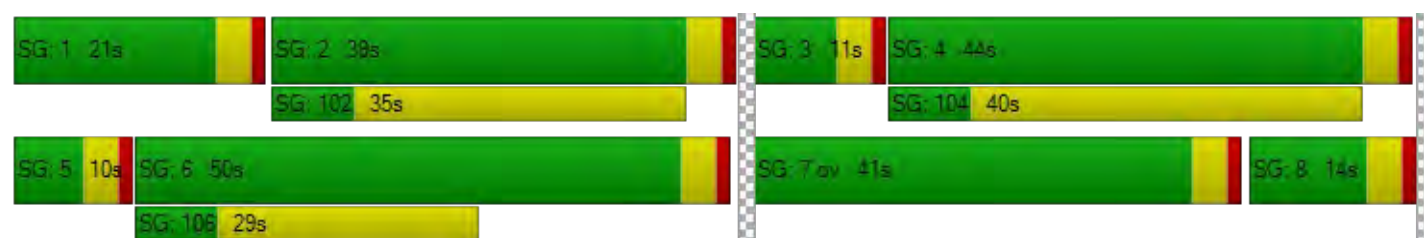
d_M, Delay for Movement [s/veh]	59.74	58.61	60.50	42.36	32.78	32.79	57.16	35.25	38.86	54.15	25.99	5.29
Movement LOS	E	E	E	D	C	C	E	D	D	D	C	A
d_A, Approach Delay [s/veh]	59.48			38.48			35.96			26.42		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	34.52											
Intersection LOS	C											
Intersection V/C	0.791											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	47.03	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.842	2.818	3.198	0.000
Crosswalk LOS	C	C	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	174	696	609	800
d_b, Bicycle Delay [s]	47.93	24.46	27.83	20.70
I_b,int, Bicycle LOS Score for Intersection	1.970	2.738	2.149	2.924
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.909

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	977	0	489	0	1580	538	207	1930	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	977	0	489	0	1580	538	207	1930	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8640	1.0000	0.8640	1.0000	0.9400	0.9400	0.9190	0.9190	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	283	0	141	0	420	143	56	525	0
Total Analysis Volume [veh/h]	0	0	0	1131	0	566	0	1681	572	225	2100	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	59	0	0	0	48	0	13	61	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		49	49	49	50	50	50	9	63
g / C, Green / Cycle		0.41	0.41	0.41	0.42	0.42	0.42	0.08	0.53
(v / s)_i Volume / Saturation Flow Rate		0.34	0.34	0.38	0.33	0.36	0.37	0.07	0.44
s, saturation flow rate [veh/h]		1687	1687	1506	3373	1562	1506	3277	4826
c, Capacity [veh/h]		686	686	613	1408	652	629	248	2541
d1, Uniform Delay [s]		31.75	31.75	33.80	30.55	31.83	32.51	55.01	23.80
k, delay calibration		0.27	0.27	0.34	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.14	6.14	16.20	4.85	14.23	17.86	11.90	3.24
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.82	0.92	0.80	0.86	0.90	0.91	0.83
d, Delay for Lane Group [s/veh]		37.89	37.89	50.00	35.40	46.06	50.37	66.91	27.04
Lane Group LOS		D	D	D	D	D	D	E	C
Critical Lane Group		No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		15.53	15.53	18.05	14.92	17.13	17.98	3.78	16.75
50th-Percentile Queue Length [ft/ln]		388.34	388.37	451.19	373.02	428.31	449.62	94.59	418.71
95th-Percentile Queue Length [veh/ln]		22.00	22.00	25.01	21.26	23.92	24.94	6.81	23.46
95th-Percentile Queue Length [ft/ln]		549.93	549.96	625.37	531.40	598.01	623.49	170.27	586.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	37.89	0.00	49.99	0.00	36.54	50.30	66.91	27.04	0.00
Movement LOS				D		D		D	D	E	C	
d_A, Approach Delay [s/veh]	0.00			41.93			41.81			30.90		
Approach LOS	A			D			D			C		
d_I, Intersection Delay [s/veh]	37.80											
Intersection LOS	D											
Intersection V/C	0.909											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.117			2.506			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			733			950		
d_b, Bicycle Delay [s]	60.00			60.00			24.07			16.54		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.932			2.799			2.838		
Bicycle LOS	D			F			C			C		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.930

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	970	0	459	0	0	0	262	2285	0	0	1178	452
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	970	0	459	0	0	0	262	2285	0	0	1178	452
Peak Hour Factor	0.8940	1.0000	0.8940	1.0000	1.0000	1.0000	0.9710	0.9710	1.0000	1.0000	0.8830	0.8830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	271	0	128	0	0	0	67	588	0	0	334	128
Total Analysis Volume [veh/h]	1085	0	513	0	0	0	270	2353	0	0	1334	512
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	52	0	0	0	0	0	14	58	0	0	44	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	110	110		110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	42	42		10	60	46	46	46
g / C, Green / Cycle	0.38	0.38		0.09	0.55	0.42	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.33	0.34		0.08	0.49	0.27	0.30	0.31
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1545	1506
c, Capacity [veh/h]	1240	570		300	2649	1420	650	634
d1, Uniform Delay [s]	31.76	32.22		49.44	21.84	25.39	26.30	26.59
k, delay calibration	0.11	0.30		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	13.34		9.56	4.93	2.32	6.46	7.19
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.90		0.90	0.89	0.65	0.71	0.73
d, Delay for Lane Group [s/veh]	33.88	45.56		59.00	26.77	27.71	32.76	33.78
Lane Group LOS	C	D		E	C	C	C	C
Critical Lane Group	No	Yes		No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	13.43	14.64		4.06	17.90	9.86	10.91	11.11
50th-Percentile Queue Length [ft/ln]	335.64	366.03		101.47	447.39	246.55	272.67	277.87
95th-Percentile Queue Length [veh/ln]	19.43	20.92		7.31	24.83	15.01	16.32	16.58
95th-Percentile Queue Length [ft/ln]	485.87	522.91		182.64	620.83	375.31	408.08	414.56

Movement, Approach, & Intersection Results

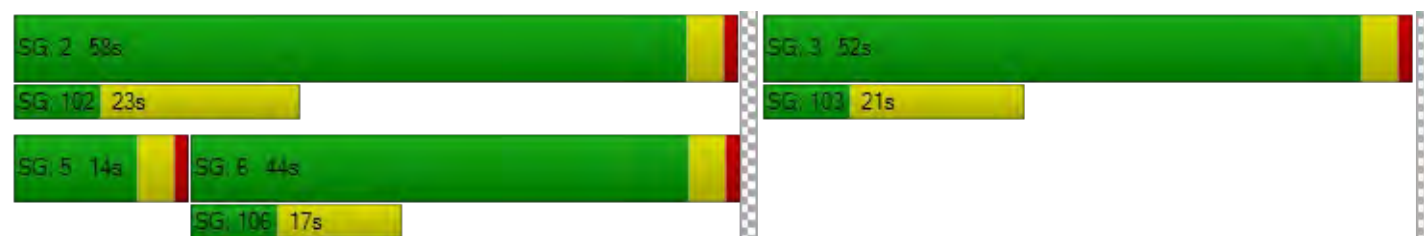
d_M, Delay for Movement [s/veh]	33.88	0.00	45.56	0.00	0.00	0.00	59.00	26.77	0.00	0.00	28.10	33.68
Movement LOS	C		D				E	C			C	C
d_A, Approach Delay [s/veh]	37.63			0.00			30.09			30.49		
Approach LOS	D			A			C			C		
d_I, Intersection Delay [s/veh]	32.20											
Intersection LOS	C											
Intersection V/C	0.930											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	0.00	44.55
I_p,int, Pedestrian LOS Score for Intersection	2.469	2.106	0.000	3.260
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	982	727
d_b, Bicycle Delay [s]	55.00	55.00	14.25	22.27
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	3.002	2.575
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	272	105	29	18	200	302	90	602	988	249	677	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	105	29	18	200	302	90	602	988	249	677	12
Peak Hour Factor	0.7870	0.7870	0.7870	0.8900	0.8900	0.8900	0.9170	0.9170	0.9170	0.9370	0.9370	0.9370
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	33	9	5	56	85	25	164	269	66	181	3
Total Analysis Volume [veh/h]	346	133	37	20	225	339	98	656	1077	266	723	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	49	49	10	42	0	15	37	37	14	36	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	38	52	3	27	27	8	44	61	10	46	46
g / C, Green / Cycle	0.12	0.34	0.47	0.03	0.25	0.25	0.07	0.40	0.55	0.09	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.08	0.02	0.01	0.13	0.23	0.06	0.19	0.40	0.08	0.14	0.14
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1756
c, Capacity [veh/h]	389	605	706	44	440	374	123	1335	1468	300	1399	728
d1, Uniform Delay [s]	47.81	25.83	15.91	52.85	35.61	40.12	50.25	24.94	18.63	49.45	22.02	22.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.20	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.07	0.18	0.03	7.22	0.92	14.11	11.14	1.29	3.28	8.69	0.68	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.22	0.05	0.46	0.51	0.91	0.80	0.49	0.73	0.89	0.35	0.35
d, Delay for Lane Group [s/veh]	54.88	26.01	15.94	60.07	36.53	54.23	61.39	26.23	21.91	58.14	22.70	23.33
Lane Group LOS	D	C	B	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.04	2.51	0.51	0.63	5.29	10.26	3.03	6.58	10.46	3.97	4.36	4.67
50th-Percentile Queue Length [ft/ln]	125.91	62.78	12.81	15.81	132.28	256.45	75.76	164.41	261.39	99.14	109.12	116.86
95th-Percentile Queue Length [veh/ln]	8.72	4.52	0.92	1.14	9.06	15.51	5.45	10.78	15.76	7.14	7.79	8.22
95th-Percentile Queue Length [ft/ln]	217.93	113.01	23.06	28.46	226.59	387.76	136.37	269.55	393.96	178.46	194.78	205.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.88	26.01	15.94	60.07	36.53	54.23	61.39	26.23	21.91	58.14	22.91	23.33
Movement LOS	D	C	B	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	44.64			47.61			25.57			32.27		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.05											
Intersection LOS	C											
Intersection V/C	0.890											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.801			2.342			3.130			2.842		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	818			691			600			582		
d_b, Bicycle Delay [s]	19.20			23.56			26.95			27.65		
I_b,int, Bicycle LOS Score for Intersection	2.411			2.523			3.070			2.111		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	26	404	181	320	950	57	46	65	11	247	66	216
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	404	181	320	950	57	46	65	11	247	66	216
Peak Hour Factor	0.8300	0.8300	0.8300	0.9210	0.9210	0.9210	0.8710	0.8710	0.8710	0.7670	0.7670	0.7670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	122	55	87	258	15	13	19	3	81	22	70
Total Analysis Volume [veh/h]	31	487	218	347	1031	62	53	75	13	322	86	282
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	28	0	19	35	0	14	37	0	26	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	59	59	15	70	70	5	7	13	16	35
g / C, Green / Cycle	0.03	0.53	0.53	0.14	0.63	0.63	0.04	0.07	0.12	0.14	0.31
(v / s)_i Volume / Saturation Flow Rate	0.02	0.14	0.15	0.11	0.21	0.21	0.03	0.05	0.10	0.05	0.19
s, saturation flow rate [veh/h]	1687	3373	1512	3277	3373	1721	1687	1727	3277	1772	1506
c, Capacity [veh/h]	58	1792	803	448	2137	1090	75	114	395	252	474
d1, Uniform Delay [s]	52.29	14.11	14.20	45.89	9.41	9.41	51.87	50.60	47.20	42.59	31.78
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.41	0.37	0.86	2.90	0.43	0.84	11.24	10.48	4.11	0.80	1.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.27	0.28	0.77	0.34	0.34	0.70	0.77	0.81	0.34	0.59
d, Delay for Lane Group [s/veh]	59.69	14.48	15.06	48.79	9.84	10.26	63.11	61.08	51.32	43.40	32.97
Lane Group LOS	E	B	B	D	A	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.96	3.30	3.19	4.74	3.94	4.15	1.68	2.71	4.51	2.17	6.43
50th-Percentile Queue Length [ft/ln]	24.03	82.42	79.79	118.57	98.61	103.72	41.91	67.82	112.80	54.17	160.65
95th-Percentile Queue Length [veh/ln]	1.73	5.93	5.74	8.31	7.10	7.47	3.02	4.88	8.00	3.90	10.58
95th-Percentile Queue Length [ft/ln]	43.25	148.36	143.62	207.86	177.49	186.70	75.44	122.08	199.89	97.50	264.59

Movement, Approach, & Intersection Results

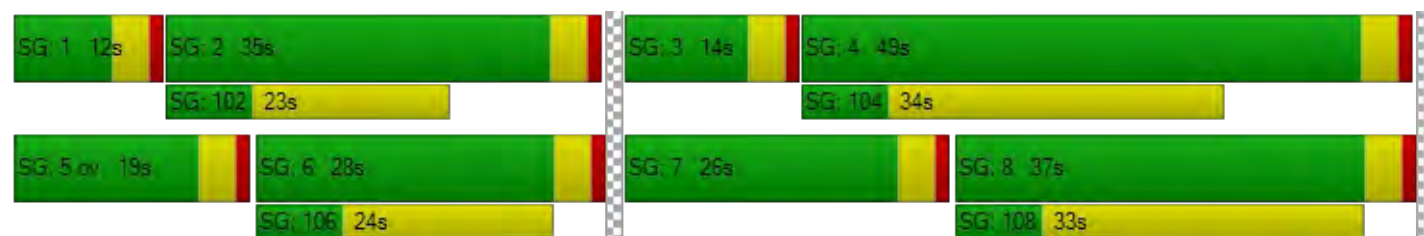
d_M, Delay for Movement [s/veh]	59.69	14.48	15.06	48.79	9.97	10.26	63.11	61.08	61.08	51.32	43.40	32.97
Movement LOS	E	B	B	D	A	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	16.56			19.33			61.84			42.83		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	26.04											
Intersection LOS	C											
Intersection V/C	0.519											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.896			3.011			2.054			2.679		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	436			564			600			818		
d_b, Bicycle Delay [s]	33.62			28.37			26.95			19.20		
I_b,int, Bicycle LOS Score for Intersection	1.964			2.352			1.792			2.698		
Bicycle LOS	A			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.371

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	22	38	81	35	33	24	37	528	85	67	446	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	38	81	35	33	24	37	528	85	67	446	41
Peak Hour Factor	0.8140	0.8140	0.8140	0.7190	0.7190	0.7190	0.8220	0.8220	0.8220	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	12	25	12	11	8	11	161	26	19	125	11
Total Analysis Volume [veh/h]	27	47	100	49	46	33	45	642	103	75	499	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	13	30	0	32	49	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11	11	11	4	71	71	6	73	73
g / C, Green / Cycle	0.11	0.11	0.11	0.11	0.11	0.04	0.71	0.71	0.06	0.73	0.73
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.07	0.04	0.05	0.03	0.22	0.22	0.04	0.15	0.03
s, saturation flow rate [veh/h]	1320	1772	1506	1358	1650	1687	1772	1687	1687	3373	1506
c, Capacity [veh/h]	128	194	165	158	181	72	1263	1203	96	2453	1095
d1, Uniform Delay [s]	46.78	40.71	42.45	45.52	41.62	47.05	5.24	5.24	46.52	4.36	3.83
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	0.64	3.54	1.10	1.65	8.39	0.61	0.65	12.62	0.19	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.24	0.61	0.31	0.44	0.62	0.30	0.30	0.78	0.20	0.04
d, Delay for Lane Group [s/veh]	47.59	41.34	45.98	46.63	43.27	55.44	5.86	5.89	59.15	4.55	3.91
Lane Group LOS	D	D	D	D	D	E	A	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.68	1.09	2.50	1.22	1.90	1.26	2.69	2.58	2.17	1.44	0.24
50th-Percentile Queue Length [ft/ln]	17.05	27.22	62.54	30.61	47.38	31.62	67.18	64.38	54.18	35.96	6.12
95th-Percentile Queue Length [veh/ln]	1.23	1.96	4.50	2.20	3.41	2.28	4.84	4.64	3.90	2.59	0.44
95th-Percentile Queue Length [ft/ln]	30.70	49.00	112.57	55.10	85.28	56.91	120.92	115.88	97.52	64.72	11.01

Movement, Approach, & Intersection Results

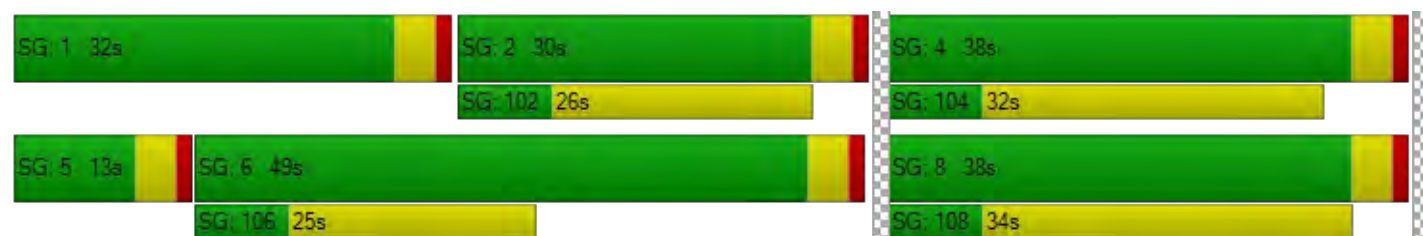
d_M, Delay for Movement [s/veh]	47.59	41.34	45.98	46.63	43.27	43.27	55.44	5.87	5.89	59.15	4.55	3.91
Movement LOS	D	D	D	D	D	D	E	A	A	E	A	A
d_A, Approach Delay [s/veh]	44.98			44.56			8.70			11.11		
Approach LOS	D			D			A			B		
d_I, Intersection Delay [s/veh]	15.94											
Intersection LOS	B											
Intersection V/C	0.371											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.233			2.031			2.606			2.757		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			520			900		
d_b, Bicycle Delay [s]	21.78			21.78			27.38			15.13		
I_b,int, Bicycle LOS Score for Intersection	1.847			1.771			2.211			2.071		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	38.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	72	114	91	598	742	138	71	478	45	74	529	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	114	91	598	742	138	71	478	45	74	529	260
Peak Hour Factor	0.8430	0.8430	0.8430	0.8910	0.8910	0.8910	0.8600	0.8600	0.8600	0.7640	0.7640	0.7640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	34	27	168	208	39	21	139	13	24	173	85
Total Analysis Volume [veh/h]	85	135	108	671	833	155	83	556	52	97	692	340
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	39	0	32	48	0	11	39	0	10	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	17	17	27	38	38	6	54	54	6	55	55
g / C, Green / Cycle	0.05	0.14	0.14	0.22	0.32	0.32	0.05	0.45	0.45	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.07	0.20	0.28	0.29	0.03	0.16	0.03	0.03	0.21	0.23
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1677	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	157	484	216	727	562	532	156	1527	682	160	1531	683
d1, Uniform Delay [s]	55.87	45.87	47.44	45.72	38.99	39.41	55.86	21.54	18.63	55.97	22.53	23.13
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.18	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.90	0.31	1.78	5.55	7.50	10.21	2.79	0.67	0.22	3.67	0.97	2.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.28	0.50	0.92	0.89	0.91	0.53	0.36	0.08	0.61	0.45	0.50
d, Delay for Lane Group [s/veh]	58.77	46.18	49.22	51.26	46.49	49.62	58.65	22.21	18.85	59.64	23.50	25.71
Lane Group LOS	E	D	D	D	D	D	E	C	B	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.32	1.83	3.10	10.29	15.05	15.16	1.29	5.25	0.87	1.52	6.87	7.21
50th-Percentile Queue Length [ft/ln]	33.07	45.67	77.38	257.30	376.31	378.89	32.26	131.21	21.68	38.08	171.63	180.21
95th-Percentile Queue Length [veh/ln]	2.38	3.29	5.57	15.55	21.42	21.54	2.32	9.01	1.56	2.74	11.16	11.61
95th-Percentile Queue Length [ft/ln]	59.53	82.21	139.29	388.83	535.38	538.50	58.06	225.14	39.03	68.54	279.06	290.29

Movement, Approach, & Intersection Results

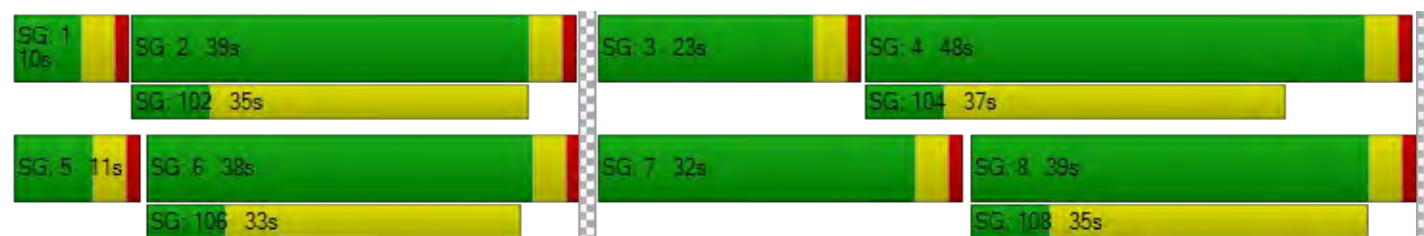
d_M, Delay for Movement [s/veh]	58.77	46.18	49.22	51.26	47.74	49.62	58.65	22.21	18.85	59.64	23.50	25.71
Movement LOS	E	D	D	D	D	D	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	50.45			49.34			26.34			27.27		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	38.72											
Intersection LOS	D											
Intersection V/C	0.655											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.790			2.827			2.834			2.951		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			733			583			567		
d_b, Bicycle Delay [s]	30.10			24.07			30.10			30.82		
I_b,int, Bicycle LOS Score for Intersection	1.830			2.928			2.130			2.491		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	223	6	292	52	27	8	2	866	288	325	711	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	6	292	52	27	8	2	866	288	325	711	10
Peak Hour Factor	0.8160	0.8160	0.8160	0.7410	0.7410	0.7410	0.8560	0.8560	0.8560	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	2	89	18	9	3	1	253	84	89	194	3
Total Analysis Volume [veh/h]	273	7	358	70	36	11	2	1012	336	356	778	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	61	61	0	37	0	10	38	0	21	49	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	27	48	10	10	0	64	64	17	81	81
g / C, Green / Cycle	0.10	0.22	0.40	0.09	0.09	0.00	0.54	0.54	0.14	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.24	0.05	0.03	0.00	0.39	0.40	0.11	0.22	0.22
s, saturation flow rate [veh/h]	3277	1772	1506	1408	1701	1687	1772	1623	3277	1772	1763
c, Capacity [veh/h]	336	392	597	151	145	6	951	872	464	1196	1191
d1, Uniform Delay [s]	52.74	36.54	28.69	55.26	51.62	59.66	21.24	21.42	49.59	8.14	8.14
k, delay calibration	0.11	0.11	0.42	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.77	0.02	3.68	2.21	1.27	31.21	5.03	5.72	2.68	0.74	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.02	0.60	0.46	0.32	0.34	0.73	0.74	0.77	0.33	0.33
d, Delay for Lane Group [s/veh]	57.51	36.56	32.37	57.47	52.90	90.87	26.28	27.14	52.27	8.88	8.89
Lane Group LOS	E	D	C	E	D	F	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.25	0.16	8.70	2.18	1.38	0.11	15.84	14.97	5.31	4.29	4.28
50th-Percentile Queue Length [ft/ln]	106.22	4.10	217.49	54.39	34.62	2.79	396.09	374.16	132.77	107.37	106.90
95th-Percentile Queue Length [veh/ln]	7.63	0.30	13.54	3.92	2.49	0.20	22.37	21.31	9.09	7.69	7.67
95th-Percentile Queue Length [ft/ln]	190.73	7.38	338.41	97.91	62.31	5.02	559.29	532.78	227.25	192.34	191.68

Movement, Approach, & Intersection Results

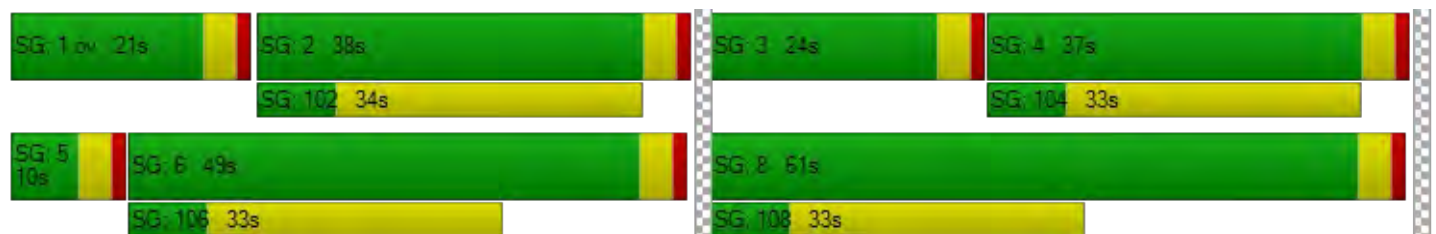
d_M, Delay for Movement [s/veh]	57.51	36.56	32.37	57.47	52.90	52.90	90.87	26.54	27.14	52.27	8.89	8.89
Movement LOS	E	D	C	E	D	D	F	C	C	D	A	A
d_A, Approach Delay [s/veh]	43.18			55.63			26.79			22.37		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	29.49											
Intersection LOS	C											
Intersection V/C	0.817											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.689			1.999			2.784			2.986		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	950			550			567			750		
d_b, Bicycle Delay [s]	16.54			31.54			30.82			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.612			1.753			2.673			2.504		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	5	149	2	428	303	794	16	8	684	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	5	149	2	428	303	794	16	8	684	77
Peak Hour Factor	0.5500	0.5500	0.5500	0.8490	0.8490	0.8490	0.8890	0.8890	0.8890	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	2	44	1	126	85	223	4	2	194	22
Total Analysis Volume [veh/h]	5	5	9	176	2	504	341	893	18	9	777	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	44	36	0	40	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	3	3	28	28	69	30	71	71	2	43	43
g / C, Green / Cycle	0.02	0.02	0.02	0.24	0.24	0.57	0.25	0.59	0.59	0.01	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.01	0.05	0.05	0.33	0.20	0.26	0.26	0.01	0.23	0.06
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1689	1506	1687	1772	1759	1687	3373	1506
c, Capacity [veh/h]	75	43	37	397	397	865	418	1050	1043	23	1210	540
d1, Uniform Delay [s]	58.93	57.29	57.47	37.05	37.05	16.34	42.54	13.40	13.41	58.68	32.06	26.21
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.17	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.16	3.37	0.28	0.28	2.86	5.97	1.31	1.32	9.94	2.62	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.12	0.24	0.22	0.22	0.58	0.81	0.43	0.44	0.38	0.64	0.16
d, Delay for Lane Group [s/veh]	59.30	58.45	60.83	37.34	37.34	19.20	48.51	14.72	14.73	68.62	34.69	26.86
Lane Group LOS	E	E	E	D	D	B	D	B	B	E	C	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.16	0.16	0.30	2.15	2.16	9.25	10.17	6.95	6.91	0.34	9.77	1.83
50th-Percentile Queue Length [ft/ln]	3.97	4.07	7.58	53.85	53.90	231.31	254.35	173.70	172.70	8.41	244.35	45.63
95th-Percentile Queue Length [veh/ln]	0.29	0.29	0.55	3.88	3.88	14.24	15.40	11.27	11.22	0.61	14.90	3.29
95th-Percentile Queue Length [ft/ln]	7.14	7.32	13.64	96.93	97.02	356.03	385.12	281.78	280.46	15.14	372.53	82.13

Movement, Approach, & Intersection Results

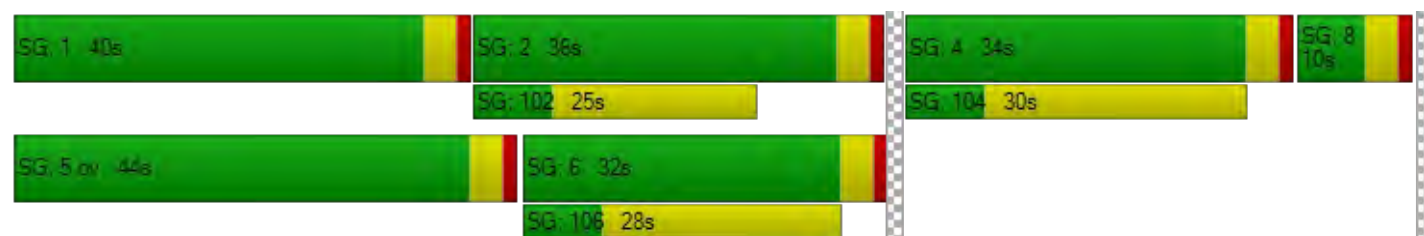
d_M, Delay for Movement [s/veh]	59.30	58.45	60.83	37.34	37.34	19.20	48.51	14.72	14.73	68.62	34.69	26.86
Movement LOS	E	E	E	D	D	B	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	59.80			23.93			23.93			34.25		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	27.36											
Intersection LOS	C											
Intersection V/C	0.790											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.157			2.417			2.816			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			500			533			467		
d_b, Bicycle Delay [s]	54.15			33.75			32.27			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.591			2.685			2.593			2.281		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.690

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	127	205	87	419	939	169	35	523	328	59	403	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	205	87	419	939	169	35	523	328	59	403	205
Peak Hour Factor	0.8520	0.8520	0.8520	0.8550	0.8550	0.8550	0.9040	0.9040	0.9040	0.7250	0.7250	0.7250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	60	26	123	275	49	10	145	91	20	139	71
Total Analysis Volume [veh/h]	149	241	102	490	1098	198	39	579	363	81	556	283
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	37	0	24	48	0	10	43	0	11	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	42	42	19	54	54	4	31	31	7	33	33
g / C, Green / Cycle	0.06	0.37	0.37	0.17	0.47	0.47	0.04	0.27	0.27	0.06	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.07	0.15	0.26	0.26	0.02	0.17	0.24	0.05	0.16	0.19
s, saturation flow rate [veh/h]	3277	3373	1525	3277	3373	1637	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	206	1236	559	545	1585	769	64	902	403	102	979	437
d1, Uniform Delay [s]	52.95	24.81	24.93	47.01	21.80	21.83	54.50	37.27	40.68	53.33	34.72	35.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.77	0.34	0.80	5.63	1.38	2.84	8.88	0.77	15.06	12.66	0.52	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.19	0.20	0.90	0.55	0.55	0.61	0.64	0.90	0.79	0.57	0.65
d, Delay for Lane Group [s/veh]	57.72	25.14	25.73	52.64	23.18	24.67	63.38	38.04	55.74	65.99	35.24	37.33
Lane Group LOS	E	C	C	D	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.25	2.21	2.21	7.27	8.55	8.65	1.27	7.27	11.50	2.67	6.66	7.09
50th-Percentile Queue Length [ft/ln]	56.24	55.36	55.29	181.78	213.77	216.33	31.78	181.67	287.47	66.74	166.48	177.36
95th-Percentile Queue Length [veh/ln]	4.05	3.99	3.98	11.69	13.35	13.48	2.29	11.69	17.06	4.81	10.89	11.46
95th-Percentile Queue Length [ft/ln]	101.24	99.64	99.53	292.33	333.66	336.94	57.21	292.20	426.50	120.14	272.29	286.56

Movement, Approach, & Intersection Results

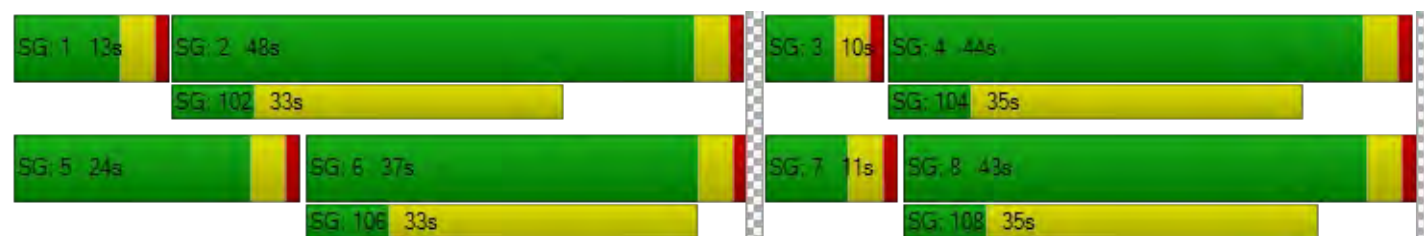
d_M, Delay for Movement [s/veh]	57.72	25.17	25.73	52.64	23.48	24.67	63.38	38.04	55.74	65.99	35.24	37.33
Movement LOS	E	C	C	D	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	35.14			31.61			45.60			38.59		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	36.85											
Intersection LOS	D											
Intersection V/C	0.690											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.985			3.023			2.771			2.804		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	574			765			678			696		
d_b, Bicycle Delay [s]	29.23			21.92			25.11			24.46		
I_b,int, Bicycle LOS Score for Intersection	1.830			2.542			2.369			2.319		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.154

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	24	124	8	6	113	13	30	2	54	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	124	8	6	113	13	30	2	54	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.6500	0.6500	0.6500	0.5970	0.5970	0.5970	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	34	2	2	43	5	13	1	23	0	0	0
Total Analysis Volume [veh/h]	27	138	9	9	174	20	50	3	90	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	26	0	10	26	0	0	54	0	0	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	69	69	1	67	67	8	8	8	8
g / C, Green / Cycle	0.03	0.77	0.77	0.01	0.75	0.75	0.08	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.04	0.04	0.01	0.06	0.06	0.04	0.06	0.00	0.00
s, saturation flow rate [veh/h]	1687	1772	1734	1687	1772	1709	1417	1513	1303	1772
c, Capacity [veh/h]	57	1360	1331	25	1326	1279	172	128	88	150
d1, Uniform Delay [s]	42.70	2.54	2.54	43.94	3.02	3.02	40.80	40.21	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.90	0.08	0.08	8.64	0.11	0.11	0.92	7.66	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.05	0.06	0.36	0.07	0.08	0.29	0.73	0.00	0.00
d, Delay for Lane Group [s/veh]	48.60	2.61	2.62	52.59	3.13	3.14	41.72	47.88	0.00	0.00
Lane Group LOS	D	A	A	D	A	A	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.68	0.25	0.25	0.26	0.39	0.39	1.11	2.26	0.00	0.00
50th-Percentile Queue Length [ft/ln]	16.95	6.30	6.28	6.41	9.74	9.66	27.67	56.39	0.00	0.00
95th-Percentile Queue Length [veh/ln]	1.22	0.45	0.45	0.46	0.70	0.70	1.99	4.06	0.00	0.00
95th-Percentile Queue Length [ft/ln]	30.51	11.35	11.30	11.55	17.53	17.39	49.81	101.51	0.00	0.00

Movement, Approach, & Intersection Results

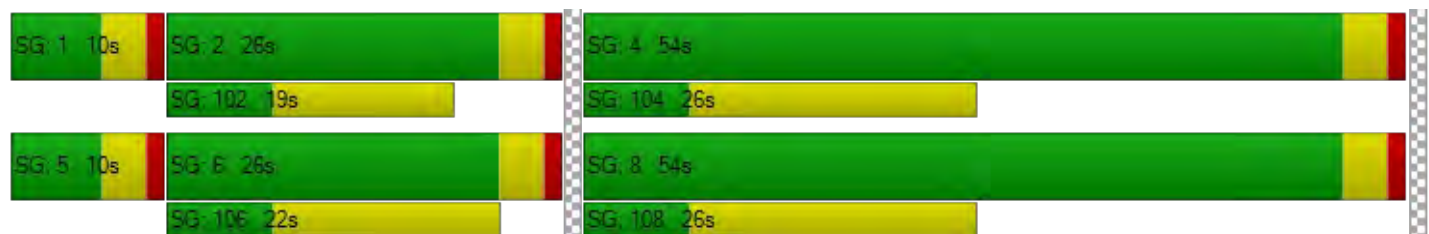
d_M, Delay for Movement [s/veh]	48.60	2.62	2.62	52.59	3.13	3.14	41.72	47.88	47.88	0.00	0.00	0.00
Movement LOS	D	A	A	D	A	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	9.75			5.32			45.72			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	17.92											
Intersection LOS	B											
Intersection V/C	0.154											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.385			2.447			2.001			1.947		
Crosswalk LOS	B			B			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	489			489			1111			1111		
d_b, Bicycle Delay [s]	25.69			25.69			8.89			8.89		
I_b,int, Bicycle LOS Score for Intersection	1.703			1.727			1.796			1.560		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	8.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.113

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	12	155	63	14	134	6	1	0	1	25	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	155	63	14	134	6	1	0	1	25	0	5
Peak Hour Factor	0.8280	0.8280	0.8280	0.9050	0.9050	0.9050	0.2500	0.2500	0.2500	0.6000	0.6000	0.6000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	47	19	4	37	2	1	0	1	10	0	2
Total Analysis Volume [veh/h]	14	187	76	15	148	7	4	0	4	42	0	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	30	0	10	30	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	82	76	76	82	76	76	1	1	5	5
g / C, Green / Cycle	0.82	0.76	0.76	0.82	0.76	0.76	0.01	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.01	0.08	0.08	0.01	0.04	0.04	0.00	0.00	0.01	0.02
s, saturation flow rate [veh/h]	1254	1772	1604	1145	1772	1744	1687	1506	1687	1624
c, Capacity [veh/h]	1116	1348	1220	1017	1350	1329	21	19	77	74
d1, Uniform Delay [s]	1.61	3.10	3.11	1.64	2.96	2.97	48.90	48.92	46.26	46.28
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.15	0.17	0.03	0.08	0.08	4.21	5.42	2.43	2.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.10	0.11	0.01	0.06	0.06	0.19	0.21	0.33	0.34
d, Delay for Lane Group [s/veh]	1.62	3.25	3.28	1.66	3.05	3.05	53.12	54.34	48.69	48.92
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	0.60	0.58	0.04	0.33	0.33	0.12	0.13	0.65	0.65
50th-Percentile Queue Length [ft/ln]	0.76	15.02	14.49	0.96	8.29	8.27	3.08	3.18	16.36	16.30
95th-Percentile Queue Length [veh/ln]	0.05	1.08	1.04	0.07	0.60	0.60	0.22	0.23	1.18	1.17
95th-Percentile Queue Length [ft/ln]	1.36	27.03	26.08	1.73	14.93	14.88	5.55	5.72	29.44	29.35

Movement, Approach, & Intersection Results

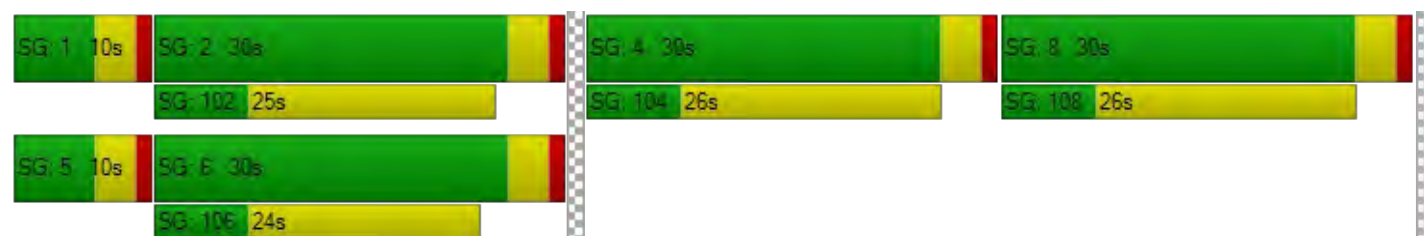
d_M, Delay for Movement [s/veh]	1.62	3.26	3.28	1.66	3.05	3.05	53.12	53.12	54.34	48.78	48.92	48.92
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	3.18			2.93			53.73			48.80		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.41											
Intersection LOS	A											
Intersection V/C	0.113											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.397			2.377			1.970			2.008		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			520			520			520		
d_b, Bicycle Delay [s]	27.38			27.38			27.38			27.38		
I_b,int, Bicycle LOS Score for Intersection	1.788			1.700			1.573			1.642		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.218

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	30	5	14	3	2	26	73	227	14	26	304	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	5	14	3	2	26	73	227	14	26	304	11
Peak Hour Factor	0.5830	0.5830	0.5830	0.5500	0.5500	0.5500	0.8240	0.8240	0.8240	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	2	6	1	1	12	22	69	4	7	81	3
Total Analysis Volume [veh/h]	51	9	24	5	4	47	89	275	17	28	323	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	11	33	0	10	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	5	5	5	23	5	61	61	3	59	59
g / C, Green / Cycle	0.06	0.06	0.06	0.05	0.05	0.26	0.06	0.68	0.68	0.03	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.02	0.00	0.00	0.03	0.03	0.08	0.08	0.02	0.09	0.10
s, saturation flow rate [veh/h]	1417	1556	1506	1687	1612	1506	3277	1772	1736	1687	1772	1749
c, Capacity [veh/h]	138	164	90	87	83	392	199	1198	1174	59	1153	1138
d1, Uniform Delay [s]	40.37	40.90	40.51	40.68	40.66	25.45	40.90	5.15	5.15	42.70	6.08	6.08
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.39	0.85	1.57	0.27	0.24	0.13	1.58	0.21	0.22	5.81	0.27	0.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.26	0.27	0.06	0.05	0.12	0.45	0.12	0.12	0.47	0.15	0.15
d, Delay for Lane Group [s/veh]	40.75	41.75	42.08	40.96	40.90	25.58	42.48	5.36	5.37	48.51	6.34	6.35
Lane Group LOS	D	D	D	D	D	C	D	A	A	D	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.36	0.96	0.54	0.11	0.09	0.77	0.99	0.90	0.89	0.70	1.17	1.16
50th-Percentile Queue Length [ft/ln]	9.07	23.96	13.58	2.78	2.23	19.36	24.69	22.46	22.23	17.53	29.15	28.97
95th-Percentile Queue Length [veh/ln]	0.65	1.72	0.98	0.20	0.16	1.39	1.78	1.62	1.60	1.26	2.10	2.09
95th-Percentile Queue Length [ft/ln]	16.32	43.12	24.44	5.01	4.01	34.85	44.44	40.43	40.01	31.55	52.46	52.14

Movement, Approach, & Intersection Results

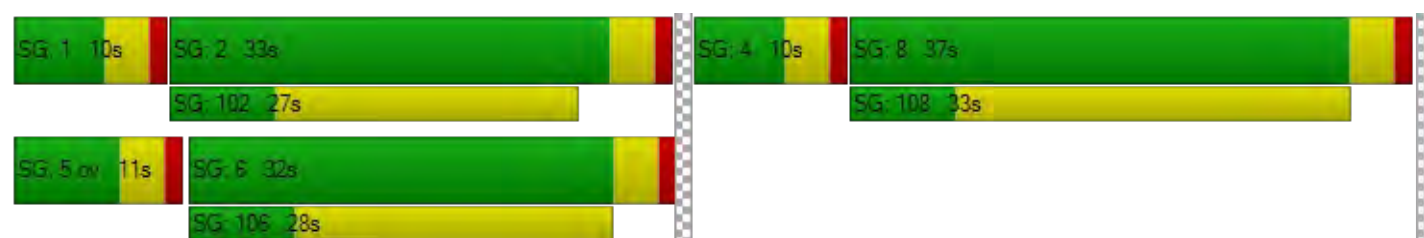
d_M, Delay for Movement [s/veh]	41.40	41.75	42.08	40.96	40.90	25.58	42.48	5.36	5.37	48.51	6.35	6.35
Movement LOS	D	D	D	D	D	C	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	41.65			28.05			14.03			9.60		
Approach LOS	D			C			B			A		
d_I, Intersection Delay [s/veh]	15.72											
Intersection LOS	B											
Intersection V/C	0.218											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			0.00			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.325			2.332			0.000			2.429		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	733			133			644			622		
d_b, Bicycle Delay [s]	18.05			39.20			20.67			21.36		
I_b,int, Bicycle LOS Score for Intersection	1.698			1.606			1.874			1.859		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	45.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.944

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	288	572	247	136	1182	266	174	1234	344	269	1089	94
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	572	247	136	1182	266	174	1234	344	269	1089	94
Peak Hour Factor	0.8230	0.8230	0.8230	0.9630	0.9630	0.9630	0.8630	0.8630	0.8630	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	174	75	35	307	69	50	357	100	69	278	24
Total Analysis Volume [veh/h]	350	695	300	141	1227	276	202	1430	399	274	1111	96
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	45	0	11	39	0	13	49	0	15	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	39	39	7	33	33	9	47	47	11	49	49
g / C, Green / Cycle	0.11	0.33	0.33	0.06	0.28	0.28	0.08	0.39	0.39	0.09	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.11	0.14	0.20	0.04	0.25	0.18	0.06	0.37	0.37	0.08	0.23	0.06
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1583	3277	4826	1506
c, Capacity [veh/h]	356	1583	494	192	1343	419	247	1309	614	301	1952	609
d1, Uniform Delay [s]	53.39	31.65	33.83	55.57	41.93	38.28	54.69	35.52	35.87	54.00	27.64	22.73
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.18	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.65	0.19	1.71	5.33	2.86	2.98	6.58	14.96	28.08	10.34	1.21	0.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.44	0.61	0.73	0.91	0.66	0.82	0.95	0.96	0.91	0.57	0.16
d, Delay for Lane Group [s/veh]	72.04	31.84	35.54	60.90	44.79	41.26	61.26	50.49	63.95	64.34	28.85	23.28
Lane Group LOS	E	C	D	E	D	D	E	D	E	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.18	5.30	7.54	2.24	11.96	7.50	3.23	19.87	21.31	4.53	8.38	1.83
50th-Percentile Queue Length [ft/ln]	154.49	132.62	188.45	56.05	299.05	187.45	80.84	496.68	532.75	113.20	209.62	45.85
95th-Percentile Queue Length [veh/ln]	10.26	9.08	12.04	4.04	17.63	11.99	5.82	27.18	28.88	8.02	13.13	3.30
95th-Percentile Queue Length [ft/ln]	256.42	227.05	301.02	100.89	440.85	299.72	145.51	679.43	722.02	200.44	328.34	82.52

Movement, Approach, & Intersection Results

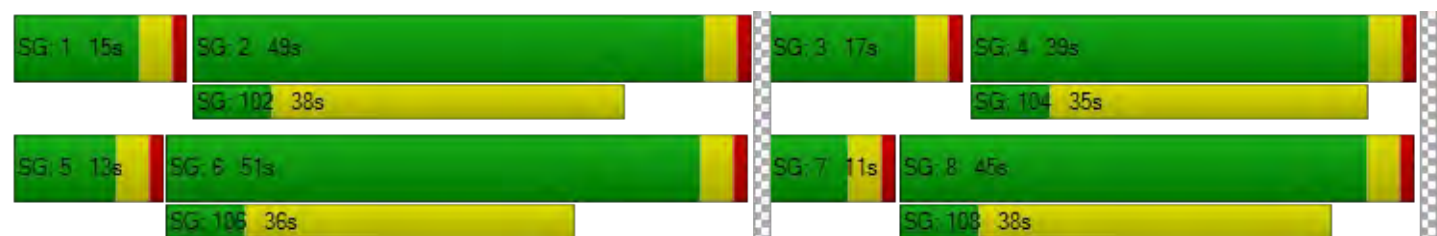
d_M, Delay for Movement [s/veh]	72.04	31.84	35.54	60.90	44.79	41.26	61.26	52.29	63.95	64.34	28.85	23.28
Movement LOS	E	C	D	E	D	D	E	D	E	E	C	C
d_A, Approach Delay [s/veh]	43.13			45.58			55.47			35.06		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	45.77											
Intersection LOS	D											
Intersection V/C	0.944											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.215			3.149			3.198			3.226		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			583			750			783		
d_b, Bicycle Delay [s]	26.00			30.10			23.44			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.299			2.464			2.677			2.374		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.560

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	56	108	145	114	80	127	208	1251	74	46	1138	149
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	108	145	114	80	127	208	1251	74	46	1138	149
Peak Hour Factor	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510	0.8710	0.8710	0.8710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	30	41	33	24	37	60	359	21	12	294	39
Total Analysis Volume [veh/h]	63	121	162	134	94	149	239	1436	85	48	1177	154
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	28	41	0	21	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	21	21	16	63	63	4	51	51
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.21	0.21	0.16	0.63	0.63	0.04	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.11	0.11	0.03	0.10	0.14	0.30	0.30	0.03	0.24	0.10
s, saturation flow rate [veh/h]	1302	1772	1506	1270	3373	1506	1687	3373	1721	1687	4826	1506
c, Capacity [veh/h]	289	369	314	239	703	314	273	2116	1080	75	2461	768
d1, Uniform Delay [s]	36.46	33.63	35.11	42.13	32.23	34.77	40.94	9.90	9.90	47.01	15.88	13.37
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	0.51	1.31	2.04	0.09	1.11	8.75	0.77	1.51	8.91	0.67	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.33	0.52	0.56	0.13	0.47	0.88	0.48	0.48	0.64	0.48	0.20
d, Delay for Lane Group [s/veh]	36.83	34.14	36.42	44.18	32.31	35.89	49.69	10.67	11.41	55.93	16.55	13.96
Lane Group LOS	D	C	D	D	C	D	D	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.37	2.54	3.59	3.32	0.93	3.26	6.34	5.57	5.92	1.35	5.71	1.96
50th-Percentile Queue Length [ft/ln]	34.30	63.40	89.64	82.98	23.32	81.48	158.60	139.26	147.89	33.85	142.75	49.06
95th-Percentile Queue Length [veh/ln]	2.47	4.56	6.45	5.97	1.68	5.87	10.47	9.44	9.90	2.44	9.63	3.53
95th-Percentile Queue Length [ft/ln]	61.74	114.12	161.36	149.36	41.98	146.66	261.86	236.02	247.61	60.93	240.72	88.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.83	34.14	36.42	44.18	32.31	35.89	49.69	10.89	11.41	55.93	16.55	13.96
Movement LOS	D	C	D	D	C	D	D	B	B	E	B	B
d_A, Approach Delay [s/veh]	35.70			37.94			16.18			17.63		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	20.57											
Intersection LOS	C											
Intersection V/C	0.560											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.416			2.478			3.127			3.300		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			740			600		
d_b, Bicycle Delay [s]	21.78			21.78			19.85			24.50		
I_b,int, Bicycle LOS Score for Intersection	2.131			1.871			2.528			2.318		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	45.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.927

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	406	430	135	120	899	155	124	1408	329	143	1342	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	430	135	120	899	155	124	1408	329	143	1342	60
Peak Hour Factor	0.7960	0.7960	0.7960	0.9500	0.9500	0.9500	0.9210	0.9210	0.9210	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	128	135	42	32	237	41	34	382	89	41	386	17
Total Analysis Volume [veh/h]	510	540	170	126	946	163	135	1529	357	165	1544	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	48	0	18	42	0	10	43	0	11	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	49	49	7	36	36	6	41	41	7	42	42
g / C, Green / Cycle	0.17	0.41	0.41	0.06	0.30	0.30	0.05	0.34	0.34	0.06	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.16	0.11	0.11	0.04	0.28	0.11	0.04	0.32	0.24	0.05	0.32	0.05
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	547	1983	619	182	1011	451	166	1646	514	193	1686	526
d1, Uniform Delay [s]	49.35	23.45	23.48	55.68	40.92	33.02	56.42	38.15	34.16	55.97	37.37	26.63
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.82	0.07	0.24	4.62	4.81	0.49	9.11	10.71	7.57	10.10	9.32	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.27	0.27	0.69	0.94	0.36	0.81	0.93	0.70	0.85	0.92	0.13
d, Delay for Lane Group [s/veh]	57.17	23.53	23.72	60.30	45.73	33.50	65.52	48.86	41.73	66.07	46.68	27.15
Lane Group LOS	E	C	C	E	D	C	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.11	3.41	3.25	1.99	14.12	3.80	2.24	15.87	10.01	2.75	15.69	1.44
50th-Percentile Queue Length [ft/ln]	202.83	85.15	81.21	49.80	353.04	95.00	55.91	396.68	250.22	68.69	392.13	35.88
95th-Percentile Queue Length [veh/ln]	12.78	6.13	5.85	3.59	20.28	6.84	4.03	22.40	15.20	4.95	22.18	2.58
95th-Percentile Queue Length [ft/ln]	319.61	153.26	146.18	89.63	507.11	170.99	100.64	560.00	379.93	123.64	554.51	64.58

Movement, Approach, & Intersection Results

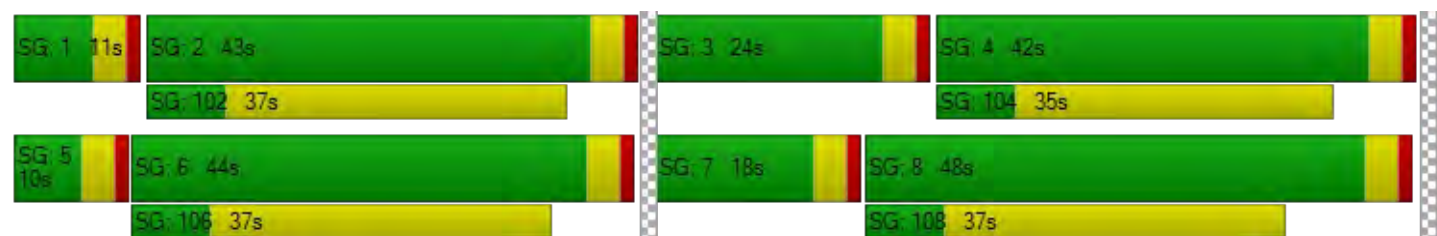
d_M, Delay for Movement [s/veh]	57.17	23.53	23.72	60.30	45.73	33.50	65.52	48.86	41.73	66.07	46.68	27.15
Movement LOS	E	C	C	E	D	C	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	37.62			45.60			48.71			47.72		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.65											
Intersection LOS	D											
Intersection V/C	0.927											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.067			2.980			3.322			3.253		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	733			633			650			667		
d_b, Bicycle Delay [s]	24.07			28.02			27.34			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.231			2.578			2.671			2.538		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	13.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.537

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	50	119	13	28	55	1444	9	23	1396	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	50	119	13	28	55	1444	9	23	1396	136
Peak Hour Factor	0.7700	0.7700	0.7700	0.8070	0.8070	0.8070	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	16	37	4	9	15	403	3	7	410	40
Total Analysis Volume [veh/h]	18	17	65	147	16	35	61	1613	10	27	1640	160
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	40	0	10	40	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	7	7	5	67	67	3	66	66
g / C, Green / Cycle	0.07	0.07	0.07	0.07	0.07	0.05	0.67	0.67	0.03	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.05	0.04	0.03	0.02	0.32	0.32	0.02	0.34	0.11
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1580	3277	3373	1766	1687	4826	1506
c, Capacity [veh/h]	111	116	90	228	110	164	2267	1187	55	3161	986
d1, Uniform Delay [s]	44.20	44.15	45.90	45.38	44.79	46.04	7.86	7.86	47.59	9.03	6.67
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.57	10.48	3.03	3.02	1.40	0.70	1.34	6.47	0.61	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.15	0.72	0.64	0.46	0.37	0.47	0.47	0.49	0.52	0.16
d, Delay for Lane Group [s/veh]	44.88	44.72	56.38	48.41	47.80	47.44	8.56	9.20	54.07	9.64	7.02
Lane Group LOS	D	D	E	D	D	D	A	A	D	A	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	0.42	1.84	1.87	1.30	0.76	5.04	5.48	0.76	5.70	1.29
50th-Percentile Queue Length [ft/ln]	11.03	10.38	45.95	46.63	32.60	19.08	125.93	137.11	18.97	142.50	32.26
95th-Percentile Queue Length [veh/ln]	0.79	0.75	3.31	3.36	2.35	1.37	8.72	9.33	1.37	9.62	2.32
95th-Percentile Queue Length [ft/ln]	19.86	18.68	82.71	83.94	58.67	34.35	217.95	233.13	34.14	240.38	58.06

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.88	44.72	56.38	48.41	47.80	47.80	47.44	8.78	9.20	54.07	9.64	7.02
Movement LOS	D	D	E	D	D	D	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	52.33			48.25			10.18			10.07		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	13.21											
Intersection LOS	B											
Intersection V/C	0.537											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.173			2.390			3.142			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	120			720			720			720		
d_b, Bicycle Delay [s]	44.18			20.48			20.48			20.48		
I_b,int, Bicycle LOS Score for Intersection	1.642			1.886			2.486			2.564		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	35.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	92	130	378	80	325	25	31	1446	163	410	1445	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	92	130	378	80	325	25	31	1446	163	410	1445	128
Peak Hour Factor	0.9050	0.9050	0.9050	0.9420	0.9420	0.9420	0.9090	0.9090	0.9090	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	36	104	21	86	7	9	398	45	114	401	36
Total Analysis Volume [veh/h]	102	144	418	85	345	27	34	1591	179	456	1606	142
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	41	0	10	39	0	10	34	0	20	44	44
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	31	31	6	32	32	4	36	36	16	48	58
g / C, Green / Cycle	0.05	0.30	0.30	0.06	0.30	0.30	0.04	0.34	0.34	0.15	0.46	0.55
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.28	0.04	0.11	0.11	0.01	0.27	0.27	0.14	0.33	0.09
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1727	3277	4826	1656	3277	4826	1506
c, Capacity [veh/h]	179	1002	447	136	531	518	120	1644	564	500	2204	832
d1, Uniform Delay [s]	48.45	27.12	35.93	48.40	28.80	28.82	49.28	31.42	31.43	43.82	23.25	11.63
k, delay calibration	0.11	0.11	0.30	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.83	0.07	20.55	4.62	0.40	0.41	1.29	4.23	11.46	6.89	2.16	0.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.14	0.93	0.62	0.35	0.36	0.28	0.80	0.80	0.91	0.73	0.17
d, Delay for Lane Group [s/veh]	51.28	27.18	56.49	53.01	29.20	29.24	50.56	35.65	42.88	50.71	25.40	12.07
Lane Group LOS	D	C	E	D	C	C	D	D	D	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.37	1.33	12.74	1.17	3.74	3.67	0.45	10.53	11.98	6.26	10.85	1.70
50th-Percentile Queue Length [ft/ln]	34.27	33.32	318.48	29.31	93.43	91.84	11.37	263.36	299.54	156.59	271.34	42.53
95th-Percentile Queue Length [veh/ln]	2.47	2.40	18.59	2.11	6.73	6.61	0.82	15.86	17.66	10.37	16.26	3.06
95th-Percentile Queue Length [ft/ln]	61.68	59.98	464.81	52.77	168.17	165.32	20.47	396.43	441.45	259.20	406.41	76.55

Movement, Approach, & Intersection Results

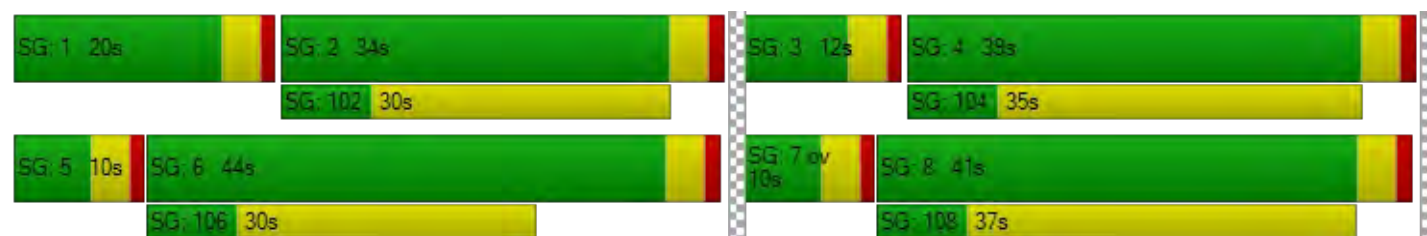
d_M, Delay for Movement [s/veh]	51.28	27.18	56.49	53.01	29.22	29.24	50.56	36.89	42.88	50.71	25.40	12.07
Movement LOS	D	C	E	D	C	C	D	D	D	D	C	B
d_A, Approach Delay [s/veh]	49.33			33.64			37.75			29.78		
Approach LOS	D			C			D			C		
d_I, Intersection Delay [s/veh]	35.46											
Intersection LOS	D											
Intersection V/C	0.856											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.830			2.586			3.240			3.393		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	705			667			571			762		
d_b, Bicycle Delay [s]	22.02			23.33			26.79			20.12		
I_b,int, Bicycle LOS Score for Intersection	2.107			1.937			2.304			2.772		
Bicycle LOS	B			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	16.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.651

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	547	0	438	0	1343	609	0	1567	171
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	547	0	438	0	1343	609	0	1567	171
Peak Hour Factor	1.0000	1.0000	1.0000	0.8810	1.0000	0.8810	1.0000	0.9270	0.9270	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	155	0	124	0	362	164	0	417	45
Total Analysis Volume [veh/h]	0	0	0	621	0	497	0	1449	657	0	1667	182
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		26	26	26	56	56
g / C, Green / Cycle		0.29	0.29	0.29	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate		0.22	0.23	0.25	0.30	0.35
s, saturation flow rate [veh/h]		1687	1622	1506	4826	4826
c, Capacity [veh/h]		489	470	437	2997	2997
d1, Uniform Delay [s]		29.06	29.40	30.09	9.22	9.86
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.49	3.06	4.84	0.56	0.75
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.76	0.79	0.85	0.48	0.56
d, Delay for Lane Group [s/veh]		31.55	32.46	34.93	9.78	10.61
Lane Group LOS		C	C	C	A	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		7.43	7.58	7.93	4.71	5.81
50th-Percentile Queue Length [ft/ln]		185.84	189.43	198.34	117.69	145.16
95th-Percentile Queue Length [veh/ln]		11.91	12.09	12.55	8.27	9.76
95th-Percentile Queue Length [ft/ln]		297.63	302.29	313.82	206.65	243.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.91	0.00	34.31	0.00	9.78	0.00	0.00	10.61	0.00
Movement LOS				C		C		A			B	
d_A, Approach Delay [s/veh]	0.00			32.98			9.78			10.61		
Approach LOS	A			C			A			B		
d_I, Intersection Delay [s/veh]	16.23											
Intersection LOS	B											
Intersection V/C	0.651											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.403			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			5.977			2.357			2.476		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.743

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	791	167	746	0	0	90	152	1220	506	0	1333	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	791	167	746	0	0	90	152	1220	506	0	1333	6
Peak Hour Factor	0.9080	0.9080	0.9080	1.0000	1.0000	0.6820	0.8790	0.8790	0.8790	1.0000	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	218	46	205	0	0	33	43	347	144	0	373	2
Total Analysis Volume [veh/h]	871	184	822	0	0	132	173	1388	576	0	1491	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	68	0	0	0	18	18	52	0	0	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	10	0	0	0	0	0	17	0	0	10	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	46	46	46	14	14	66	48	48
g / C, Green / Cycle	0.38	0.38	0.38	0.12	0.12	0.55	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.27	0.33	0.32	0.05	0.10	0.29	0.23	0.21
s, saturation flow rate [veh/h]	3277	1589	1506	2665	1687	4826	4826	1766
c, Capacity [veh/h]	1251	607	575	312	197	2661	1936	708
d1, Uniform Delay [s]	31.20	34.37	33.50	49.20	52.11	16.94	28.03	27.29
k, delay calibration	0.11	0.19	0.17	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.71	6.97	4.73	0.91	11.64	0.74	1.28	2.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.87	0.83	0.42	0.88	0.52	0.58	0.53
d, Delay for Lane Group [s/veh]	31.91	41.35	38.23	50.12	63.74	17.68	29.31	30.11
Lane Group LOS	C	D	D	D	E	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.63	15.25	13.09	1.88	5.75	8.02	8.56	8.67
50th-Percentile Queue Length [ft/ln]	265.66	381.29	327.13	47.08	143.87	200.52	214.08	216.72
95th-Percentile Queue Length [veh/ln]	15.97	21.66	19.02	3.39	9.69	12.67	13.36	13.50
95th-Percentile Queue Length [ft/ln]	399.31	541.41	475.44	84.74	242.23	316.63	334.06	337.43

Movement, Approach, & Intersection Results

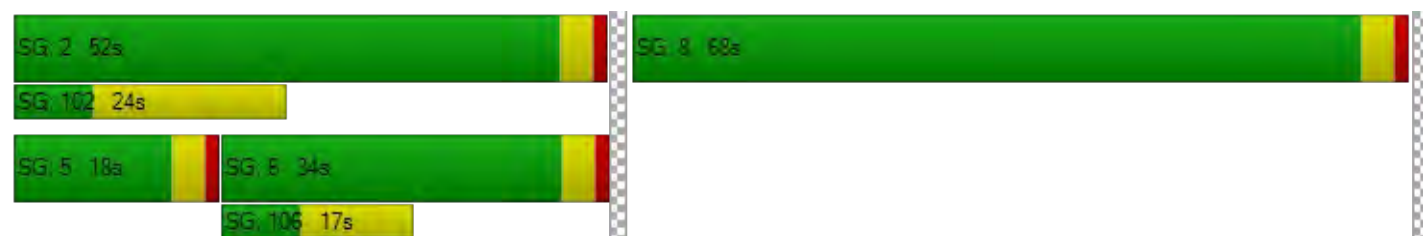
d_M, Delay for Movement [s/veh]	31.91	41.35	39.52	0.00	0.00	50.12	63.74	17.68	0.00	0.00	29.50	30.11
Movement LOS	C	D	D			D	E	B			C	C
d_A, Approach Delay [s/veh]	36.18			50.12			22.78			29.51		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.44											
Intersection LOS	C											
Intersection V/C	0.743											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.680	2.115	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	0	800	500
d_b, Bicycle Delay [s]	13.07	60.00	21.60	33.75
I_b,int, Bicycle LOS Score for Intersection	4.657	4.132	2.418	2.178
Bicycle LOS	E	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	29.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	137	192	66	138	305	136	138	1709	92	85	1465	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	137	192	66	138	305	136	138	1709	92	85	1465	78
Peak Hour Factor	0.8870	0.8870	0.8870	0.9320	0.9320	0.9320	0.9120	0.9120	0.9120	0.9620	0.9620	0.9620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	54	19	37	82	36	38	468	25	22	381	20
Total Analysis Volume [veh/h]	154	216	74	148	327	146	151	1874	101	88	1523	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	19	48	0	16	41	0	11	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	22	22	7	23	23	12	58	58	7	54	54
g / C, Green / Cycle	0.05	0.20	0.20	0.06	0.21	0.21	0.11	0.53	0.53	0.06	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.09	0.05	0.18	0.10	0.09	0.39	0.39	0.05	0.25	0.25
s, saturation flow rate [veh/h]	3277	1772	1621	3277	1772	1506	1687	3373	1726	1687	4826	1713
c, Capacity [veh/h]	181	353	323	211	369	314	179	1777	909	109	2342	831
d1, Uniform Delay [s]	51.55	38.57	38.67	50.46	42.33	38.22	48.34	20.10	20.17	50.84	19.33	19.33
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.46	0.81	0.93	4.17	7.22	1.08	10.35	2.73	5.34	13.22	0.78	2.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.42	0.44	0.70	0.89	0.47	0.85	0.73	0.74	0.81	0.51	0.51
d, Delay for Lane Group [s/veh]	62.01	39.38	39.59	54.62	49.54	39.29	58.68	22.84	25.51	64.06	20.11	21.53
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.36	3.61	3.40	2.12	9.29	3.54	4.57	12.96	14.03	2.79	6.87	7.65
50th-Percentile Queue Length [ft/ln]	59.12	90.25	85.11	52.90	232.31	88.55	114.25	323.94	350.69	69.69	171.82	191.28
95th-Percentile Queue Length [veh/ln]	4.26	6.50	6.13	3.81	14.29	6.38	8.08	18.86	20.17	5.02	11.17	12.19
95th-Percentile Queue Length [ft/ln]	106.41	162.46	153.20	95.23	357.30	159.39	201.89	471.53	504.25	125.44	279.31	304.70

Movement, Approach, & Intersection Results

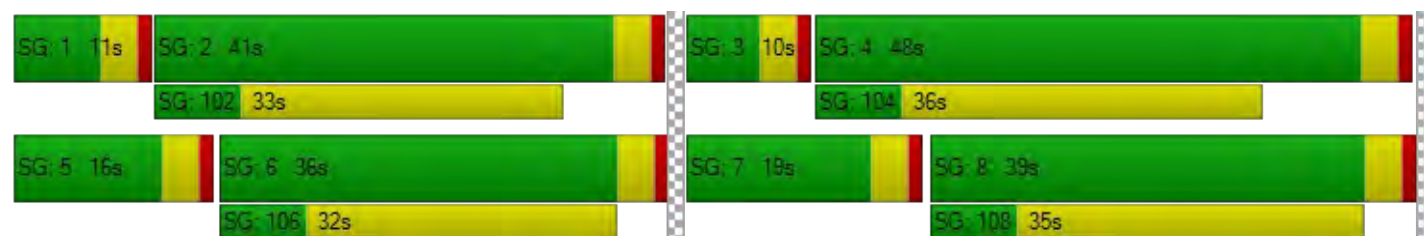
d_M, Delay for Movement [s/veh]	62.01	39.45	39.59	54.62	49.54	39.29	58.68	23.65	25.51	64.06	20.43	21.53
Movement LOS	E	D	D	D	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	47.30			48.34			26.23			22.75		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.75											
Intersection LOS	C											
Intersection V/C	0.787											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.497			2.636			3.216			3.197		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			800			673			582		
d_b, Bicycle Delay [s]	25.57			19.80			24.22			27.65		
I_b,int, Bicycle LOS Score for Intersection	1.926			2.584			2.729			2.258		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	20.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	160	11	134	23	26	13	12	1672	330	162	1339	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	11	134	23	26	13	12	1672	330	162	1339	30
Peak Hour Factor	0.8320	0.8320	0.8320	0.6740	0.6740	0.6740	0.9510	0.9510	0.9510	0.8930	0.8930	0.8930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	3	40	9	10	5	3	440	87	45	375	8
Total Analysis Volume [veh/h]	192	13	161	34	39	19	13	1758	347	181	1499	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	5	5	2	45	45	12	55	55
g / C, Green / Cycle	0.13	0.13	0.13	0.06	0.06	0.02	0.50	0.50	0.13	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.11	0.02	0.03	0.01	0.36	0.23	0.11	0.30	0.30
s, saturation flow rate [veh/h]	1687	1697	1506	1687	1675	1687	4826	1506	1687	3373	1752
c, Capacity [veh/h]	227	228	203	103	102	34	2402	750	218	2047	1063
d1, Uniform Delay [s]	35.95	35.95	37.82	40.56	41.17	43.65	17.89	14.78	38.30	9.94	9.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.40	1.39	6.91	1.84	4.85	7.13	2.01	2.05	7.92	0.85	1.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.45	0.79	0.33	0.57	0.39	0.73	0.46	0.83	0.49	0.49
d, Delay for Lane Group [s/veh]	37.35	37.34	44.73	42.41	46.02	50.78	19.91	16.83	46.22	10.79	11.57
Lane Group LOS	D	D	D	D	D	D	B	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.13	2.14	3.77	0.77	1.38	0.35	9.35	4.78	4.32	5.22	5.66
50th-Percentile Queue Length [ft/ln]	53.28	53.57	94.37	19.21	34.42	8.76	233.65	119.50	107.91	130.51	141.38
95th-Percentile Queue Length [veh/ln]	3.84	3.86	6.79	1.38	2.48	0.63	14.36	8.37	7.72	8.97	9.56
95th-Percentile Queue Length [ft/ln]	95.91	96.43	169.87	34.58	61.96	15.76	358.99	209.14	193.09	224.18	238.88

Movement, Approach, & Intersection Results

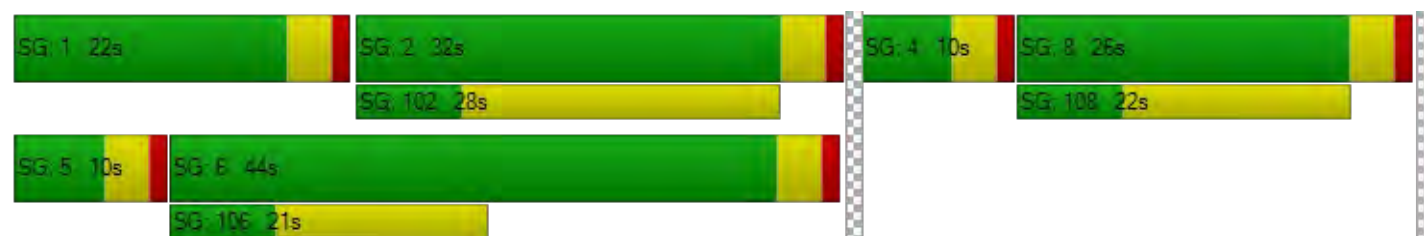
d_M, Delay for Movement [s/veh]	37.34	37.34	44.73	42.41	46.02	46.02	50.78	19.91	16.83	46.22	11.04	11.57
Movement LOS	D	D	D	D	D	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	40.59			44.68			19.59			14.77		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	19.99											
Intersection LOS	B											
Intersection V/C	0.746											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			0.00			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.358			1.989			0.000			3.104		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	489			133			622			889		
d_b, Bicycle Delay [s]	25.69			39.20			21.36			13.89		
I_b,int, Bicycle LOS Score for Intersection	2.164			1.711			2.725			2.502		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	160	226	79	302	596	103	125	1165	223	66	965	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	226	79	302	596	103	125	1165	223	66	965	82
Peak Hour Factor	0.8020	0.8020	0.8020	0.9340	0.9340	0.9340	0.8920	0.8920	0.8920	0.9780	0.9780	0.9780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	70	25	81	160	28	35	327	63	17	247	21
Total Analysis Volume [veh/h]	200	282	99	323	638	110	140	1306	250	67	987	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	30	0	16	35	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	17	17	11	21	21	6	46	46	5	45	45
g / C, Green / Cycle	0.07	0.18	0.18	0.12	0.22	0.22	0.06	0.48	0.48	0.05	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.06	0.11	0.11	0.10	0.19	0.07	0.04	0.31	0.31	0.02	0.21	0.21
s, saturation flow rate [veh/h]	3277	1772	1617	3277	3373	1506	3277	3373	1630	3277	3373	1701
c, Capacity [veh/h]	244	311	284	391	744	332	205	1630	788	175	1599	807
d1, Uniform Delay [s]	43.40	36.40	36.46	40.93	35.65	31.18	43.68	18.44	18.45	43.51	16.67	16.68
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.67	2.15	2.45	4.44	3.00	0.58	3.97	1.97	4.04	1.36	0.90	1.78
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.64	0.64	0.83	0.86	0.33	0.68	0.64	0.64	0.38	0.44	0.45
d, Delay for Lane Group [s/veh]	50.08	38.55	38.91	45.37	38.65	31.76	47.64	20.40	22.50	44.88	17.57	18.46
Lane Group LOS	D	D	D	D	D	C	D	C	C	D	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.52	4.39	4.10	3.89	7.28	2.15	1.71	8.61	8.80	0.79	5.15	5.40
50th-Percentile Queue Length [ft/ln]	63.09	109.84	102.41	97.34	181.93	53.87	42.84	215.22	219.95	19.75	128.68	135.06
95th-Percentile Queue Length [veh/ln]	4.54	7.83	7.37	7.01	11.70	3.88	3.08	13.42	13.66	1.42	8.87	9.21
95th-Percentile Queue Length [ft/ln]	113.56	195.78	184.34	175.22	292.54	96.97	77.11	335.52	341.56	35.55	221.70	230.36

Movement, Approach, & Intersection Results

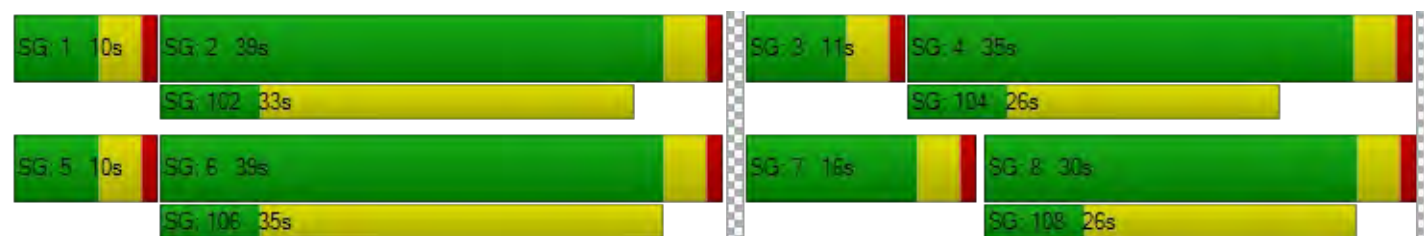
d_M, Delay for Movement [s/veh]	50.08	38.66	38.91	45.37	38.65	31.76	47.64	20.82	22.50	44.88	17.82	18.46
Movement LOS	D	D	D	D	D	C	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	42.63			39.97			23.28			19.46		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	28.80											
Intersection LOS	C											
Intersection V/C	0.700											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.705			2.816			3.092			3.077		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	547			653			737			737		
d_b, Bicycle Delay [s]	25.06			21.56			18.95			18.95		
I_b,int, Bicycle LOS Score for Intersection	2.039			2.443			2.492			2.186		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	44.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	138	527	238	225	897	380	237	1064	144	287	1076	134
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	527	238	225	897	380	237	1064	144	287	1076	134
Peak Hour Factor	0.8190	0.8190	0.8190	0.9240	0.9240	0.9240	0.8870	0.8870	0.8870	0.9290	0.9290	0.9290
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	161	73	61	243	103	67	300	41	77	290	36
Total Analysis Volume [veh/h]	168	643	291	244	971	411	267	1200	162	309	1158	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	41	41	19	45	45	15	46	0	14	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	38	52	11	38	53	11	45	45	10	44	44
g / C, Green / Cycle	0.09	0.31	0.43	0.09	0.31	0.44	0.09	0.38	0.38	0.08	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.10	0.19	0.19	0.07	0.29	0.27	0.08	0.25	0.11	0.09	0.26	0.26
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1673
c, Capacity [veh/h]	156	1054	647	303	1055	660	302	1823	569	275	1246	618
d1, Uniform Delay [s]	54.49	35.05	24.19	53.42	39.82	26.05	53.86	30.93	26.04	54.99	32.16	32.16
k, delay calibration	0.11	0.11	0.28	0.11	0.11	0.32	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	57.07	0.57	1.29	5.03	3.85	2.80	8.41	1.88	1.25	66.35	3.26	6.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.61	0.45	0.81	0.92	0.62	0.88	0.66	0.28	1.12	0.70	0.70
d, Delay for Lane Group [s/veh]	111.56	35.63	25.48	58.46	43.67	28.85	62.26	32.81	27.29	121.34	35.42	38.60
Lane Group LOS	F	D	C	E	D	C	E	C	C	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.16	8.03	6.04	3.82	14.20	9.46	4.33	9.83	3.44	6.69	11.21	11.67
50th-Percentile Queue Length [ft/ln]	179.07	200.79	151.03	95.54	354.99	236.43	108.35	245.80	86.07	167.20	280.15	291.78
95th-Percentile Queue Length [veh/ln]	11.88	12.68	10.07	6.88	20.38	14.50	7.75	14.97	6.20	11.37	16.70	17.27
95th-Percentile Queue Length [ft/ln]	296.89	316.98	251.81	171.96	509.49	362.51	193.71	374.36	154.92	284.13	417.40	431.85

Movement, Approach, & Intersection Results

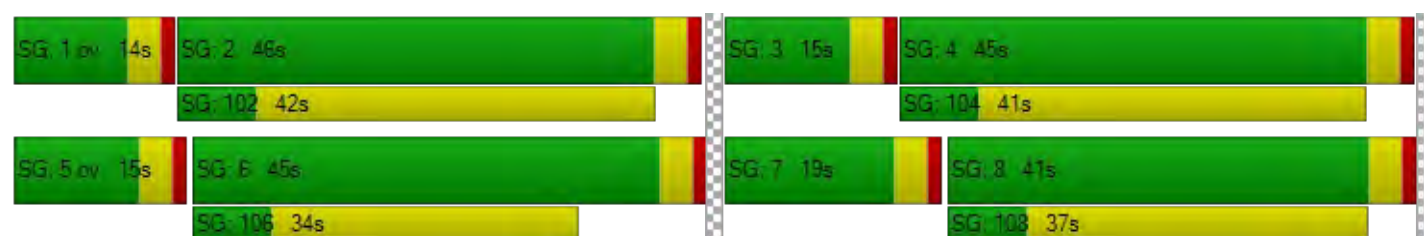
d_M, Delay for Movement [s/veh]	111.56	35.63	25.48	58.46	43.67	28.85	62.26	32.81	27.29	121.34	36.21	38.60
Movement LOS	F	D	C	E	D	C	E	C	C	F	D	D
d_A, Approach Delay [s/veh]	44.52			42.14			37.09			52.75		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.07											
Intersection LOS	D											
Intersection V/C	0.843											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.880			2.981			3.228			3.147		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			683			700			683		
d_b, Bicycle Delay [s]	28.70			26.00			25.35			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.469			2.901			2.456			2.446		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.704

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	257	240	14	144	862	209	244	824	507	23	955	104
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	257	240	14	144	862	209	244	824	507	23	955	104
Peak Hour Factor	0.9290	0.9290	0.9290	0.9170	0.9170	0.9170	0.9110	0.9110	0.9110	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	65	4	39	235	57	67	226	139	6	256	28
Total Analysis Volume [veh/h]	277	258	15	157	940	228	268	905	557	25	1025	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	38	0	23	44	44	16	49	49	10	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	33	8	28	44	12	60	77	3	51	51
g / C, Green / Cycle	0.11	0.27	0.07	0.23	0.37	0.10	0.50	0.64	0.03	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.05	0.19	0.15	0.08	0.27	0.37	0.01	0.22	0.23
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1684
c, Capacity [veh/h]	357	926	217	1120	551	329	1675	962	96	1435	716
d1, Uniform Delay [s]	52.08	34.21	54.96	43.96	28.44	52.89	20.79	12.43	57.01	25.57	25.59
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.66	0.16	4.49	1.77	0.50	4.87	1.25	2.54	1.43	1.40	2.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.28	0.72	0.84	0.41	0.81	0.54	0.58	0.26	0.53	0.53
d, Delay for Lane Group [s/veh]	55.74	34.37	59.46	45.74	28.94	57.76	22.04	14.97	58.45	26.97	28.38
Lane Group LOS	E	C	E	D	C	E	C	B	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.24	3.00	2.47	9.03	4.98	4.18	8.87	8.76	0.39	8.23	8.51
50th-Percentile Queue Length [ft/ln]	106.04	74.91	61.63	225.63	124.61	104.50	221.81	219.03	9.77	205.64	212.76
95th-Percentile Queue Length [veh/ln]	7.62	5.39	4.44	13.95	8.65	7.52	13.76	13.62	0.70	12.93	13.29
95th-Percentile Queue Length [ft/ln]	190.48	134.84	110.94	348.81	216.14	188.09	343.94	340.39	17.58	323.22	332.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.74	34.37	0.00	59.46	45.74	28.94	57.76	22.04	14.97	58.45	27.34	28.38
Movement LOS	E	C		E	D	C	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	45.44			44.47			25.30			28.11		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.60											
Intersection LOS	C											
Intersection V/C	0.704											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.990			2.978			3.137			2.917		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	567			667			750			650		
d_b, Bicycle Delay [s]	30.82			26.67			23.44			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.001			2.288			2.987			2.199		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	110	361	129	85	149	123	80	1057	66	76	1400	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	110	361	129	85	149	123	80	1057	66	76	1400	128
Peak Hour Factor	0.8320	0.8320	0.8320	0.8070	0.8070	0.8070	0.8830	0.8830	0.8830	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	108	39	26	46	38	23	299	19	20	368	34
Total Analysis Volume [veh/h]	132	434	155	105	185	152	91	1197	75	80	1471	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	34	0	11	32	0	10	35	0	10	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	18	18	7	17	17	6	43	43	5	43	43
g / C, Green / Cycle	0.10	0.20	0.20	0.08	0.19	0.19	0.07	0.48	0.48	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.17	0.17	0.06	0.10	0.10	0.05	0.25	0.25	0.05	0.32	0.32
s, saturation flow rate [veh/h]	1687	1772	1615	1687	1772	1516	1687	3373	1719	1687	3373	1697
c, Capacity [veh/h]	163	364	331	132	332	284	114	1611	821	103	1589	800
d1, Uniform Delay [s]	39.92	34.45	34.50	40.83	33.12	33.29	41.44	16.40	16.40	41.73	18.44	18.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.16	5.41	6.10	10.13	1.35	1.74	11.92	1.22	2.38	11.73	2.28	4.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.84	0.85	0.79	0.54	0.56	0.80	0.52	0.52	0.78	0.67	0.67
d, Delay for Lane Group [s/veh]	49.08	39.86	40.59	50.96	34.47	35.02	53.36	17.61	18.77	53.45	20.72	22.93
Lane Group LOS	D	D	D	D	C	D	D	B	B	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.24	6.87	6.37	2.63	3.58	3.24	2.35	5.97	6.35	2.07	8.56	9.11
50th-Percentile Queue Length [ft/ln]	81.03	171.78	159.21	65.83	89.47	81.03	58.64	149.32	158.80	51.70	213.99	227.83
95th-Percentile Queue Length [veh/ln]	5.83	11.17	10.51	4.74	6.44	5.83	4.22	9.98	10.49	3.72	13.36	14.06
95th-Percentile Queue Length [ft/ln]	145.85	279.26	262.67	118.49	161.05	145.85	105.56	249.52	262.13	93.07	333.95	351.60

Movement, Approach, & Intersection Results

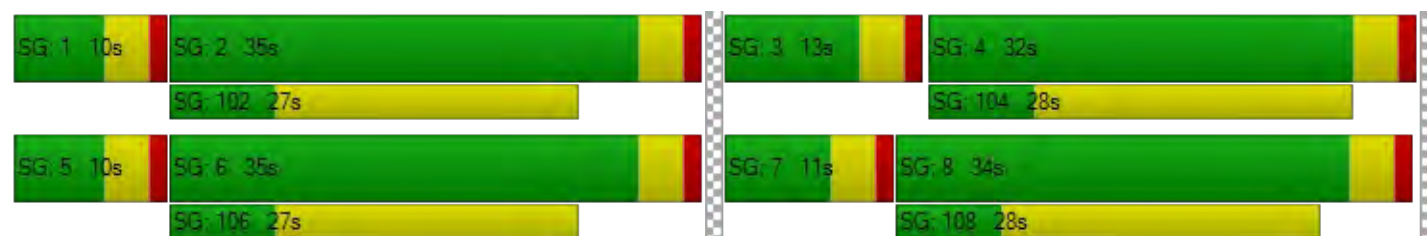
d_M, Delay for Movement [s/veh]	49.08	40.08	40.59	50.96	34.49	35.02	53.36	17.96	18.77	53.45	21.33	22.93
Movement LOS	D	D	D	D	C	D	D	B	B	D	C	C
d_A, Approach Delay [s/veh]	41.84			38.59			20.37			22.98		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	27.00											
Intersection LOS	C											
Intersection V/C	0.739											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.506			2.514			3.028			3.031		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			622			689			689		
d_b, Bicycle Delay [s]	20.00			21.36			19.34			19.34		
I_b,int, Bicycle LOS Score for Intersection	2.154			1.924			2.309			2.486		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	38.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.754

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	399	648	171	66	295	91	150	1117	355	204	1173	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	399	648	171	66	295	91	150	1117	355	204	1173	74
Peak Hour Factor	0.9000	0.9000	0.9000	0.9430	0.9430	0.9430	0.9070	0.9070	0.9070	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	180	48	17	78	24	41	308	98	58	336	21
Total Analysis Volume [veh/h]	443	720	190	70	313	97	165	1232	391	234	1345	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	45	0	10	33	0	17	42	0	23	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	29	29	6	17	17	13	51	51	18	56	56
g / C, Green / Cycle	0.15	0.24	0.24	0.05	0.14	0.14	0.11	0.42	0.42	0.15	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.14	0.21	0.13	0.04	0.09	0.06	0.10	0.26	0.26	0.14	0.28	0.28
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1718
c, Capacity [veh/h]	492	813	363	86	478	214	184	2033	634	259	1572	801
d1, Uniform Delay [s]	50.15	43.96	39.57	56.43	48.74	47.26	52.84	27.00	27.16	49.92	23.80	23.80
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.31	3.46	1.17	16.87	1.53	1.51	14.29	1.35	4.45	12.42	1.72	3.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.89	0.52	0.82	0.65	0.45	0.90	0.61	0.62	0.90	0.60	0.60
d, Delay for Lane Group [s/veh]	56.45	47.42	40.74	73.30	50.26	48.77	67.14	28.36	31.61	62.35	25.52	27.15
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.95	10.65	4.99	2.50	4.54	2.76	5.64	9.29	9.44	7.78	10.19	10.75
50th-Percentile Queue Length [ft/ln]	173.80	266.33	124.83	62.57	113.54	68.95	140.93	232.36	236.03	194.48	254.63	268.68
95th-Percentile Queue Length [veh/ln]	11.28	16.01	8.66	4.51	8.04	4.96	9.53	14.29	14.48	12.35	15.42	16.12
95th-Percentile Queue Length [ft/ln]	281.90	400.16	216.45	112.63	200.91	124.11	238.28	357.36	362.01	308.84	385.48	403.09

Movement, Approach, & Intersection Results

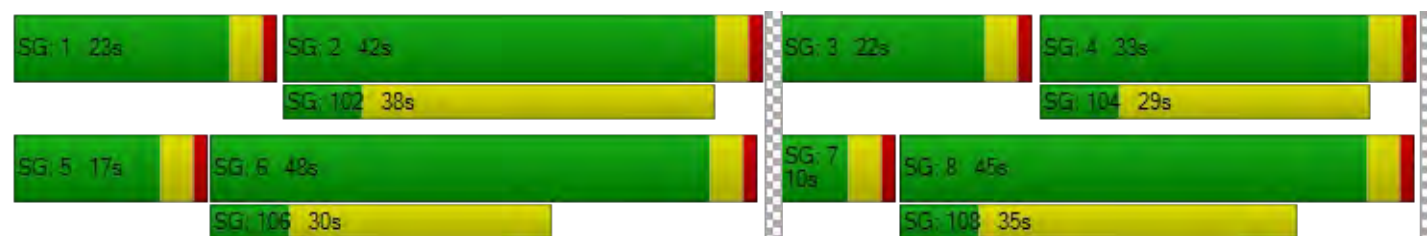
d_M, Delay for Movement [s/veh]	56.45	47.42	40.74	73.30	50.26	48.77	67.14	28.36	31.61	62.35	26.00	27.15
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	49.44			53.32			32.65			31.17		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	38.36											
Intersection LOS	D											
Intersection V/C	0.754											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.927			2.702			3.187			3.047		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			483			633			733		
d_b, Bicycle Delay [s]	26.00			34.50			28.02			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.676			1.956			2.543			2.475		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.807

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	288	549	241	519	354	14	36	1086	233	301	960	653
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	549	241	519	354	14	36	1086	233	301	960	653
Peak Hour Factor	0.9470	0.9470	0.9470	0.9220	0.9220	0.9220	0.8360	0.8360	0.8360	0.9740	0.9740	0.9740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	145	64	141	96	4	11	325	70	77	246	168
Total Analysis Volume [veh/h]	304	580	254	563	384	15	43	1299	279	309	986	670
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	19	35	0	28	44	0	10	39	0	18	47	47
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	23	23	23	24	34	34	5	44	44	13	52	80
g / C, Green / Cycle	0.11	0.19	0.19	0.19	0.20	0.28	0.28	0.04	0.36	0.36	0.11	0.44	0.67
(v / s)_i Volume / Saturation Flow Rate	0.09	0.17	0.17	0.17	0.17	0.11	0.11	0.01	0.25	0.25	0.09	0.20	0.44
s, saturation flow rate [veh/h]	3277	1772	1767	1506	3277	1772	1748	3277	4826	1572	3277	4826	1506
c, Capacity [veh/h]	360	339	338	288	656	499	493	128	1759	573	362	2105	1008
d1, Uniform Delay [s]	52.43	46.99	46.99	47.03	46.38	34.92	34.92	56.18	32.17	32.21	52.43	23.99	11.81
k, delay calibration	0.11	0.19	0.19	0.19	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.44	10.61	10.64	12.62	3.42	0.52	0.53	1.54	2.11	6.34	5.73	0.75	3.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.86	0.86	0.87	0.86	0.40	0.40	0.34	0.68	0.68	0.85	0.47	0.66
d, Delay for Lane Group [s/veh]	57.87	57.61	57.64	59.66	49.80	35.45	35.46	57.73	34.28	38.55	58.16	24.74	15.27
Lane Group LOS	E	E	E	E	D	D	D	E	C	D	E	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.76	9.44	9.41	8.22	8.40	4.84	4.78	0.66	9.97	10.46	4.86	6.71	10.76
50th-Percentile Queue Length [ft/ln]	119.0	235.8	235.3	205.4	209.93	121.07	119.50	16.57	249.14	261.38	121.41	167.82	269.12
95th-Percentile Queue Length [veh/ln]	8.34	14.47	14.45	12.92	13.15	8.45	8.37	1.19	15.14	15.76	8.47	10.96	16.15
95th-Percentile Queue Length [ft/ln]	208.5	361.8	361.1	323.0	328.74	211.29	209.13	29.83	378.57	393.95	211.76	274.05	403.65

Movement, Approach, & Intersection Results

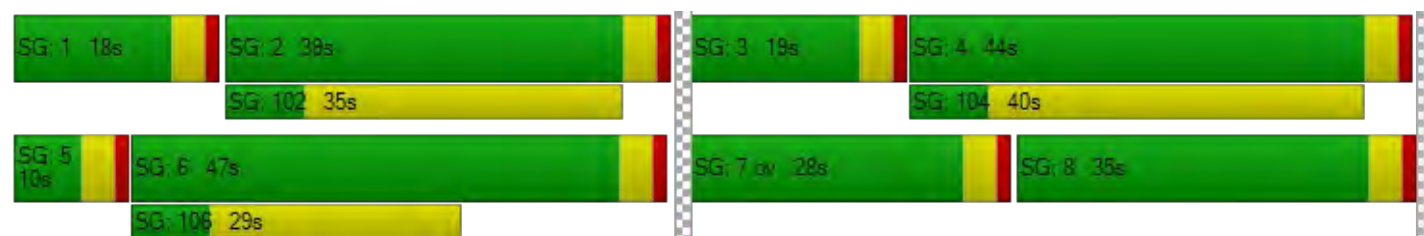
d_M, Delay for Movement [s/veh]	57.87	57.62	59.66	49.80	35.45	35.46	57.73	34.64	38.55	58.16	24.74	15.27
Movement LOS	E	E	E	D	D	D	E	C	D	E	C	B
d_A, Approach Delay [s/veh]	58.14			43.85			35.92			26.77		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	38.55											
Intersection LOS	D											
Intersection V/C	0.807											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.902			2.833			3.180			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			667			583			717		
d_b, Bicycle Delay [s]	33.00			26.67			30.10			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.498			2.353			2.228			2.640		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	21.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	422	0	664	0	1062	710	215	1533	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	422	0	664	0	1062	710	215	1533	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9480	1.0000	0.9480	1.0000	0.8820	0.8820	0.9530	0.9530	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	111	0	175	0	301	201	56	402	0
Total Analysis Volume [veh/h]	0	0	0	445	0	700	0	1204	805	226	1609	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	55	0	0	0	23	0	12	35	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		27	27	27	43	43	43	8	55
g / C, Green / Cycle		0.30	0.30	0.30	0.48	0.48	0.48	0.09	0.61
(v / s)_i Volume / Saturation Flow Rate		0.23	0.25	0.25	0.30	0.33	0.33	0.07	0.33
s, saturation flow rate [veh/h]		1687	1533	1506	3373	1506	1506	3277	4826
c, Capacity [veh/h]		504	458	449	1614	721	721	294	2957
d1, Uniform Delay [s]		28.64	29.50	29.68	17.44	18.37	18.37	40.07	10.13
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.37	4.05	4.57	1.82	5.52	5.52	4.22	0.72
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.76	0.83	0.85	0.62	0.70	0.70	0.77	0.54
d, Delay for Lane Group [s/veh]		31.00	33.55	34.25	19.25	23.89	23.89	44.29	10.86
Lane Group LOS		C	C	C	B	C	C	D	B
Critical Lane Group		No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		7.56	7.97	8.07	7.66	8.75	8.75	2.59	5.67
50th-Percentile Queue Length [ft/ln]		189.08	199.15	201.65	191.55	218.72	218.72	64.66	141.70
95th-Percentile Queue Length [veh/ln]		12.07	12.59	12.72	12.20	13.60	13.60	4.66	9.57
95th-Percentile Queue Length [ft/ln]		301.84	314.87	318.10	305.04	339.99	339.99	116.39	239.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.37	0.00	33.93	0.00	19.25	23.89	44.29	10.86	0.00
Movement LOS				C		C		B	C	D	B	
d_A, Approach Delay [s/veh]	0.00			32.93			21.57			14.97		
Approach LOS	A			C			C			B		
d_I, Intersection Delay [s/veh]	21.75											
Intersection LOS	C											
Intersection V/C	0.757											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.217	2.312	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	422	689
d_b, Bicycle Delay [s]	45.00	45.00	28.01	19.34
I_b,int, Bicycle LOS Score for Intersection	4.132	6.022	2.665	2.569
Bicycle LOS	D	F	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.689

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	606	0	248	0	0	0	339	1340	0	0	975	487
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	606	0	248	0	0	0	339	1340	0	0	975	487
Peak Hour Factor	0.8400	1.0000	0.8400	1.0000	1.0000	1.0000	0.8440	0.8440	1.0000	1.0000	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	180	0	74	0	0	0	100	397	0	0	256	128
Total Analysis Volume [veh/h]	721	0	295	0	0	0	402	1588	0	0	1023	511
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	47	0	0	0	0	0	22	43	0	0	21	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24		13	58	41	41	41
g / C, Green / Cycle	0.27	0.27		0.15	0.65	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.22	0.20		0.12	0.33	0.23	0.25	0.25
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1506	1506
c, Capacity [veh/h]	869	399		487	3117	1527	682	682
d1, Uniform Delay [s]	31.16	30.22		37.20	8.42	17.45	18.08	18.09
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	2.69		3.62	0.60	1.18	3.34	3.34
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.74		0.83	0.51	0.50	0.56	0.56
d, Delay for Lane Group [s/veh]	33.28	32.91		40.82	9.01	18.63	21.42	21.42
Lane Group LOS	C	C		D	A	B	C	C
Critical Lane Group	Yes	No		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.42	5.98		4.46	4.88	5.61	6.18	6.18
50th-Percentile Queue Length [ft/ln]	185.41	149.55		111.58	122.03	140.15	154.57	154.58
95th-Percentile Queue Length [veh/ln]	11.88	9.99		7.93	8.50	9.49	10.26	10.26
95th-Percentile Queue Length [ft/ln]	297.06	249.82		198.19	212.62	237.23	256.52	256.53

Movement, Approach, & Intersection Results

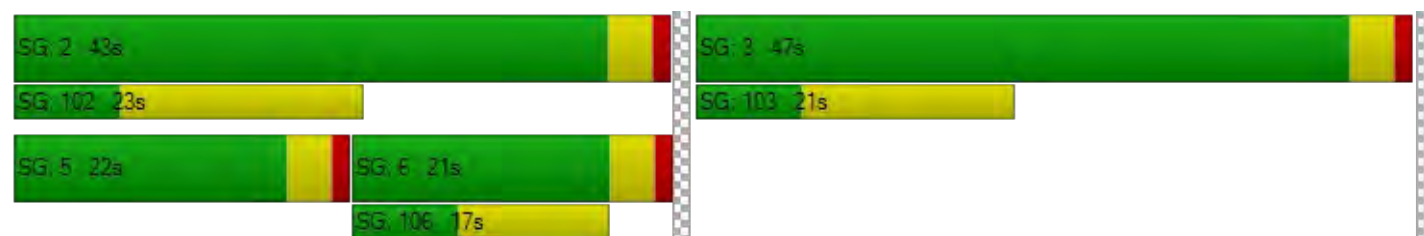
d_M, Delay for Movement [s/veh]	33.28	0.00	32.91	0.00	0.00	0.00	40.82	9.01	0.00	0.00	18.63	21.42
Movement LOS	C		C				D	A			B	C
d_A, Approach Delay [s/veh]	33.17			0.00			15.44			20.02		
Approach LOS	C			A			B			C		
d_I, Intersection Delay [s/veh]	20.96											
Intersection LOS	C											
Intersection V/C	0.689											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.270	2.159	0.000	3.069
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	867	378
d_b, Bicycle Delay [s]	45.00	45.00	14.45	29.61
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.654	2.403
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.631

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	左左左			左左			右左左			右左左		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	465	274	205	4	92	106	169	772	438	75	306	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	465	274	205	4	92	106	169	772	438	75	306	25
Peak Hour Factor	0.9310	0.9310	0.9310	0.9020	0.9020	0.9020	0.7940	0.7940	0.7940	0.8150	0.8150	0.8150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	125	74	55	1	25	29	53	243	138	23	94	8
Total Analysis Volume [veh/h]	499	294	220	4	102	118	213	972	552	92	375	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	57	57	10	42	0	21	43	43	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	31	41	1	12	12	17	66	90	6	55	55
g / C, Green / Cycle	0.17	0.26	0.34	0.01	0.10	0.10	0.14	0.55	0.75	0.05	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.15	0.17	0.15	0.00	0.06	0.08	0.13	0.29	0.21	0.03	0.08	0.08
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1704
c, Capacity [veh/h]	558	463	520	12	174	148	238	1847	2002	166	1542	779
d1, Uniform Delay [s]	48.76	39.30	30.15	59.31	51.82	52.99	50.68	17.25	4.69	55.65	19.21	19.24
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.32	1.45	0.74	14.92	3.13	9.48	11.19	1.08	0.34	2.86	0.25	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.64	0.42	0.33	0.59	0.80	0.89	0.53	0.28	0.55	0.17	0.18
d, Delay for Lane Group [s/veh]	54.08	40.75	30.89	74.23	54.95	62.47	61.87	18.33	5.03	58.51	19.45	19.73
Lane Group LOS	D	D	C	E	D	E	E	B	A	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.71	7.85	4.99	0.17	3.09	3.87	7.02	8.59	1.97	1.43	2.27	2.38
50th-Percentile Queue Length [ft/ln]	192.70	196.34	124.78	4.29	77.36	96.77	175.49	214.66	49.29	35.70	56.65	59.61
95th-Percentile Queue Length [veh/ln]	12.26	12.45	8.66	0.31	5.57	6.97	11.36	13.39	3.55	2.57	4.08	4.29
95th-Percentile Queue Length [ft/ln]	306.53	311.24	216.38	7.72	139.26	174.19	284.11	334.81	88.72	64.26	101.97	107.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.08	40.75	30.89	74.23	54.95	62.47	61.87	18.33	5.03	58.51	19.53	19.73
Movement LOS	D	D	C	E	D	E	E	B	A	E	B	B
d_A, Approach Delay [s/veh]	45.18			59.26			19.44			26.75		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	30.57											
Intersection LOS	C											
Intersection V/C	0.631											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.752			2.331			3.072			2.844		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	883			633			650			467		
d_b, Bicycle Delay [s]	18.70			28.02			27.34			35.27		
I_b,int, Bicycle LOS Score for Intersection	3.231			1.929			2.993			1.834		
Bicycle LOS	C			A			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	34.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.494

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	61	743	281	367	611	53	63	85	30	325	140	535
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	743	281	367	611	53	63	85	30	325	140	535
Peak Hour Factor	0.9480	0.9480	0.9480	0.9200	0.9200	0.9200	0.9080	0.9080	0.9080	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	196	74	100	166	14	17	23	8	87	38	143
Total Analysis Volume [veh/h]	64	784	296	399	664	58	69	94	33	348	150	573
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	28	0	30	28	0	10	37	0	20	47	47
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	47	47	25	67	67	6	13	14	21	50
g / C, Green / Cycle	0.05	0.41	0.41	0.22	0.58	0.58	0.05	0.11	0.12	0.18	0.44
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.22	0.12	0.14	0.14	0.04	0.07	0.11	0.08	0.38
s, saturation flow rate [veh/h]	1687	3373	1535	3277	3373	1700	1687	1694	3277	1772	1506
c, Capacity [veh/h]	83	1368	622	725	1947	981	88	187	407	322	660
d1, Uniform Delay [s]	54.05	26.06	26.11	39.74	11.98	11.99	53.89	49.25	49.39	42.06	29.34
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.48
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.73	1.54	3.41	0.65	0.30	0.60	13.88	4.31	5.25	1.04	14.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.54	0.55	0.55	0.25	0.25	0.78	0.68	0.86	0.47	0.87
d, Delay for Lane Group [s/veh]	67.78	27.61	29.52	40.39	12.28	12.59	67.77	53.56	54.64	43.11	43.38
Lane Group LOS	E	C	C	D	B	B	E	D	D	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.15	7.93	7.60	5.07	3.05	3.16	2.31	3.73	5.19	3.90	16.52
50th-Percentile Queue Length [ft/ln]	53.68	198.33	189.99	126.64	76.14	78.96	57.81	93.30	129.64	97.61	413.03
95th-Percentile Queue Length [veh/ln]	3.87	12.55	12.12	8.76	5.48	5.68	4.16	6.72	8.92	7.03	23.19
95th-Percentile Queue Length [ft/ln]	96.63	313.81	303.01	218.92	137.04	142.12	104.06	167.93	223.01	175.69	579.68

Movement, Approach, & Intersection Results

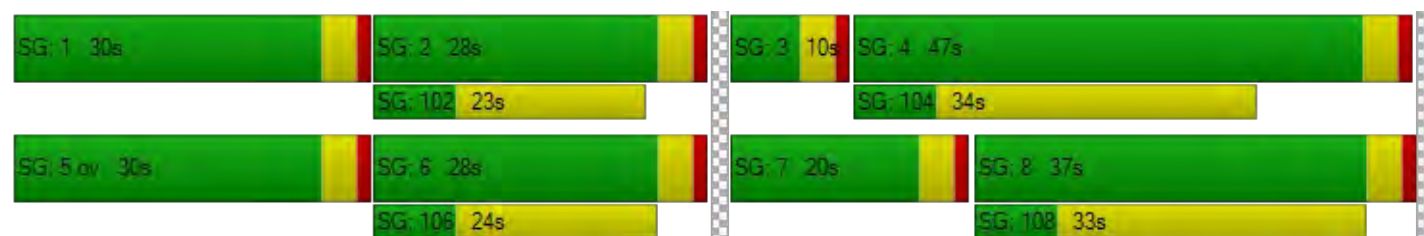
d_M, Delay for Movement [s/veh]	67.78	27.71	29.52	40.39	12.37	12.59	67.77	53.56	53.56	54.64	43.11	43.38
Movement LOS	E	C	C	D	B	B	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	30.42			22.35			58.56			47.00		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	34.45											
Intersection LOS	C											
Intersection V/C	0.494											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.911			3.048			2.104			2.767		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417			417			574			748		
d_b, Bicycle Delay [s]	36.00			36.00			29.23			22.54		
I_b,int, Bicycle LOS Score for Intersection	2.189			2.176			1.883			3.327		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.544

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	123	53	154	48	46	101	73	579	89	174	985	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	123	53	154	48	46	101	73	579	89	174	985	36
Peak Hour Factor	0.8740	0.8740	0.8740	0.7860	0.7860	0.7860	0.9250	0.9250	0.9250	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	15	44	15	15	32	20	156	24	46	258	9
Total Analysis Volume [veh/h]	141	61	176	61	59	128	79	626	96	182	1032	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	24	24	24	5	43	43	12	49	49
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.26	0.06	0.47	0.47	0.13	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.12	0.03	0.12	0.05	0.12	0.05	0.21	0.21	0.11	0.31	0.03
s, saturation flow rate [veh/h]	1196	1772	1506	1341	1581	1687	1772	1690	1687	3373	1506
c, Capacity [veh/h]	256	470	400	374	419	101	837	799	217	1826	815
d1, Uniform Delay [s]	37.12	25.15	27.50	28.76	27.54	41.72	15.80	15.81	38.31	13.64	9.71
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.85	0.12	0.76	0.20	0.74	12.24	1.68	1.77	8.39	1.27	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.13	0.44	0.16	0.45	0.78	0.44	0.44	0.84	0.57	0.05
d, Delay for Lane Group [s/veh]	38.98	25.27	28.26	28.96	28.29	53.97	17.49	17.58	46.70	14.91	9.82
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.08	1.00	3.17	1.09	3.37	2.05	5.18	4.97	4.36	6.69	0.36
50th-Percentile Queue Length [ft/ln]	77.07	24.89	79.36	27.15	84.37	51.32	129.60	124.34	109.04	167.16	8.95
95th-Percentile Queue Length [veh/ln]	5.55	1.79	5.71	1.95	6.07	3.69	8.92	8.63	7.79	10.93	0.64
95th-Percentile Queue Length [ft/ln]	138.73	44.80	142.85	48.87	151.86	92.37	222.96	215.78	194.67	273.18	16.12

Movement, Approach, & Intersection Results

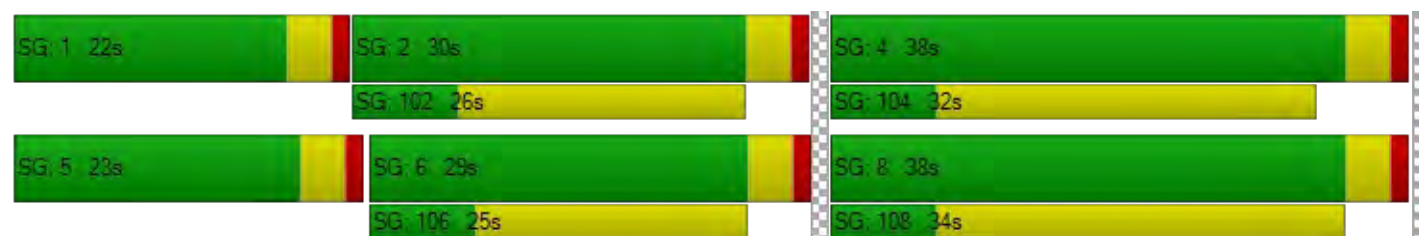
d_M, Delay for Movement [s/veh]	38.98	25.27	28.26	28.96	28.29	28.29	53.97	17.52	17.58	46.70	14.91	9.82
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	31.78			28.45			21.13			19.38		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	22.49											
Intersection LOS	C											
Intersection V/C	0.544											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.305			2.078			2.910			2.883		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.183			1.969			2.220			2.593		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	32.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.801

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	132	336	149	295	309	245	185	706	147	134	904	573
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	336	149	295	309	245	185	706	147	134	904	573
Peak Hour Factor	0.9210	0.9210	0.9210	0.9620	0.9620	0.9620	0.9110	0.9110	0.9110	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	91	40	77	80	64	51	194	40	35	237	150
Total Analysis Volume [veh/h]	143	365	162	307	321	255	203	775	161	140	947	600
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	17	46	0	12	39	0	10	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	16	16	12	21	21	8	56	56	6	54	54
g / C, Green / Cycle	0.06	0.15	0.15	0.11	0.20	0.20	0.08	0.53	0.53	0.06	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.11	0.09	0.18	0.18	0.06	0.23	0.11	0.04	0.28	0.40
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1515	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	190	499	223	370	360	307	252	1784	796	190	1720	768
d1, Uniform Delay [s]	48.77	42.78	42.75	45.64	40.48	40.49	47.74	15.15	13.06	48.73	17.55	20.98
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.92	2.08	4.48	4.82	6.19	7.19	5.98	0.77	0.57	5.49	1.27	7.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.73	0.73	0.83	0.86	0.86	0.81	0.43	0.20	0.74	0.55	0.78
d, Delay for Lane Group [s/veh]	54.69	44.86	47.23	50.46	46.67	47.68	53.72	15.92	13.63	54.21	18.82	28.75
Lane Group LOS	D	D	D	D	D	D	D	B	B	D	B	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.00	4.64	4.27	4.15	8.29	7.18	2.81	5.64	2.08	1.95	7.80	13.01
50th-Percentile Queue Length [ft/ln]	49.92	116.11	106.73	103.64	207.19	179.56	70.33	141.04	51.99	48.63	195.03	325.37
95th-Percentile Queue Length [veh/ln]	3.59	8.18	7.66	7.46	13.01	11.58	5.06	9.54	3.74	3.50	12.38	18.93
95th-Percentile Queue Length [ft/ln]	89.86	204.47	191.44	186.56	325.22	289.45	126.60	238.43	93.58	87.53	309.55	473.29

Movement, Approach, & Intersection Results

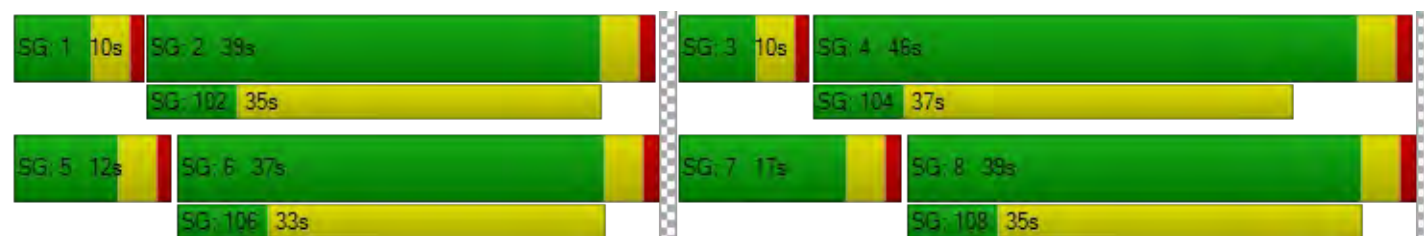
d_M, Delay for Movement [s/veh]	54.69	44.86	47.23	50.46	46.70	47.68	53.72	15.92	13.63	54.21	18.82	28.75
Movement LOS	D	D	D	D	D	D	D	B	B	D	B	C
d_A, Approach Delay [s/veh]	47.53			48.29			22.33			25.29		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.56											
Intersection LOS	C											
Intersection V/C	0.801											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.781			2.793			2.947			3.009		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			800			667			629		
d_b, Bicycle Delay [s]	23.33			18.90			23.33			24.69		
I_b,int, Bicycle LOS Score for Intersection	2.112			2.288			2.499			2.951		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	438	30	326	10	18	6	12	814	273	270	1155	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	438	30	326	10	18	6	12	814	273	270	1155	16
Peak Hour Factor	0.9370	0.9370	0.9370	0.8500	0.8500	0.8500	0.9910	0.9910	0.9910	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	8	87	3	5	2	3	205	69	72	307	4
Total Analysis Volume [veh/h]	467	32	348	12	21	7	12	821	275	287	1226	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	66	66	0	37	0	10	38	0	16	44	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	28	45	5	5	2	68	68	12	78	78
g / C, Green / Cycle	0.16	0.24	0.37	0.04	0.04	0.02	0.56	0.56	0.10	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.02	0.23	0.01	0.02	0.01	0.32	0.32	0.09	0.35	0.35
s, saturation flow rate [veh/h]	3277	1772	1506	1377	1697	1687	1772	1621	3277	1772	1763
c, Capacity [veh/h]	533	420	558	73	69	28	997	913	328	1145	1140
d1, Uniform Delay [s]	49.05	35.59	30.95	59.37	56.13	58.44	16.92	16.93	53.26	11.56	11.57
k, delay calibration	0.11	0.11	0.40	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.74	0.08	4.14	1.04	3.76	10.01	2.39	2.62	7.36	1.85	1.87
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.08	0.62	0.16	0.40	0.43	0.57	0.57	0.88	0.54	0.54
d, Delay for Lane Group [s/veh]	53.79	35.66	35.08	60.41	59.89	68.45	19.31	19.55	60.62	13.41	13.44
Lane Group LOS	D	D	D	E	E	E	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.17	0.74	8.83	0.39	0.90	0.44	10.54	9.73	4.60	9.15	9.13
50th-Percentile Queue Length [ft/ln]	179.15	18.58	220.70	9.64	22.50	10.98	263.54	243.20	115.00	228.69	228.23
95th-Percentile Queue Length [veh/ln]	11.56	1.34	13.70	0.69	1.62	0.79	15.87	14.84	8.12	14.11	14.08
95th-Percentile Queue Length [ft/ln]	288.90	33.45	342.51	17.35	40.50	19.77	396.65	371.08	202.93	352.70	352.11

Movement, Approach, & Intersection Results

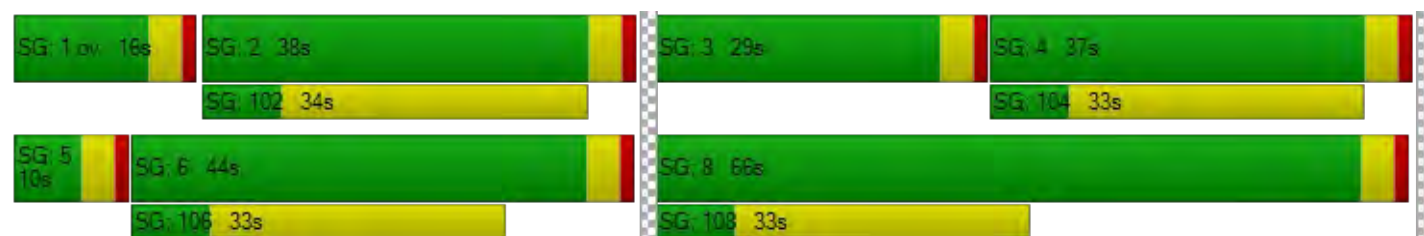
d_M, Delay for Movement [s/veh]	53.79	35.66	35.08	60.41	59.89	59.89	68.45	19.38	19.55	60.62	13.43	13.44
Movement LOS	D	D	D	E	E	E	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	45.42			60.05			19.96			22.28		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	27.54											
Intersection LOS	C											
Intersection V/C	0.710											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.699			1.987			2.861			2.924		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1033			550			567			667		
d_b, Bicycle Delay [s]	14.02			31.54			30.82			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.957			1.626			2.474			2.822		
Bicycle LOS	C			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	94	3	270	260	849	11	5	1192	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	94	3	270	260	849	11	5	1192	124
Peak Hour Factor	0.7500	0.7500	0.7500	0.8100	0.8100	0.8100	0.9290	0.9290	0.9290	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	3	29	1	83	70	228	3	1	330	34
Total Analysis Volume [veh/h]	16	3	13	116	4	333	280	914	12	6	1319	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	34	56	0	10	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	19	19	52	21	70	70	1	50	50
g / C, Green / Cycle	0.03	0.03	0.03	0.18	0.18	0.47	0.19	0.63	0.63	0.01	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.04	0.04	0.22	0.17	0.26	0.26	0.00	0.39	0.09
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1693	1506	1687	1772	1763	1687	3373	1506
c, Capacity [veh/h]	95	63	53	296	297	716	323	1122	1117	17	1525	681
d1, Uniform Delay [s]	53.40	51.32	51.68	38.79	38.79	19.46	43.12	10.01	10.01	54.12	27.14	18.18
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.31	0.16	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.83	0.31	2.36	0.33	0.33	1.36	10.06	1.13	1.13	11.60	6.80	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.05	0.24	0.20	0.20	0.47	0.87	0.41	0.41	0.35	0.87	0.20
d, Delay for Lane Group [s/veh]	54.23	51.64	54.04	39.12	39.12	20.82	53.18	11.14	11.15	65.73	33.94	18.85
Lane Group LOS	D	D	D	D	D	C	D	B	B	E	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.46	0.09	0.38	1.41	1.42	5.90	8.23	5.57	5.55	0.22	16.44	2.21
50th-Percentile Queue Length [ft/ln]	11.50	2.14	9.60	35.32	35.43	147.52	205.83	139.17	138.63	5.51	411.12	55.34
95th-Percentile Queue Length [veh/ln]	0.83	0.15	0.69	2.54	2.55	9.88	12.94	9.44	9.41	0.40	23.10	3.98
95th-Percentile Queue Length [ft/ln]	20.70	3.85	17.28	63.57	63.77	247.12	323.47	235.91	235.18	9.92	577.38	99.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.23	51.64	54.04	39.12	39.12	20.82	53.18	11.14	11.15	65.73	33.94	18.85
Movement LOS	D	D	D	D	D	C	D	B	B	E	C	B
d_A, Approach Delay [s/veh]	53.91			25.67			20.90			32.66		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	27.37											
Intersection LOS	C											
Intersection V/C	0.869											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.154			2.353			2.893			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			545			945			509		
d_b, Bicycle Delay [s]	49.16			29.09			15.29			30.56		
I_b,int, Bicycle LOS Score for Intersection	1.612			2.307			2.555			2.766		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	48.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	552	683	115	200	346	97	202	665	273	72	634	197
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	552	683	115	200	346	97	202	665	273	72	634	197
Peak Hour Factor	0.9100	0.9100	0.9100	0.8350	0.8350	0.8350	0.8890	0.8890	0.8890	0.8090	0.8090	0.8090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	188	32	60	104	29	57	187	77	22	196	61
Total Analysis Volume [veh/h]	607	751	126	240	414	116	227	748	307	89	784	244
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	37	0	25	37	0	19	47	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	47	47	11	37	37	15	39	39	7	31	31
g / C, Green / Cycle	0.18	0.39	0.39	0.09	0.31	0.31	0.13	0.32	0.32	0.06	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.19	0.17	0.17	0.07	0.11	0.11	0.13	0.22	0.20	0.05	0.23	0.16
s, saturation flow rate [veh/h]	3277	3373	1644	3277	3373	1583	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	575	1322	645	306	1046	491	212	1085	484	101	862	385
d1, Uniform Delay [s]	49.53	26.90	26.90	53.27	31.99	32.08	52.50	35.51	34.72	56.05	43.36	39.72
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.15	0.11	0.11	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.58	1.09	2.23	4.43	0.89	1.97	49.54	0.79	1.86	20.80	4.11	2.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.45	0.45	0.78	0.34	0.35	1.07	0.69	0.63	0.88	0.91	0.63
d, Delay for Lane Group [s/veh]	84.11	27.99	29.13	57.70	32.89	34.05	102.04	36.30	36.57	76.85	47.48	41.82
Lane Group LOS	F	C	C	E	C	C	F	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.34	6.41	6.45	3.73	4.16	4.15	9.31	9.59	7.85	3.26	11.69	6.61
50th-Percentile Queue Length [ft/ln]	283.53	160.22	161.31	93.30	103.98	103.85	232.65	239.81	196.29	81.50	292.26	165.22
95th-Percentile Queue Length [veh/ln]	17.32	10.56	10.62	6.72	7.49	7.48	14.72	14.67	12.45	5.87	17.30	10.82
95th-Percentile Queue Length [ft/ln]	433.06	264.02	265.45	167.94	187.16	186.93	367.95	366.80	311.18	146.70	432.45	270.62

Movement, Approach, & Intersection Results

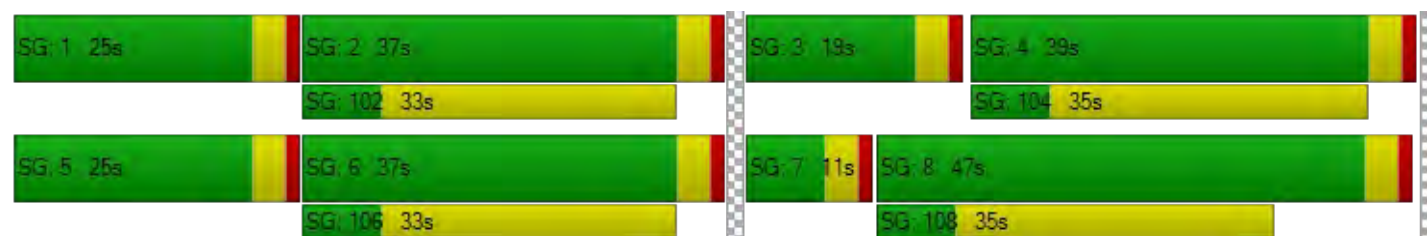
d_M, Delay for Movement [s/veh]	84.11	28.24	29.13	57.70	33.04	34.05	102.04	36.30	36.57	76.85	47.48	41.82
Movement LOS	F	C	C	E	C	C	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	51.17			40.88			48.01			48.58		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	47.97											
Intersection LOS	D											
Intersection V/C	0.763											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.019			2.982			2.920			2.829		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			550			717			583		
d_b, Bicycle Delay [s]	31.54			31.54			24.70			30.10		
I_b,int, Bicycle LOS Score for Intersection	2.376			1.983			2.617			2.481		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.204

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	44	293	39	26	233	26	57	4	48	69	4	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	293	39	26	233	26	57	4	48	69	4	35
Peak Hour Factor	0.9560	0.9560	0.9560	0.9590	0.9590	0.9590	0.6990	0.6990	0.6990	0.8710	0.8710	0.8710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	77	10	7	61	7	20	1	17	20	1	10
Total Analysis Volume [veh/h]	46	306	41	27	243	27	82	6	69	79	5	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	23	49	0	11	37	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	62	62	3	61	61	13	13	13	13
g / C, Green / Cycle	0.05	0.69	0.69	0.03	0.67	0.67	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.10	0.02	0.08	0.08	0.06	0.05	0.06	0.03
s, saturation flow rate [veh/h]	1687	1772	1700	1687	1772	1711	1361	1524	1324	1531
c, Capacity [veh/h]	77	1217	1168	56	1195	1153	209	223	181	224
d1, Uniform Delay [s]	42.12	4.89	4.90	42.77	5.17	5.18	39.23	34.48	40.82	33.77
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.09	0.25	0.26	6.38	0.19	0.20	1.19	0.88	1.65	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.59	0.14	0.15	0.48	0.11	0.12	0.39	0.34	0.44	0.20
d, Delay for Lane Group [s/veh]	49.21	5.14	5.16	49.14	5.37	5.38	40.42	35.36	42.47	34.21
Lane Group LOS	D	A	A	D	A	A	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.14	1.05	1.02	0.68	0.84	0.83	1.79	1.51	1.78	0.88
50th-Percentile Queue Length [ft/ln]	28.61	26.17	25.61	17.08	20.98	20.69	44.81	37.76	44.52	22.07
95th-Percentile Queue Length [veh/ln]	2.06	1.88	1.84	1.23	1.51	1.49	3.23	2.72	3.21	1.59
95th-Percentile Queue Length [ft/ln]	51.49	47.11	46.09	30.74	37.77	37.24	80.66	67.97	80.14	39.73

Movement, Approach, & Intersection Results

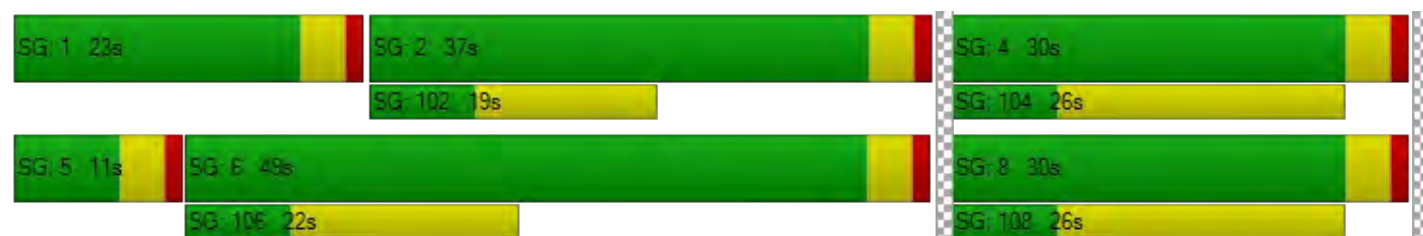
d_M, Delay for Movement [s/veh]	49.21	5.15	5.16	49.14	5.37	5.38	40.42	35.36	35.36	42.47	34.21	34.21
Movement LOS	D	A	A	D	A	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	10.31			9.35			38.00			39.47		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	18.22											
Intersection LOS	B											
Intersection V/C	0.204											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.565			2.557			2.016			2.004		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1000			733			578			578		
d_b, Bicycle Delay [s]	11.25			18.05			22.76			22.76		
I_b,int, Bicycle LOS Score for Intersection	1.884			1.805			1.819			1.764		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.373

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	299	295	34	329	18	16	3	11	250	3	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	299	295	34	329	18	16	3	11	250	3	43
Peak Hour Factor	0.9560	0.9560	0.9560	0.9310	0.9310	0.9310	0.9380	0.9380	0.9380	0.8620	0.8620	0.8620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	78	77	9	88	5	4	1	3	73	1	12
Total Analysis Volume [veh/h]	16	313	309	37	353	19	17	3	12	290	3	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	29	0	10	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72	64	64	72	65	65	4	4	13	13
g / C, Green / Cycle	0.72	0.64	0.64	0.72	0.65	0.65	0.04	0.04	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.02	0.18	0.21	0.04	0.11	0.11	0.01	0.01	0.10	0.10
s, saturation flow rate [veh/h]	1050	1772	1506	875	1772	1740	1699	1506	1687	1630
c, Capacity [veh/h]	810	1128	959	651	1158	1137	61	54	216	209
d1, Uniform Delay [s]	4.19	8.02	8.31	4.66	6.71	6.71	47.06	46.88	42.40	42.41
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.61	0.89	0.17	0.30	0.31	3.07	2.03	6.86	7.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.28	0.32	0.06	0.16	0.16	0.33	0.22	0.80	0.81
d, Delay for Lane Group [s/veh]	4.20	8.63	9.20	4.83	7.01	7.02	50.12	48.91	49.26	49.59
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	2.92	3.03	0.22	1.50	1.49	0.54	0.32	4.56	4.44
50th-Percentile Queue Length [ft/ln]	2.07	73.12	75.80	5.48	37.54	37.16	13.40	8.00	113.97	110.90
95th-Percentile Queue Length [veh/ln]	0.15	5.26	5.46	0.39	2.70	2.68	0.96	0.58	8.06	7.89
95th-Percentile Queue Length [ft/ln]	3.73	131.62	136.45	9.86	67.57	66.89	24.12	14.39	201.51	197.26

Movement, Approach, & Intersection Results

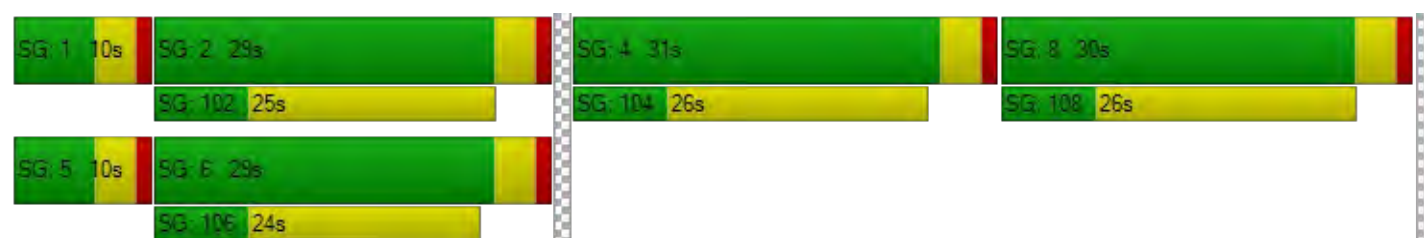
d_M, Delay for Movement [s/veh]	4.20	8.63	9.20	4.83	7.01	7.02	50.12	50.12	48.91	49.39	49.59	49.59
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	8.80			6.82			49.67			49.42		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	18.94											
Intersection LOS	B											
Intersection V/C	0.373											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.557			2.459			1.983			2.205		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			500			520			540		
d_b, Bicycle Delay [s]	28.13			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.086			1.897			1.612			2.126		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.667

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	131	18	61	41	12	350	452	470	21	90	394	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	18	61	41	12	350	452	470	21	90	394	25
Peak Hour Factor	0.8330	0.8330	0.8330	0.9000	0.9000	0.9000	0.8700	0.8700	0.8700	0.9090	0.9090	0.9090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	5	18	11	3	97	130	135	6	25	108	7
Total Analysis Volume [veh/h]	157	22	73	46	13	389	520	540	24	99	433	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	26	31	0	27	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10	6	6	46	22	65	65	8	51	51
g / C, Green / Cycle	0.10	0.10	0.10	0.06	0.06	0.44	0.21	0.62	0.62	0.07	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.05	0.03	0.01	0.26	0.16	0.16	0.16	0.06	0.13	0.13
s, saturation flow rate [veh/h]	1417	1512	1506	1687	1612	1506	3277	1772	1745	1687	1772	1734
c, Capacity [veh/h]	184	210	147	99	95	665	685	1091	1075	128	854	836
d1, Uniform Delay [s]	44.93	46.21	45.01	47.92	46.99	22.12	39.13	9.25	9.25	47.77	16.23	16.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.38	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.13	2.21	2.56	3.34	0.65	2.87	1.76	0.58	0.59	9.64	0.79	0.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.55	0.50	0.46	0.14	0.58	0.76	0.26	0.26	0.78	0.27	0.27
d, Delay for Lane Group [s/veh]	46.06	48.43	47.58	51.27	47.65	24.99	40.89	9.83	9.84	57.41	17.02	17.05
Lane Group LOS	D	D	D	D	D	C	D	A	A	E	B	B
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.64	3.04	1.91	1.26	0.34	7.58	6.41	2.98	2.94	2.88	3.46	3.40
50th-Percentile Queue Length [ft/ln]	40.99	75.95	47.63	31.41	8.50	189.45	160.29	74.50	73.47	72.00	86.41	85.06
95th-Percentile Queue Length [veh/ln]	2.95	5.47	3.43	2.26	0.61	12.09	10.56	5.36	5.29	5.18	6.22	6.12
95th-Percentile Queue Length [ft/ln]	73.79	136.71	85.73	56.55	15.29	302.31	264.11	134.10	132.25	129.60	155.54	153.10

Movement, Approach, & Intersection Results

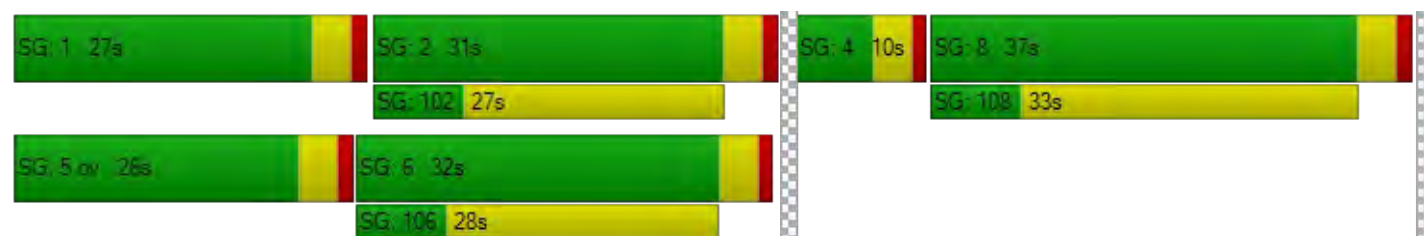
d_M, Delay for Movement [s/veh]	47.42	48.43	47.58	51.27	47.65	24.99	40.89	9.84	9.84	57.41	17.03	17.05
Movement LOS	D	D	D	D	D	C	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	47.58			28.34			24.73			24.17		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	27.75											
Intersection LOS	C											
Intersection V/C	0.667											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			0.00			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.383			2.506			0.000			2.545		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	629			114			514			533		
d_b, Bicycle Delay [s]	24.69			46.67			28.97			28.23		
I_b,int, Bicycle LOS Score for Intersection	1.975			1.929			2.454			2.022		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	45.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	406	1039	201	187	811	291	255	1132	273	405	1427	209
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	1039	201	187	811	291	255	1132	273	405	1427	209
Peak Hour Factor	0.9550	0.9550	0.9550	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	106	272	53	49	214	77	67	299	72	107	378	55
Total Analysis Volume [veh/h]	425	1088	210	198	857	308	270	1197	289	429	1510	221
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	46	0	12	39	0	15	42	0	20	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	35	35	8	28	28	11	45	45	16	50	50
g / C, Green / Cycle	0.13	0.29	0.29	0.07	0.24	0.24	0.09	0.37	0.37	0.13	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.13	0.23	0.14	0.06	0.18	0.20	0.08	0.30	0.30	0.13	0.31	0.15
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1601	3277	4826	1506
c, Capacity [veh/h]	412	1419	443	223	1140	356	304	1250	593	439	1988	620
d1, Uniform Delay [s]	52.50	38.64	34.78	55.52	42.60	44.04	53.87	33.91	33.97	51.82	30.23	24.35
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.24	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.94	0.89	0.79	11.32	1.02	12.91	8.65	5.59	11.30	15.10	2.79	1.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.77	0.47	0.89	0.75	0.87	0.89	0.81	0.81	0.98	0.76	0.36
d, Delay for Lane Group [s/veh]	81.44	39.54	35.57	66.85	43.62	56.95	62.52	39.50	45.27	66.92	33.02	25.94
Lane Group LOS	F	D	D	E	D	E	E	D	D	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.86	9.78	5.14	3.32	7.95	10.02	4.40	13.94	14.25	7.34	12.75	4.60
50th-Percentile Queue Length [ft/ln]	196.40	244.61	128.38	83.10	198.80	250.48	109.88	348.53	356.21	183.51	318.74	115.04
95th-Percentile Queue Length [veh/ln]	12.61	14.91	8.85	5.98	12.58	15.21	7.83	20.06	20.44	11.78	18.61	8.12
95th-Percentile Queue Length [ft/ln]	315.31	372.86	221.29	149.58	314.42	380.26	195.83	501.61	510.98	294.59	465.14	202.99

Movement, Approach, & Intersection Results

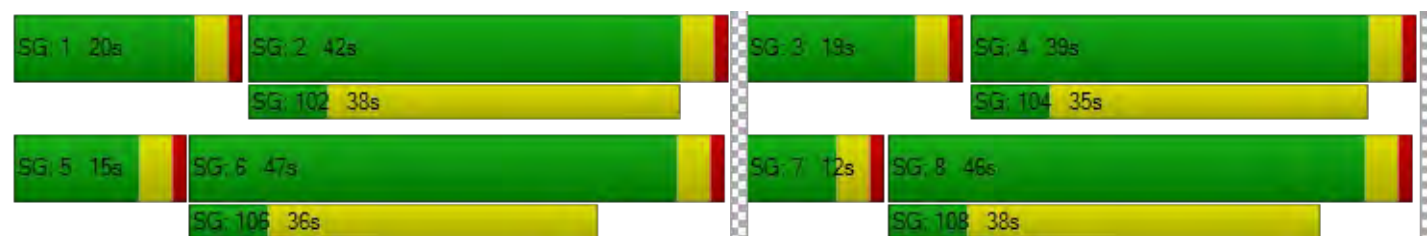
d_M, Delay for Movement [s/veh]	81.44	39.54	35.57	66.85	43.62	56.95	62.52	40.42	45.27	66.92	33.02	25.94
Movement LOS	F	D	D	E	D	E	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	49.39			50.01			44.62			39.03		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.12											
Intersection LOS	D											
Intersection V/C	0.882											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.220			3.182			3.227			3.271		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	700			583			633			717		
d_b, Bicycle Delay [s]	25.35			30.10			28.02			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.507			2.309			2.525			2.748		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.715

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	33	45	77	155	99	194	119	1353	35	98	1565	241
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	45	77	155	99	194	119	1353	35	98	1565	241
Peak Hour Factor	0.7970	0.7970	0.7970	0.6700	0.6700	0.6700	0.9700	0.9700	0.9700	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	14	24	58	37	72	31	349	9	27	427	66
Total Analysis Volume [veh/h]	41	56	97	231	148	290	123	1395	36	107	1709	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	18	40	0	12	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	23	23	23	23	8	48	48	7	47	47
g / C, Green / Cycle	0.25	0.25	0.25	0.25	0.25	0.25	0.09	0.53	0.53	0.08	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.06	0.17	0.04	0.19	0.07	0.28	0.28	0.06	0.35	0.17
s, saturation flow rate [veh/h]	1239	1772	1506	1347	3373	1506	1687	3373	1749	1687	4826	1506
c, Capacity [veh/h]	320	448	381	354	853	381	153	1804	935	134	2524	788
d1, Uniform Delay [s]	30.27	25.95	26.86	34.46	26.29	31.13	40.13	13.52	13.52	40.74	15.85	12.40
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	0.12	0.35	2.03	0.10	3.18	9.32	1.09	2.09	10.44	1.48	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.13	0.25	0.65	0.17	0.76	0.80	0.52	0.52	0.80	0.68	0.33
d, Delay for Lane Group [s/veh]	30.45	26.08	27.21	36.49	26.38	34.31	49.45	14.61	15.61	51.19	17.33	13.54
Lane Group LOS	C	C	C	D	C	C	D	B	B	D	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.75	0.93	1.67	4.95	1.23	6.01	3.03	5.99	6.47	2.69	8.32	3.13
50th-Percentile Queue Length [ft/ln]	18.71	23.22	41.87	123.68	30.85	150.25	75.77	149.79	161.82	67.23	207.94	78.24
95th-Percentile Queue Length [veh/ln]	1.35	1.67	3.01	8.59	2.22	10.03	5.46	10.01	10.65	4.84	13.05	5.63
95th-Percentile Queue Length [ft/ln]	33.68	41.80	75.37	214.87	55.53	250.76	136.38	250.14	266.13	121.01	326.18	140.83

Movement, Approach, & Intersection Results

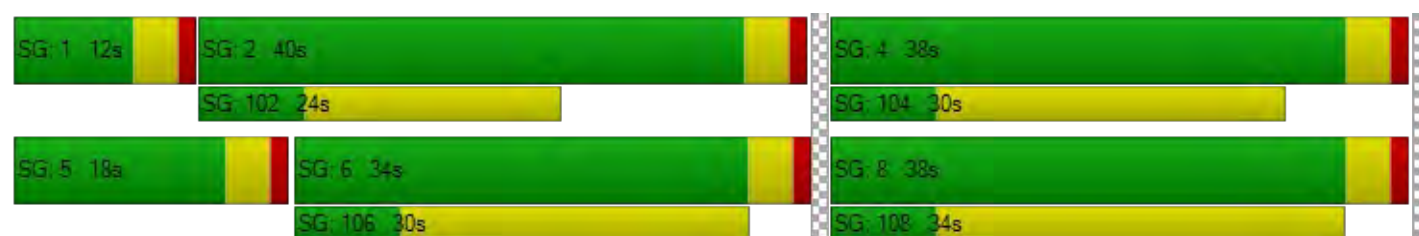
d_M, Delay for Movement [s/veh]	30.45	26.08	27.21	36.49	26.38	34.31	49.45	14.93	15.61	51.19	17.33	13.54
Movement LOS	C	C	C	D	C	C	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	27.57			33.31			17.68			18.59		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	20.86											
Intersection LOS	C											
Intersection V/C	0.715											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	34.67	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.394	2.516	3.152	3.517
Crosswalk LOS	B	B	C	D
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	756	756	800	667
d_b, Bicycle Delay [s]	17.42	17.42	16.20	20.00
I_b,int, Bicycle LOS Score for Intersection	1.880	2.112	2.414	2.703
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.858

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	480	764	231	195	599	167	178	1571	386	213	1607	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	480	764	231	195	599	167	178	1571	386	213	1607	131
Peak Hour Factor	0.9630	0.9630	0.9630	0.9380	0.9380	0.9380	0.9710	0.9710	0.9710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	125	198	60	52	160	45	46	404	99	55	415	34
Total Analysis Volume [veh/h]	498	793	240	208	639	178	183	1618	398	220	1662	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	48	0	14	39	0	12	45	0	13	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	35	35	10	26	26	8	50	50	9	51	51
g / C, Green / Cycle	0.16	0.29	0.29	0.08	0.21	0.21	0.07	0.42	0.42	0.08	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.15	0.16	0.16	0.06	0.19	0.12	0.06	0.34	0.26	0.07	0.34	0.09
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	520	1417	442	262	725	324	221	2015	629	248	2055	641
d1, Uniform Delay [s]	50.12	35.83	35.62	54.27	45.64	41.96	55.31	30.64	27.68	54.98	30.19	21.74
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.88	0.35	1.04	5.45	3.72	1.46	7.78	3.50	4.80	10.30	3.56	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.56	0.54	0.80	0.88	0.55	0.83	0.80	0.63	0.89	0.81	0.21
d, Delay for Lane Group [s/veh]	61.00	36.18	36.66	59.73	49.37	43.42	63.08	34.14	32.48	65.28	33.74	22.49
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.18	6.58	6.03	3.29	9.56	4.83	2.97	14.06	9.77	3.65	14.40	2.54
50th-Percentile Queue Length [ft/ln]	204.43	164.54	150.67	82.15	238.93	120.83	74.34	351.41	244.36	91.25	360.03	63.54
95th-Percentile Queue Length [veh/ln]	12.87	10.79	10.05	5.91	14.63	8.44	5.35	20.20	14.90	6.57	20.63	4.57
95th-Percentile Queue Length [ft/ln]	321.67	269.72	251.33	147.86	365.68	210.97	133.81	505.12	372.54	164.24	515.63	114.37

Movement, Approach, & Intersection Results

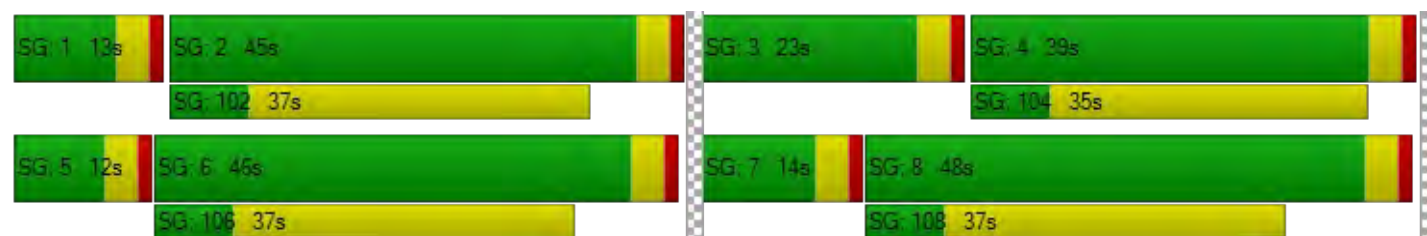
d_M, Delay for Movement [s/veh]	61.00	36.18	36.66	59.73	49.37	43.42	63.08	34.14	32.48	65.28	33.74	22.49
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	44.33			50.44			36.25			36.43		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.28											
Intersection LOS	D											
Intersection V/C	0.858											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.079			3.000			3.355			3.305		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	733			583			683			700		
d_b, Bicycle Delay [s]	24.07			30.10			26.00			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.402			2.405			2.769			2.669		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	26.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	41	31	56	299	23	198	233	1517	26	53	1753	307
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	31	56	299	23	198	233	1517	26	53	1753	307
Peak Hour Factor	0.8890	0.8890	0.8890	0.8820	0.8820	0.8820	0.9540	0.9540	0.9540	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	9	16	85	7	56	61	398	7	14	464	81
Total Analysis Volume [veh/h]	46	35	63	339	26	224	244	1590	27	56	1855	325
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	41	0	14	44	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	20	20	10	57	57	5	52	52
g / C, Green / Cycle	0.07	0.07	0.07	0.19	0.19	0.09	0.54	0.54	0.05	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.05	0.10	0.16	0.07	0.32	0.32	0.03	0.38	0.22
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1530	3277	3373	1756	1687	4826	1506
c, Capacity [veh/h]	112	118	91	632	295	305	1826	951	79	2390	746
d1, Uniform Delay [s]	47.09	46.73	48.02	38.19	40.92	46.71	16.14	16.15	49.37	21.74	17.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.39	1.39	9.01	0.71	6.65	4.85	1.36	2.60	10.88	2.54	1.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.30	0.69	0.54	0.85	0.80	0.58	0.58	0.71	0.78	0.44
d, Delay for Lane Group [s/veh]	49.49	48.12	57.03	38.89	47.58	51.56	17.50	18.75	60.26	24.29	18.92
Lane Group LOS	D	D	E	D	D	D	B	B	E	C	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.23	0.92	1.84	3.97	6.73	3.32	8.47	9.15	1.68	12.43	5.28
50th-Percentile Queue Length [ft/ln]	30.68	22.89	45.94	99.29	168.13	82.89	211.70	228.87	42.11	310.68	131.97
95th-Percentile Queue Length [veh/ln]	2.21	1.65	3.31	7.15	10.98	5.97	13.24	14.12	3.03	18.21	9.05
95th-Percentile Queue Length [ft/ln]	55.22	41.21	82.68	178.73	274.45	149.19	331.00	352.93	75.80	455.22	226.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.49	48.12	57.03	38.89	47.58	47.58	51.56	17.92	18.75	60.26	24.29	18.92
Movement LOS	D	D	E	D	D	D	D	B	B	E	C	B
d_A, Approach Delay [s/veh]	52.45			42.58			22.34			24.41		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	26.66											
Intersection LOS	C											
Intersection V/C	0.788											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	42.08	42.08	42.08	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.200	2.540	3.219	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	114	705	762	686
d_b, Bicycle Delay [s]	46.67	22.02	20.12	22.67
I_b,int, Bicycle LOS Score for Intersection	1.678	2.531	2.583	2.789
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	55.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.975

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	334	510	328	397	262	89	102	1675	87	418	1702	443
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	334	510	328	397	262	89	102	1675	87	418	1702	443
Peak Hour Factor	0.8990	0.8990	0.8990	0.8970	0.8970	0.8970	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	142	91	111	73	25	27	438	23	109	446	116
Total Analysis Volume [veh/h]	372	567	365	443	292	99	107	1750	91	438	1782	464
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	27	41	0	25	39	0	10	35	0	19	44	44
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	16	32	32	21	37	37	6	36	36	15	45	70
g / C, Green / Cycle	0.13	0.27	0.27	0.18	0.31	0.31	0.05	0.30	0.30	0.13	0.38	0.59
(v / s)_i Volume / Saturation Flow Rate	0.11	0.17	0.24	0.19	0.12	0.12	0.03	0.28	0.28	0.13	0.37	0.31
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1620	3277	4826	1715	3277	4826	1506
c, Capacity [veh/h]	440	896	400	415	543	497	164	1447	514	412	1813	880
d1, Uniform Delay [s]	50.78	38.94	42.76	49.53	32.63	32.63	56.02	40.97	40.97	52.50	37.12	15.00
k, delay calibration	0.11	0.11	0.30	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.54	0.74	19.17	41.20	0.43	0.47	4.30	12.93	27.02	39.44	17.48	2.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.63	0.91	1.07	0.38	0.38	0.65	0.94	0.94	1.06	0.98	0.53
d, Delay for Lane Group [s/veh]	55.32	39.68	61.93	90.73	33.05	33.10	60.32	53.90	67.99	91.94	54.61	17.26
Lane Group LOS	E	D	E	F	C	C	E	D	E	F	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.73	7.46	12.54	8.57	4.73	4.34	1.69	14.62	17.59	8.46	19.80	7.90
50th-Percentile Queue Length [ft/ln]	143.33	186.43	313.53	214.31	118.27	108.52	42.30	365.39	439.77	211.44	494.95	197.42
95th-Percentile Queue Length [veh/ln]	9.66	11.94	18.35	13.78	8.30	7.76	3.05	20.89	24.47	13.56	27.09	12.51
95th-Percentile Queue Length [ft/ln]	241.50	298.39	458.72	344.61	207.45	193.94	76.15	522.13	611.73	339.10	677.37	312.63

Movement, Approach, & Intersection Results

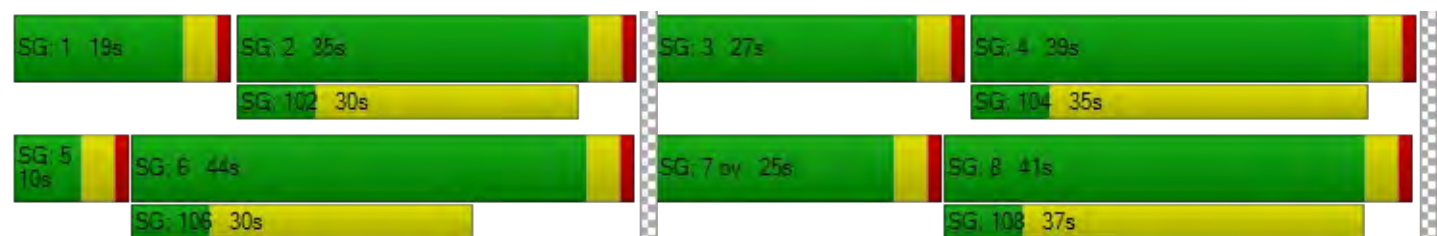
d_M, Delay for Movement [s/veh]	55.32	39.68	61.93	90.73	33.07	33.10	60.32	57.05	67.99	91.94	54.61	17.26
Movement LOS	E	D	E	F	C	C	E	E	E	F	D	B
d_A, Approach Delay [s/veh]	50.37			63.70			57.74			54.24		
Approach LOS	D			E			E			D		
d_I, Intersection Delay [s/veh]	55.67											
Intersection LOS	E											
Intersection V/C	0.975											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.904			2.787			3.318			3.491		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			517			667		
d_b, Bicycle Delay [s]	28.70			30.10			33.00			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.635			2.248			2.363			3.036		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	17.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.772

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	620	0	497	0	1559	859	0	2067	368
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	620	0	497	0	1559	859	0	2067	368
Peak Hour Factor	1.0000	1.0000	1.0000	0.9390	1.0000	0.9390	1.0000	0.9540	0.9540	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	165	0	132	0	409	225	0	531	95
Total Analysis Volume [veh/h]	0	0	0	660	0	529	0	1634	900	0	2124	378
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		28	28	28	54	54
g / C, Green / Cycle		0.31	0.31	0.31	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate		0.23	0.24	0.26	0.34	0.44
s, saturation flow rate [veh/h]		1687	1622	1506	4826	4826
c, Capacity [veh/h]		518	498	462	2915	2915
d1, Uniform Delay [s]		28.20	28.55	29.28	10.65	12.58
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.40	2.96	4.72	0.78	1.64
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.80	0.86	0.56	0.73
d, Delay for Lane Group [s/veh]		30.59	31.51	34.00	11.43	14.22
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		7.81	7.97	8.36	5.99	9.32
50th-Percentile Queue Length [ft/ln]		195.25	199.19	208.94	149.80	232.94
95th-Percentile Queue Length [veh/ln]		12.39	12.60	13.10	10.01	14.32
95th-Percentile Queue Length [ft/ln]		309.82	314.93	327.47	250.16	358.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	30.96	0.00	33.38	0.00	11.43	0.00	0.00	14.22	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			32.04			11.43			14.22		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	17.58											
Intersection LOS	B											
Intersection V/C	0.772											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.420			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.094			2.458			2.728		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.767

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	844	59	389	0	0	244	182	1655	343	0	2159	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	844	59	389	0	0	244	182	1655	343	0	2159	43
Peak Hour Factor	0.9490	0.9490	0.9490	1.0000	1.0000	0.8840	0.9510	0.9510	0.9510	1.0000	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	222	16	102	0	0	69	48	435	90	0	549	11
Total Analysis Volume [veh/h]	889	62	410	0	0	276	191	1740	361	0	2196	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	53	0	0	0	19	19	67	0	0	48	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	32	32	15	15	80	61	61
g / C, Green / Cycle	0.27	0.27	0.27	0.13	0.13	0.66	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.20	0.21	0.23	0.10	0.11	0.36	0.35	0.32
s, saturation flow rate [veh/h]	3277	1664	1506	2665	1687	4826	4826	1747
c, Capacity [veh/h]	880	447	404	334	212	3208	2442	884
d1, Uniform Delay [s]	40.34	40.48	41.63	51.17	51.73	10.54	22.45	21.53
k, delay calibration	0.11	0.11	0.14	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.40	2.88	6.56	5.18	13.14	0.66	1.61	3.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.77	0.85	0.83	0.90	0.54	0.69	0.63
d, Delay for Lane Group [s/veh]	41.74	43.36	48.19	56.35	64.86	11.20	24.05	24.98
Lane Group LOS	D	D	D	E	E	B	C	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.23	9.72	10.36	4.28	6.43	7.72	12.03	12.03
50th-Percentile Queue Length [ft/ln]	230.66	242.93	259.03	107.10	160.74	192.98	300.65	300.86
95th-Percentile Queue Length [veh/ln]	14.21	14.83	15.64	7.68	10.59	12.28	17.71	17.72
95th-Percentile Queue Length [ft/ln]	355.19	370.73	391.00	191.96	264.70	306.89	442.84	443.09

Movement, Approach, & Intersection Results

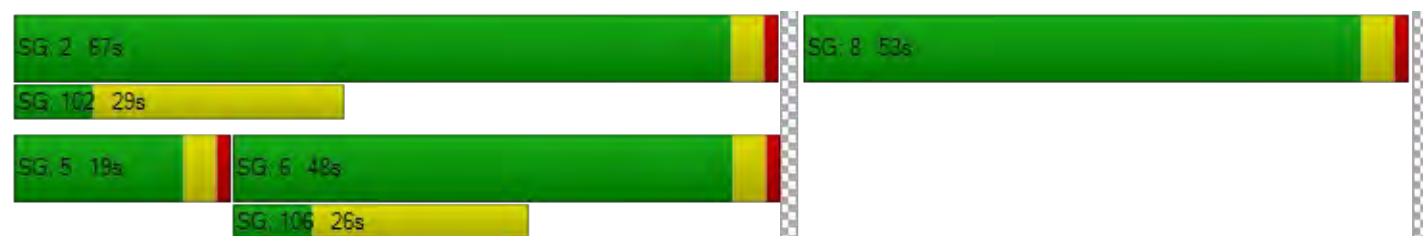
d_M, Delay for Movement [s/veh]	42.13	43.36	47.37	0.00	0.00	56.35	64.86	11.20	0.00	0.00	24.27	24.98
Movement LOS	D	D	D			E	E	B			C	C
d_A, Approach Delay [s/veh]	43.78			56.35			16.51			24.29		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	27.79											
Intersection LOS	C											
Intersection V/C	0.767											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.579			2.140			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	817			0			1050			733		
d_b, Bicycle Delay [s]	21.00			60.00			13.54			24.07		
I_b,int, Bicycle LOS Score for Intersection	3.805			4.132			2.622			2.484		
Bicycle LOS	D			D			B			B		

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	201	240	78	270	323	208	235	1662	130	162	1563	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	201	240	78	270	323	208	235	1662	130	162	1563	158
Peak Hour Factor	0.9100	0.9100	0.9100	0.8290	0.8290	0.8290	0.9480	0.9480	0.9480	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	55	66	21	81	97	63	62	438	34	43	418	42
Total Analysis Volume [veh/h]	221	264	86	326	390	251	248	1753	137	173	1672	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	16	42	0	23	48	0	17	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	26	26	12	29	29	19	53	53	13	47	47
g / C, Green / Cycle	0.08	0.22	0.22	0.10	0.24	0.24	0.16	0.44	0.44	0.11	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.10	0.10	0.22	0.17	0.15	0.37	0.37	0.10	0.28	0.28
s, saturation flow rate [veh/h]	3277	1772	1625	3277	1772	1506	1687	3373	1707	1687	4826	1666
c, Capacity [veh/h]	250	384	352	331	428	364	268	1483	751	184	1883	650
d1, Uniform Delay [s]	54.95	41.06	41.12	53.90	44.32	41.47	49.82	29.97	30.12	53.09	31.17	31.18
k, delay calibration	0.11	0.11	0.11	0.11	0.24	0.11	0.15	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.97	0.90	1.01	19.58	15.06	2.42	16.54	6.04	11.63	18.97	2.49	6.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.47	0.48	0.98	0.91	0.69	0.93	0.84	0.85	0.94	0.73	0.73
d, Delay for Lane Group [s/veh]	64.92	41.96	42.14	73.48	59.37	43.90	66.36	36.01	41.75	72.06	33.67	38.14
Lane Group LOS	E	D	D	E	E	D	E	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.66	4.79	4.47	5.81	12.99	6.99	8.55	16.94	18.51	6.15	11.53	12.76
50th-Percentile Queue Length [ft/ln]	91.43	119.73	111.83	145.21	324.85	174.84	213.79	423.45	462.77	153.63	288.35	318.96
95th-Percentile Queue Length [veh/ln]	6.58	8.38	7.94	9.76	18.91	11.33	13.35	23.69	25.57	10.21	17.10	18.62
95th-Percentile Queue Length [ft/ln]	164.57	209.45	198.54	244.02	472.64	283.27	333.69	592.18	639.17	255.26	427.59	465.41

Movement, Approach, & Intersection Results

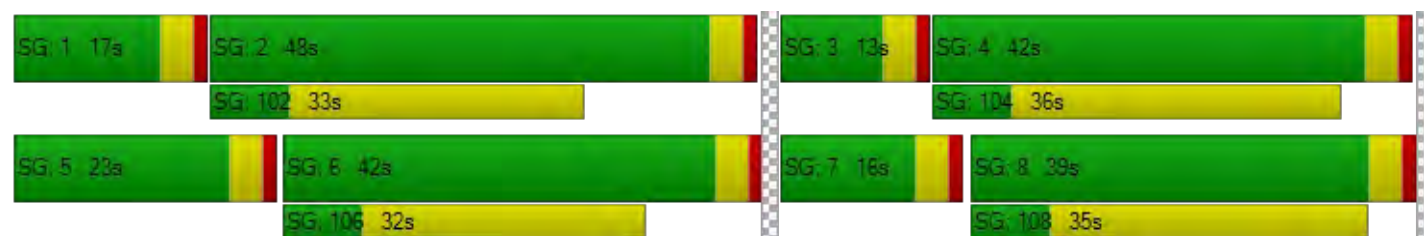
d_M, Delay for Movement [s/veh]	64.92	42.02	42.14	73.48	59.37	43.90	66.36	37.65	41.75	72.06	34.48	38.14
Movement LOS	E	D	D	E	E	D	E	D	D	E	C	D
d_A, Approach Delay [s/veh]	50.90			60.11			41.24			38.02		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	44.28											
Intersection LOS	D											
Intersection V/C	0.882											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.561			2.734			3.261			3.249		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			633			733			633		
d_b, Bicycle Delay [s]	30.10			28.02			24.07			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.031			3.155			2.736			2.390		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	29.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.835

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	224	44	246	23	21	13	17	1671	261	213	1720	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	224	44	246	23	21	13	17	1671	261	213	1720	52
Peak Hour Factor	0.8580	0.8580	0.8580	0.6480	0.6480	0.6480	0.9520	0.9520	0.9520	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	13	72	9	8	5	4	439	69	56	455	14
Total Analysis Volume [veh/h]	261	51	287	35	32	20	18	1755	274	225	1818	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	46	0	0	10	0	10	32	0	27	49	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25	6	6	3	51	51	17	66	66
g / C, Green / Cycle	0.22	0.22	0.22	0.05	0.05	0.02	0.45	0.45	0.15	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.19	0.02	0.03	0.01	0.36	0.18	0.13	0.37	0.37
s, saturation flow rate [veh/h]	1687	1714	1506	1687	1659	1687	4826	1506	1687	3373	1745
c, Capacity [veh/h]	364	369	325	84	83	40	2147	670	254	1929	998
d1, Uniform Delay [s]	38.99	38.99	43.75	53.06	53.64	55.42	27.86	21.67	47.88	16.62	16.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.79	0.78	7.95	3.27	7.66	7.62	3.60	1.85	9.83	1.64	3.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.43	0.88	0.42	0.63	0.45	0.82	0.41	0.88	0.64	0.64
d, Delay for Lane Group [s/veh]	39.78	39.77	51.71	56.33	61.30	63.05	31.46	23.52	57.71	18.26	19.81
Lane Group LOS	D	D	D	E	E	E	C	C	E	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.86	3.92	8.59	1.06	1.65	0.60	14.35	5.31	6.99	10.90	11.75
50th-Percentile Queue Length [ft/ln]	96.58	97.98	214.64	26.47	41.29	15.01	358.70	132.76	174.84	272.49	293.74
95th-Percentile Queue Length [veh/ln]	6.95	7.05	13.39	1.91	2.97	1.08	20.56	9.09	11.33	16.31	17.37
95th-Percentile Queue Length [ft/ln]	173.85	176.37	334.77	47.65	74.33	27.02	514.00	227.25	283.26	407.86	434.27

Movement, Approach, & Intersection Results

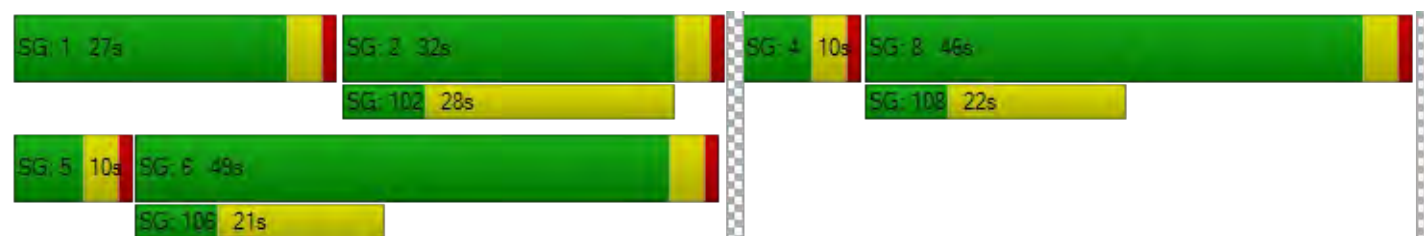
d_M, Delay for Movement [s/veh]	39.78	39.77	51.71	56.33	61.30	61.30	63.05	31.46	23.52	57.71	18.76	19.81
Movement LOS	D	D	D	E	E	E	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	45.49			59.30			30.67			22.96		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	29.68											
Intersection LOS	C											
Intersection V/C	0.835											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	0.00	47.03
I_p,int, Pedestrian LOS Score for Intersection	2.418	2.020	0.000	3.187
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	730	104	487	783
d_b, Bicycle Delay [s]	23.17	51.66	32.91	21.30
I_b,int, Bicycle LOS Score for Intersection	2.548	1.703	2.685	2.714
Bicycle LOS	B	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	37.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TLO			TLO			TLO			TLO		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	331	569	95	246	436	105	198	1255	194	171	1385	297
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	331	569	95	246	436	105	198	1255	194	171	1385	297
Peak Hour Factor	0.9600	0.9600	0.9600	0.8590	0.8590	0.8590	0.9620	0.9620	0.9620	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	148	25	72	127	31	51	326	50	47	383	82
Total Analysis Volume [veh/h]	345	593	99	286	508	122	206	1305	202	189	1530	328
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	34	0	14	30	0	11	46	0	11	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	24	24	10	21	21	7	48	48	7	48	48
g / C, Green / Cycle	0.12	0.22	0.22	0.10	0.20	0.20	0.07	0.46	0.46	0.07	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.11	0.20	0.20	0.09	0.15	0.08	0.06	0.30	0.30	0.06	0.37	0.38
s, saturation flow rate [veh/h]	3277	1772	1684	3277	3373	1506	3277	3373	1653	3277	3373	1618
c, Capacity [veh/h]	410	399	379	316	663	296	224	1546	757	224	1546	741
d1, Uniform Delay [s]	45.03	39.51	39.52	47.06	39.99	36.96	48.75	22.06	22.07	48.48	24.54	24.75
k, delay calibration	0.11	0.23	0.23	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.75	13.33	13.92	9.53	1.89	0.92	14.49	2.17	4.39	8.49	4.67	9.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.89	0.89	0.90	0.77	0.41	0.92	0.65	0.66	0.85	0.81	0.82
d, Delay for Lane Group [s/veh]	49.78	52.85	53.44	56.60	41.88	37.88	63.25	24.23	26.47	56.97	29.21	34.63
Lane Group LOS	D	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.64	10.24	9.80	4.10	6.33	2.81	3.13	9.77	10.07	2.71	13.81	14.60
50th-Percentile Queue Length [ft/ln]	116.11	255.88	244.88	102.58	158.20	70.19	78.15	244.29	251.77	67.63	345.22	364.94
95th-Percentile Queue Length [veh/ln]	8.18	15.48	14.93	7.39	10.45	5.05	5.63	14.90	15.28	4.87	19.90	20.86
95th-Percentile Queue Length [ft/ln]	204.47	387.05	373.20	184.64	261.33	126.34	140.67	372.46	381.88	121.73	497.57	521.59

Movement, Approach, & Intersection Results

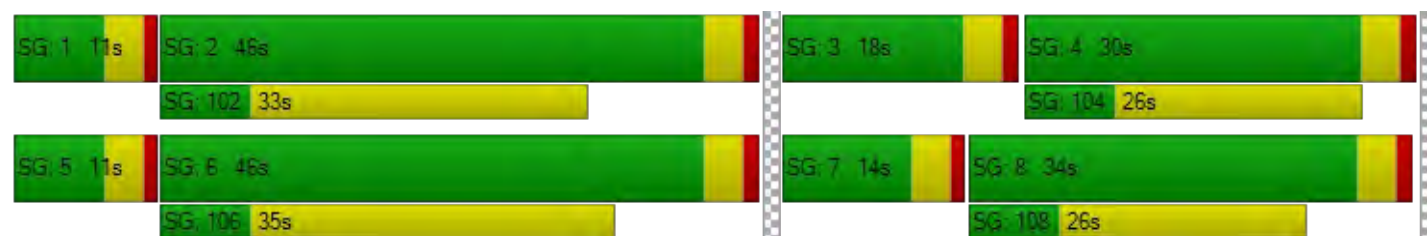
d_M, Delay for Movement [s/veh]	49.78	53.08	53.44	56.60	41.88	37.88	63.25	24.73	26.47	56.97	30.20	34.63
Movement LOS	D	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	52.02			45.94			29.57			33.39		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	37.64											
Intersection LOS	D											
Intersection V/C	0.857											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.775			2.886			3.185			3.188		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	571			495			800			800		
d_b, Bicycle Delay [s]	26.79			29.72			18.90			18.90		
I_b,int, Bicycle LOS Score for Intersection	2.415			2.315			2.502			2.685		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	42.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.895

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	75	793	309	161	562	324	535	1226	66	305	1093	248
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	793	309	161	562	324	535	1226	66	305	1093	248
Peak Hour Factor	0.9210	0.9210	0.9210	0.9300	0.9300	0.9300	0.8600	0.8600	0.8600	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	215	84	43	151	87	156	356	19	79	281	64
Total Analysis Volume [veh/h]	81	861	336	173	604	348	622	1426	77	314	1126	255
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	44	44	11	45	45	27	48	0	17	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	51	7	35	62	23	50	50	13	40	40
g / C, Green / Cycle	0.05	0.28	0.43	0.06	0.29	0.52	0.19	0.42	0.42	0.11	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.22	0.05	0.18	0.23	0.19	0.30	0.05	0.10	0.28	0.28
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1609
c, Capacity [veh/h]	86	953	640	193	981	777	628	2008	627	357	1124	536
d1, Uniform Delay [s]	56.82	41.48	25.57	56.11	36.76	18.28	48.40	29.04	21.56	52.73	36.91	36.95
k, delay calibration	0.11	0.11	0.37	0.11	0.11	0.22	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.45	3.52	2.29	13.28	0.63	0.84	14.46	2.16	0.40	7.10	7.20	14.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.90	0.53	0.89	0.62	0.45	0.99	0.71	0.12	0.88	0.83	0.83
d, Delay for Lane Group [s/veh]	90.27	44.99	27.86	69.39	37.40	19.12	62.86	31.20	21.96	59.83	44.11	51.05
Lane Group LOS	F	D	C	E	D	B	E	C	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.24	12.61	7.45	2.96	7.71	6.17	10.50	11.59	1.42	5.01	13.63	14.07
50th-Percentile Queue Length [ft/ln]	81.10	315.30	186.23	73.99	192.85	154.24	262.50	289.75	35.39	125.30	340.69	351.83
95th-Percentile Queue Length [veh/ln]	5.84	18.44	11.93	5.33	12.27	10.24	15.81	17.17	2.55	8.68	19.68	20.23
95th-Percentile Queue Length [ft/ln]	145.99	460.90	298.13	133.18	306.73	256.08	395.36	429.33	63.70	217.08	492.04	505.64

Movement, Approach, & Intersection Results

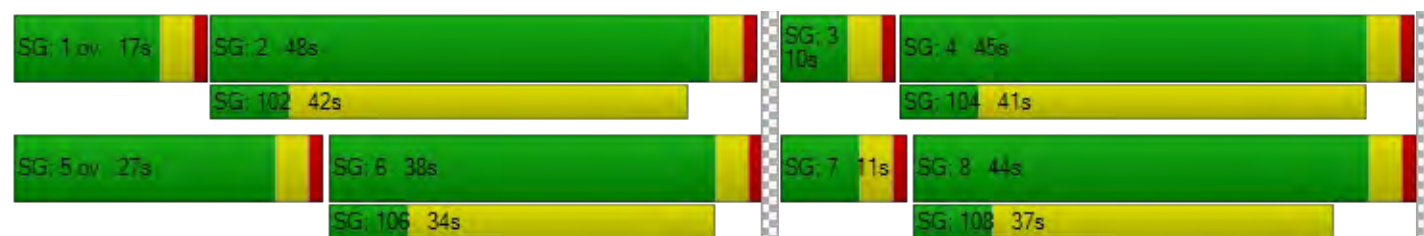
d_M, Delay for Movement [s/veh]	90.27	44.99	27.86	69.39	37.40	19.12	62.86	31.20	21.96	59.83	45.29	51.05
Movement LOS	F	D	C	E	D	B	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	43.36			36.66			40.13			48.85		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.54											
Intersection LOS	D											
Intersection V/C	0.895											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.836			3.006			3.262			3.182		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			683			733			567		
d_b, Bicycle Delay [s]	26.67			26.00			24.07			30.82		
I_b,int, Bicycle LOS Score for Intersection	2.614			2.488			2.728			2.492		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	51.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	392	888	24	127	347	241	329	1043	287	19	981	286
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	392	888	24	127	347	241	329	1043	287	19	981	286
Peak Hour Factor	0.9360	0.9360	0.9360	0.9320	0.9320	0.9320	0.8080	0.8080	0.8080	0.9070	0.9070	0.9070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	237	6	34	93	65	102	323	89	5	270	79
Total Analysis Volume [veh/h]	419	949	26	136	372	259	407	1291	355	21	1082	315
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	51	0	10	44	44	16	42	42	17	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	37	6	30	46	12	58	75	3	49	49
g / C, Green / Cycle	0.11	0.31	0.05	0.25	0.38	0.10	0.48	0.62	0.03	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.13	0.28	0.04	0.08	0.17	0.12	0.38	0.24	0.01	0.28	0.28
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1575
c, Capacity [veh/h]	357	1038	166	1204	577	329	1627	940	86	1376	642
d1, Uniform Delay [s]	53.50	40.05	56.43	36.63	27.57	54.00	26.07	11.08	57.31	29.33	29.33
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	85.51	3.66	9.42	0.14	0.55	111.87	4.08	1.16	1.47	2.88	6.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	0.91	0.82	0.31	0.45	1.24	0.79	0.38	0.25	0.69	0.69
d, Delay for Lane Group [s/veh]	139.01	43.71	65.85	36.78	28.11	165.87	30.15	12.24	58.78	32.22	35.38
Lane Group LOS	F	D	E	D	C	F	C	B	E	C	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	9.60	13.86	2.26	2.99	5.62	10.08	15.94	4.78	0.33	11.73	11.52
50th-Percentile Queue Length [ft/ln]	240.10	346.47	56.48	74.74	140.42	252.08	398.52	119.40	8.26	293.30	287.98
95th-Percentile Queue Length [veh/ln]	15.61	19.96	4.07	5.38	9.50	16.49	22.49	8.36	0.59	17.35	17.09
95th-Percentile Queue Length [ft/ln]	390.19	499.10	101.66	134.53	237.59	412.23	562.22	209.00	14.87	433.73	427.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	139.01	43.71	0.00	65.85	36.78	28.11	165.87	30.15	12.24	58.78	32.60	35.38
Movement LOS	F	D		E	D	C	F	C	B	E	C	D
d_A, Approach Delay [s/veh]	72.90			39.01			53.96			33.60		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	51.38											
Intersection LOS	D											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.997			3.036			3.204			3.004		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	783			667			633			650		
d_b, Bicycle Delay [s]	22.20			26.67			28.02			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.688			1.981			3.253			2.340		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.489

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	64	108	50	85	113	70	63	989	47	42	1058	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	108	50	85	113	70	63	989	47	42	1058	61
Peak Hour Factor	0.9400	0.9400	0.9400	0.8420	0.8420	0.8420	0.9760	0.9760	0.9760	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	29	13	25	34	21	16	253	12	12	304	18
Total Analysis Volume [veh/h]	68	115	53	101	134	83	65	1013	48	48	1217	70
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	32	0	17	39	0	10	31	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	7	7	7	9	9	5	56	56	4	56	56
g / C, Green / Cycle	0.06	0.08	0.08	0.08	0.10	0.10	0.05	0.62	0.62	0.05	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.05	0.06	0.06	0.07	0.04	0.21	0.21	0.03	0.25	0.25
s, saturation flow rate [veh/h]	1687	1772	1590	1687	1772	1554	1687	3373	1731	1687	3373	1723
c, Capacity [veh/h]	94	136	122	130	173	152	92	2096	1075	81	2073	1059
d1, Uniform Delay [s]	41.89	40.42	40.54	40.88	39.21	39.37	41.90	8.16	8.16	42.07	8.97	8.97
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.00	4.83	6.33	9.69	4.09	5.48	9.31	0.43	0.84	6.77	0.60	1.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.63	0.67	0.78	0.65	0.69	0.70	0.33	0.33	0.59	0.41	0.41
d, Delay for Lane Group [s/veh]	51.89	45.25	46.88	50.57	43.31	44.85	51.20	8.59	9.00	48.84	9.57	10.15
Lane Group LOS	D	D	D	D	D	D	D	A	A	D	A	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.73	2.01	1.96	2.52	2.56	2.44	1.64	3.02	3.23	1.19	4.00	4.26
50th-Percentile Queue Length [ft/ln]	43.30	50.28	49.10	63.06	64.12	60.99	41.10	75.56	80.72	29.69	100.11	106.52
95th-Percentile Queue Length [veh/ln]	3.12	3.62	3.54	4.54	4.62	4.39	2.96	5.44	5.81	2.14	7.21	7.65
95th-Percentile Queue Length [ft/ln]	77.95	90.51	88.38	113.52	115.42	109.78	73.99	136.01	145.29	53.44	180.20	191.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.89	45.66	46.88	50.57	43.55	44.85	51.20	8.72	9.00	48.84	9.74	10.15
Movement LOS	D	D	D	D	D	D	D	A	A	D	A	B
d_A, Approach Delay [s/veh]	47.73			46.12			11.18			11.17		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	17.72											
Intersection LOS	B											
Intersection V/C	0.489											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.390			2.410			2.941			2.942		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	622			778			600			600		
d_b, Bicycle Delay [s]	21.36			16.81			22.05			22.05		
I_b,int, Bicycle LOS Score for Intersection	1.754			1.822			2.179			2.294		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	37.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	250	338	148	134	671	136	61	914	248	204	861	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	250	338	148	134	671	136	61	914	248	204	861	43
Peak Hour Factor	0.9230	0.9230	0.9230	0.9210	0.9210	0.9210	0.9640	0.9640	0.9640	0.8850	0.8850	0.8850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	92	40	36	182	37	16	237	64	58	243	12
Total Analysis Volume [veh/h]	271	366	160	145	729	148	63	948	257	231	973	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	39	0	16	40	0	15	42	0	23	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	28	28	12	29	29	6	46	46	18	58	58
g / C, Green / Cycle	0.09	0.23	0.23	0.10	0.24	0.24	0.05	0.38	0.38	0.15	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.08	0.11	0.11	0.09	0.22	0.10	0.04	0.20	0.17	0.14	0.20	0.20
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1728
c, Capacity [veh/h]	304	783	350	171	811	362	82	1840	574	257	1635	838
d1, Uniform Delay [s]	53.89	39.72	39.62	53.10	44.21	38.43	56.45	28.62	27.73	50.00	19.93	19.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.87	0.44	0.94	11.12	3.93	0.74	13.66	1.04	2.52	11.73	0.77	1.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.47	0.46	0.85	0.90	0.41	0.77	0.52	0.45	0.90	0.41	0.41
d, Delay for Lane Group [s/veh]	62.76	40.16	40.56	64.22	48.14	39.17	70.11	29.66	30.25	61.73	20.71	21.44
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.42	4.71	4.16	4.83	10.88	3.76	2.20	7.15	5.90	7.64	6.20	6.53
50th-Percentile Queue Length [ft/ln]	110.52	117.76	103.94	120.70	271.93	93.94	55.03	178.74	147.40	190.88	155.03	163.23
95th-Percentile Queue Length [veh/ln]	7.87	8.27	7.48	8.43	16.29	6.76	3.96	11.53	9.88	12.17	10.29	10.72
95th-Percentile Queue Length [ft/ln]	196.72	206.75	187.09	210.79	407.15	169.09	99.06	288.37	246.96	304.18	257.13	268.00

Movement, Approach, & Intersection Results

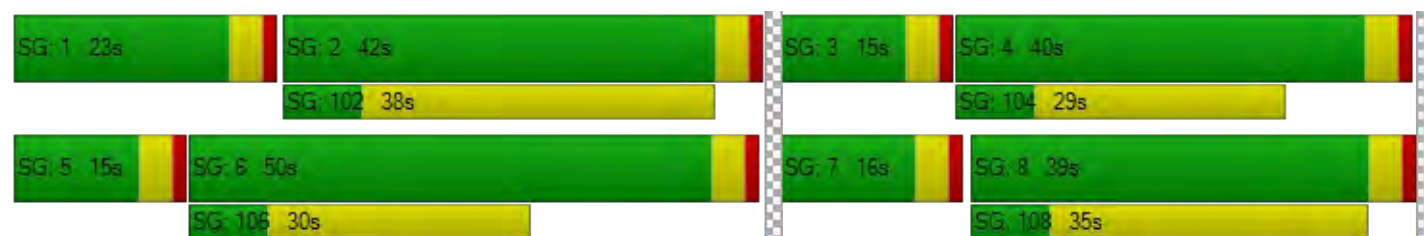
d_M, Delay for Movement [s/veh]	62.76	40.16	40.56	64.22	48.14	39.17	70.11	29.66	30.25	61.73	20.93	21.44
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	47.92			49.12			31.79			28.47		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	37.88											
Intersection LOS	D											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.888			2.710			3.063			2.957		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			600			633			767		
d_b, Bicycle Delay [s]	30.10			29.40			28.02			22.82		
I_b,int, Bicycle LOS Score for Intersection	2.217			2.403			2.257			2.249		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	122	235	303	472	334	5	17	924	247	619	1270	656
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	235	303	472	334	5	17	924	247	619	1270	656
Peak Hour Factor	0.9010	0.9010	0.9010	0.8760	0.8760	0.8760	0.8390	0.8390	0.8390	0.9650	0.9650	0.9650
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	65	84	135	95	1	5	275	74	160	329	170
Total Analysis Volume [veh/h]	135	261	336	539	381	6	20	1101	294	641	1316	680
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	30	0	24	44	0	10	39	0	27	56	56
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	18	18	18	20	32	32	3	43	43	23	63	87
g / C, Green / Cycle	0.05	0.15	0.15	0.15	0.17	0.26	0.26	0.02	0.36	0.36	0.19	0.53	0.73
(v / s)_i Volume / Saturation Flow Rate	0.04	0.12	0.12	0.12	0.16	0.11	0.11	0.01	0.22	0.22	0.20	0.27	0.45
s, saturation flow rate [veh/h]	3277	1772	1559	1506	3277	1772	1762	3277	4826	1537	3277	4826	1506
c, Capacity [veh/h]	166	261	230	222	547	467	464	83	1740	554	628	2544	1095
d1, Uniform Delay [s]	56.42	49.74	49.79	49.81	49.87	36.56	36.56	57.39	31.42	31.50	48.52	18.46	8.14
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.11	6.80	7.95	8.28	14.81	0.59	0.59	1.49	1.58	5.00	21.95	0.76	2.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.83	0.84	0.84	0.99	0.42	0.42	0.24	0.61	0.61	1.02	0.52	0.62
d, Delay for Lane Group [s/veh]	65.52	56.54	57.74	58.08	64.68	37.15	37.15	58.88	33.00	36.50	70.47	19.21	10.79
Lane Group LOS	E	E	E	E	E	D	D	E	C	D	F	B	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.24	6.83	6.13	5.95	9.16	4.80	4.77	0.32	8.55	8.80	11.27	7.93	8.48
50th-Percentile Queue Length [ft/ln]	55.91	170.7	153.2	148.8	228.90	119.93	119.29	7.88	213.82	219.94	281.79	198.36	211.97
95th-Percentile Queue Length [veh/ln]	4.03	11.11	10.19	9.95	14.12	8.39	8.35	0.57	13.35	13.66	16.95	12.55	13.25
95th-Percentile Queue Length [ft/ln]	100.6	277.8	254.7	248.8	352.96	209.73	208.85	14.19	333.73	341.55	423.77	313.86	331.36

Movement, Approach, & Intersection Results

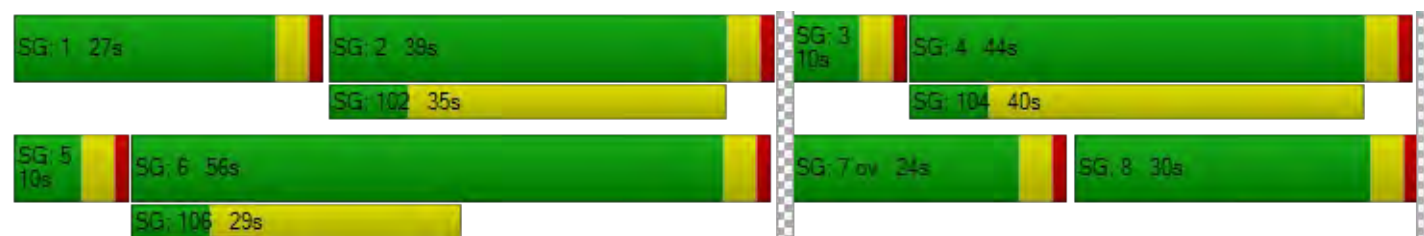
d_M, Delay for Movement [s/veh]	65.52	56.74	57.94	64.68	37.15	37.15	58.88	33.14	36.50	70.47	19.21	10.79
Movement LOS	E	E	E	E	D	D	E	C	D	F	B	B
d_A, Approach Delay [s/veh]	58.91			53.18			34.20			29.50		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	38.27											
Intersection LOS	D											
Intersection V/C	0.813											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.893			2.773			3.174			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	433			667			583			867		
d_b, Bicycle Delay [s]	36.82			26.67			30.10			19.27		
I_b,int, Bicycle LOS Score for Intersection	2.164			2.324			2.143			3.010		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	30.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.874

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	756	0	971	0	1190	495	157	1575	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	756	0	971	0	1190	495	157	1575	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9460	1.0000	0.9460	1.0000	0.9230	0.9230	0.9510	0.9510	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	200	0	257	0	322	134	41	414	0
Total Analysis Volume [veh/h]	0	0	0	799	0	1026	0	1289	536	165	1656	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	57	0	0	0	23	0	10	33	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		41	41	41	31	31	31	6	41
g / C, Green / Cycle		0.46	0.46	0.46	0.34	0.34	0.34	0.07	0.46
(v / s)_i Volume / Saturation Flow Rate		0.36	0.39	0.40	0.27	0.30	0.30	0.05	0.34
s, saturation flow rate [veh/h]		1687	1558	1506	3373	1533	1506	3277	4826
c, Capacity [veh/h]		770	711	687	1157	526	516	222	2196
d1, Uniform Delay [s]		20.82	21.84	22.34	26.65	27.68	27.89	41.21	20.36
k, delay calibration		0.18	0.22	0.23	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		3.05	5.97	8.21	5.50	17.40	19.34	4.89	2.46
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.79	0.86	0.89	0.79	0.87	0.88	0.74	0.75
d, Delay for Lane Group [s/veh]		23.88	27.81	30.55	32.15	45.08	47.23	46.10	22.82
Lane Group LOS		C	C	C	C	D	D	D	C
Critical Lane Group		No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		10.85	11.87	12.51	9.35	11.33	11.63	1.93	9.53
50th-Percentile Queue Length [ft/ln]		271.24	296.86	312.63	233.70	283.29	290.80	48.17	238.20
95th-Percentile Queue Length [veh/ln]		16.25	17.53	18.30	14.36	16.85	17.23	3.47	14.59
95th-Percentile Queue Length [ft/ln]		406.29	438.15	457.62	359.05	421.31	430.64	86.70	364.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	24.82	0.00	29.43	0.00	32.88	46.91	46.10	22.82	0.00
Movement LOS				C		C		C	D	D	C	
d_A, Approach Delay [s/veh]	0.00			27.41			39.15			24.93		
Approach LOS	A			C			D			C		
d_I, Intersection Delay [s/veh]	30.50											
Intersection LOS	C											
Intersection V/C	0.874											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.056	2.533	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	422	644
d_b, Bicycle Delay [s]	45.00	45.00	28.01	20.67
I_b,int, Bicycle LOS Score for Intersection	4.132	7.144	2.563	2.561
Bicycle LOS	D	F	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	25.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.780

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	982	0	401	0	0	0	513	1438	0	0	750	380
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	982	0	401	0	0	0	513	1438	0	0	750	380
Peak Hour Factor	0.9860	1.0000	0.9860	1.0000	1.0000	1.0000	0.9080	0.9080	1.0000	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	249	0	102	0	0	0	141	396	0	0	199	101
Total Analysis Volume [veh/h]	996	0	407	0	0	0	565	1584	0	0	798	404
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	43	0	0	0	0	0	26	47	0	0	21	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	31	31		18	51	29	29	29
g / C, Green / Cycle	0.35	0.35		0.20	0.56	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.30	0.27		0.17	0.33	0.18	0.20	0.20
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1506	1506
c, Capacity [veh/h]	1145	526		653	2710	1072	478	478
d1, Uniform Delay [s]	27.36	26.10		34.87	12.88	25.50	26.18	26.18
k, delay calibration	0.11	0.18		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.18	4.07		3.59	0.93	2.12	6.13	6.13
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.77		0.86	0.58	0.56	0.63	0.63
d, Delay for Lane Group [s/veh]	29.54	30.17		38.46	13.81	27.63	32.31	32.31
Lane Group LOS	C	C		D	B	C	C	C
Critical Lane Group	Yes	No		Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.92	8.06		6.18	6.58	5.50	6.13	6.13
50th-Percentile Queue Length [ft/ln]	248.07	201.48		154.43	164.54	137.42	153.35	153.35
95th-Percentile Queue Length [veh/ln]	15.09	12.72		10.25	10.79	9.34	10.20	10.20
95th-Percentile Queue Length [ft/ln]	377.23	317.88		256.33	269.72	233.55	254.90	254.90

Movement, Approach, & Intersection Results

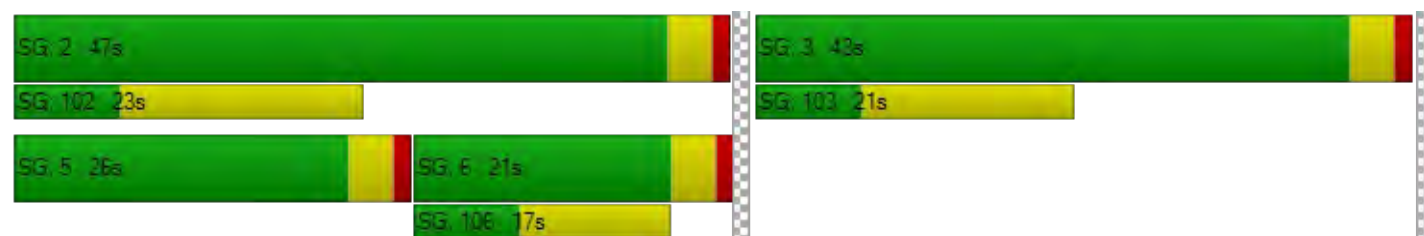
d_M, Delay for Movement [s/veh]	29.54	0.00	30.17	0.00	0.00	0.00	38.46	13.81	0.00	0.00	27.63	32.31
Movement LOS	C		C				D	B			C	C
d_A, Approach Delay [s/veh]	29.72			0.00			20.29			29.97		
Approach LOS	C			A			C			C		
d_I, Intersection Delay [s/veh]	25.52											
Intersection LOS	C											
Intersection V/C	0.780											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.396	2.187	0.000	3.038
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	956	378
d_b, Bicycle Delay [s]	45.00	45.00	12.27	29.61
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.742	2.221
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.566

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	208	140	75	1	137	171	145	705	588	83	534	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	140	75	1	137	171	145	705	588	83	534	7
Peak Hour Factor	0.8290	0.8290	0.8290	0.8490	0.8490	0.8490	0.8680	0.8680	0.8680	0.8840	0.8840	0.8840
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	42	23	0	40	50	42	203	169	23	151	2
Total Analysis Volume [veh/h]	251	169	90	1	161	201	167	812	677	94	604	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	46	46	10	42	0	17	39	39	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	26	36	0	17	17	12	56	71	6	50	50
g / C, Green / Cycle	0.10	0.25	0.35	0.00	0.16	0.16	0.12	0.54	0.67	0.06	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.08	0.10	0.06	0.00	0.09	0.13	0.10	0.24	0.25	0.03	0.12	0.12
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1760
c, Capacity [veh/h]	314	445	522	5	280	238	196	1810	1787	189	1611	841
d1, Uniform Delay [s]	46.53	32.60	23.87	52.30	41.00	43.02	45.54	14.87	7.65	48.06	16.28	16.28
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.68	0.54	0.16	21.49	1.87	8.03	9.82	0.81	0.61	2.03	0.37	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.38	0.17	0.21	0.58	0.85	0.85	0.45	0.38	0.50	0.25	0.25
d, Delay for Lane Group [s/veh]	51.21	33.13	24.02	73.79	42.87	51.05	55.36	15.68	8.27	50.09	16.65	17.00
Lane Group LOS	D	C	C	E	D	D	E	B	A	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.40	3.61	1.57	0.05	3.99	5.56	4.78	5.88	3.20	1.24	2.90	3.11
50th-Percentile Queue Length [ft/ln]	84.99	90.29	39.33	1.35	99.71	139.11	119.57	146.96	79.97	31.12	72.41	77.69
95th-Percentile Queue Length [veh/ln]	6.12	6.50	2.83	0.10	7.18	9.43	8.37	9.85	5.76	2.24	5.21	5.59
95th-Percentile Queue Length [ft/ln]	152.98	162.52	70.79	2.43	179.48	235.83	209.23	246.37	143.95	56.02	130.34	139.85

Movement, Approach, & Intersection Results

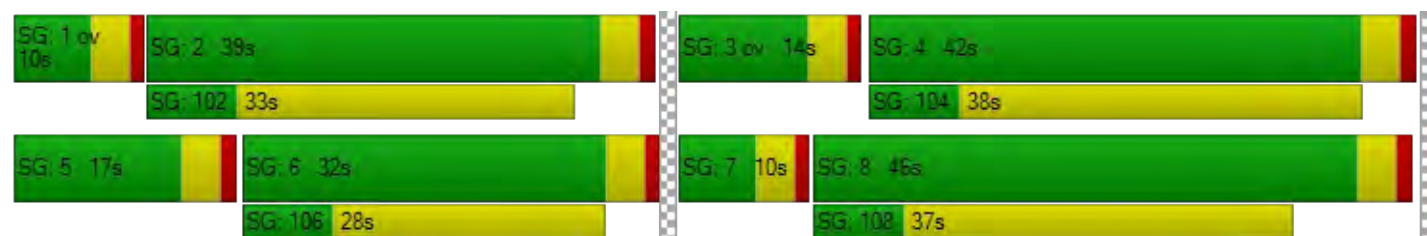
d_M, Delay for Movement [s/veh]	51.21	33.13	24.02	73.79	42.87	51.05	55.36	15.68	8.27	50.09	16.77	17.00
Movement LOS	D	C	C	E	D	D	E	B	A	D	B	B
d_A, Approach Delay [s/veh]	40.42			47.49			16.65			21.21		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	24.85											
Intersection LOS	C											
Intersection V/C	0.566											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.694			2.311			3.063			2.825		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			724			667			533		
d_b, Bicycle Delay [s]	18.90			21.38			23.33			28.23		
I_b,int, Bicycle LOS Score for Intersection	2.401			2.159			2.926			1.948		
Bicycle LOS	B			B			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	28.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.606

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	77	383	218	319	813	93	81	111	37	254	123	299
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	383	218	319	813	93	81	111	37	254	123	299
Peak Hour Factor	0.9110	0.9110	0.9110	0.9020	0.9020	0.9020	0.8540	0.8540	0.8540	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	105	60	88	225	26	24	32	11	71	34	83
Total Analysis Volume [veh/h]	85	420	239	354	901	103	95	130	43	283	137	334
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	18	28	0	18	28	0	16	39	0	15	38	38
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	47	47	14	55	55	7	12	11	16	34
g / C, Green / Cycle	0.06	0.47	0.47	0.14	0.55	0.55	0.07	0.12	0.11	0.16	0.34
(v / s)_i Volume / Saturation Flow Rate	0.05	0.12	0.16	0.11	0.20	0.20	0.06	0.10	0.09	0.08	0.22
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1680	1687	1697	3277	1772	1506
c, Capacity [veh/h]	109	1588	709	460	1843	918	121	209	347	279	509
d1, Uniform Delay [s]	46.11	16.02	16.67	41.48	12.86	12.86	45.73	42.87	43.80	38.53	28.21
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.14
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.16	0.41	1.29	2.75	0.56	1.12	10.62	8.11	4.67	1.34	1.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.26	0.34	0.77	0.36	0.36	0.79	0.83	0.82	0.49	0.66
d, Delay for Lane Group [s/veh]	57.27	16.43	17.96	44.22	13.42	13.98	56.35	50.98	48.48	39.86	30.14
Lane Group LOS	E	B	B	D	B	B	E	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.41	2.92	3.61	4.35	4.20	4.32	2.67	4.61	3.63	3.15	6.94
50th-Percentile Queue Length [ft/ln]	60.22	73.02	90.15	108.65	104.88	108.08	66.64	115.32	90.74	78.86	173.51
95th-Percentile Queue Length [veh/ln]	4.34	5.26	6.49	7.76	7.55	7.73	4.80	8.14	6.53	5.68	11.26
95th-Percentile Queue Length [ft/ln]	108.40	131.43	162.28	194.12	188.78	193.32	119.95	203.38	163.32	141.95	281.52

Movement, Approach, & Intersection Results

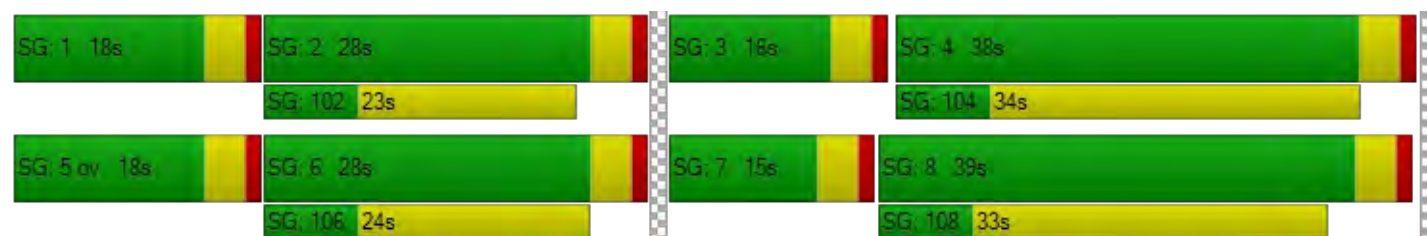
d_M, Delay for Movement [s/veh]	57.27	16.43	17.96	44.22	13.56	13.98	56.35	50.98	50.98	48.48	39.86	30.14
Movement LOS	E	B	B	D	B	B	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	21.59			21.59			52.88			38.79		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	28.42											
Intersection LOS	C											
Intersection V/C	0.606											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.873			2.999			2.138			2.698		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	480			480			700			680		
d_b, Bicycle Delay [s]	28.88			28.88			21.13			21.78		
I_b,int, Bicycle LOS Score for Intersection	1.969			2.307			2.002			2.804		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	21.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.475

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	91	70	160	51	35	73	82	537	115	139	676	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	91	70	160	51	35	73	82	537	115	139	676	24
Peak Hour Factor	0.8630	0.8630	0.8630	0.7790	0.7790	0.7790	0.9320	0.9320	0.9320	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	20	46	16	11	23	22	144	31	36	175	6
Total Analysis Volume [veh/h]	105	81	185	65	45	94	88	576	123	144	699	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	20	20	20	20	6	49	49	9	52	52
g / C, Green / Cycle	0.22	0.22	0.22	0.22	0.22	0.07	0.54	0.54	0.10	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.08	0.05	0.12	0.05	0.09	0.05	0.20	0.20	0.09	0.21	0.02
s, saturation flow rate [veh/h]	1250	1772	1506	1317	1583	1687	1772	1665	1687	3373	1506
c, Capacity [veh/h]	223	387	329	282	345	113	963	905	177	1961	876
d1, Uniform Delay [s]	38.51	28.83	31.36	33.96	30.16	41.34	11.78	11.79	39.41	9.94	8.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.53	0.27	1.51	0.41	0.76	10.92	1.11	1.19	8.60	0.51	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.21	0.56	0.23	0.40	0.78	0.37	0.37	0.81	0.36	0.03
d, Delay for Lane Group [s/veh]	40.05	29.09	32.87	34.38	30.91	52.26	12.89	12.97	48.01	10.45	8.08
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.30	1.44	3.66	1.28	2.61	2.24	4.14	3.92	3.49	3.47	0.21
50th-Percentile Queue Length [ft/ln]	57.61	36.12	91.42	32.12	65.37	56.03	103.52	98.01	87.33	86.70	5.17
95th-Percentile Queue Length [veh/ln]	4.15	2.60	6.58	2.31	4.71	4.03	7.45	7.06	6.29	6.24	0.37
95th-Percentile Queue Length [ft/ln]	103.70	65.02	164.56	57.81	117.67	100.86	186.33	176.42	157.19	156.06	9.30

Movement, Approach, & Intersection Results

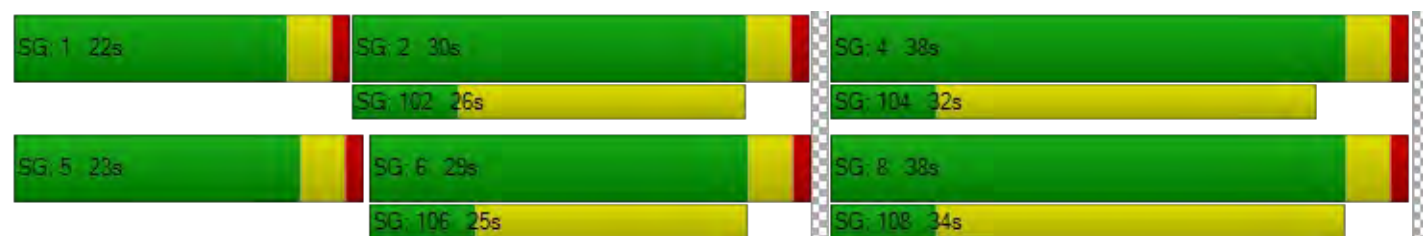
d_M, Delay for Movement [s/veh]	40.05	29.09	32.87	34.38	30.91	30.91	52.26	12.92	12.97	48.01	10.45	8.08
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	34.08			32.02			17.33			16.62		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	21.18											
Intersection LOS	C											
Intersection V/C	0.475											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.297			2.069			2.777			2.820		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.172			1.896			2.209			2.276		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	117	250	168	240	523	409	214	658	154	156	625	206
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	117	250	168	240	523	409	214	658	154	156	625	206
Peak Hour Factor	0.9440	0.9440	0.9440	0.9150	0.9150	0.9150	0.9030	0.9030	0.9030	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	66	44	66	143	112	59	182	43	42	169	56
Total Analysis Volume [veh/h]	124	265	178	262	572	447	237	729	171	168	675	222
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	21	50	0	13	39	0	11	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	32	32	11	37	37	9	44	44	7	42	42
g / C, Green / Cycle	0.05	0.29	0.29	0.10	0.34	0.34	0.08	0.40	0.40	0.06	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.12	0.08	0.31	0.31	0.07	0.22	0.11	0.05	0.20	0.15
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1519	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	180	990	442	330	601	515	270	1337	597	211	1276	569
d1, Uniform Delay [s]	51.10	29.83	31.17	48.40	34.73	34.96	49.96	25.60	22.64	50.79	26.61	24.97
k, delay calibration	0.11	0.11	0.11	0.11	0.27	0.28	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.62	0.14	0.59	4.35	12.28	15.70	8.84	1.60	1.21	6.71	1.57	2.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.27	0.40	0.79	0.91	0.92	0.88	0.55	0.29	0.80	0.53	0.39
d, Delay for Lane Group [s/veh]	55.72	29.98	31.77	52.75	47.02	50.66	58.80	27.20	23.84	57.51	28.19	26.97
Lane Group LOS	E	C	C	D	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.79	2.71	3.85	3.70	15.67	14.17	3.55	7.53	3.20	2.47	7.08	4.51
50th-Percentile Queue Length [ft/ln]	44.80	67.74	96.22	92.62	391.81	354.28	88.69	188.36	80.06	61.87	176.99	112.85
95th-Percentile Queue Length [veh/ln]	3.23	4.88	6.93	6.67	22.17	20.34	6.39	12.04	5.76	4.45	11.44	8.00
95th-Percentile Queue Length [ft/ln]	80.64	121.93	173.19	166.71	554.13	508.62	159.64	300.91	144.11	111.36	286.08	199.96

Movement, Approach, & Intersection Results

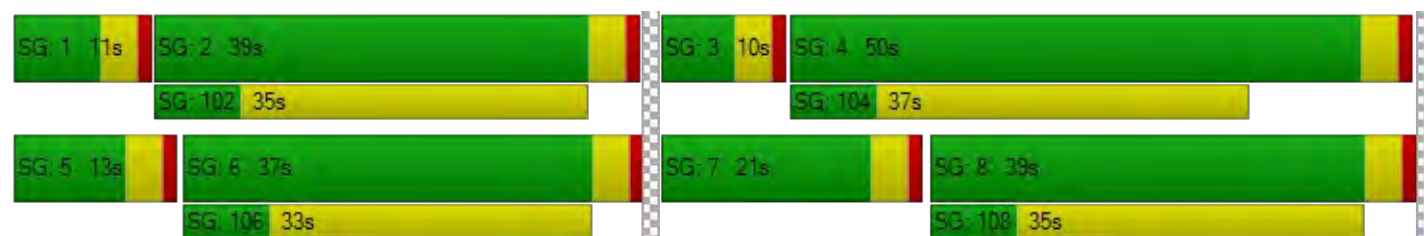
d_M, Delay for Movement [s/veh]	55.72	29.98	31.77	52.75	47.19	50.66	58.80	27.20	23.84	57.51	28.19	26.97
Movement LOS	E	C	C	D	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	36.17			49.54			33.28			32.56		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	38.64											
Intersection LOS	D											
Intersection V/C	0.728											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.809			2.788			2.935			2.915		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			836			636			600		
d_b, Bicycle Delay [s]	25.57			18.62			25.57			26.95		
I_b,int, Bicycle LOS Score for Intersection	2.027			2.616			2.498			2.438		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	21.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.575

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	303	18	159	11	20	12	8	671	318	145	656	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	303	18	159	11	20	12	8	671	318	145	656	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.7170	0.7170	0.7170	0.9350	0.9350	0.9350	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	5	41	4	7	4	2	179	85	39	177	3
Total Analysis Volume [veh/h]	316	19	166	15	28	17	9	718	340	157	708	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	56	56	0	37	0	10	38	0	11	39	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	21	32	5	5	1	65	65	7	70	70
g / C, Green / Cycle	0.12	0.20	0.31	0.05	0.05	0.01	0.62	0.62	0.07	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.10	0.01	0.11	0.01	0.03	0.01	0.32	0.32	0.05	0.20	0.20
s, saturation flow rate [veh/h]	3277	1772	1506	1393	1661	1687	1772	1582	3277	1772	1760
c, Capacity [veh/h]	382	359	463	99	79	23	1092	975	220	1186	1179
d1, Uniform Delay [s]	45.37	33.78	28.31	50.79	48.96	51.37	11.29	11.30	48.02	7.20	7.20
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.61	0.06	0.47	0.70	6.24	10.21	1.71	1.92	4.29	0.66	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.05	0.36	0.15	0.57	0.39	0.51	0.51	0.71	0.30	0.30
d, Delay for Lane Group [s/veh]	49.98	33.84	28.78	51.49	55.20	61.57	13.01	13.22	52.31	7.87	7.87
Lane Group LOS	D	C	C	D	E	E	B	B	D	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.25	0.40	3.29	0.41	1.29	0.30	7.29	6.57	2.14	3.28	3.26
50th-Percentile Queue Length [ft/ln]	106.20	9.95	82.37	10.21	32.24	7.50	182.16	164.25	53.44	81.97	81.49
95th-Percentile Queue Length [veh/ln]	7.63	0.72	5.93	0.73	2.32	0.54	11.71	10.77	3.85	5.90	5.87
95th-Percentile Queue Length [ft/ln]	190.70	17.90	148.27	18.37	58.02	13.51	292.84	269.34	96.20	147.54	146.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.98	33.84	28.78	51.49	55.20	55.20	61.57	13.06	13.22	52.31	7.87	7.87
Movement LOS	D	C	C	D	E	E	E	B	B	D	A	A
d_A, Approach Delay [s/veh]	42.34			54.28			13.52			15.82		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	21.06											
Intersection LOS	C											
Intersection V/C	0.575											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.627			1.980			2.718			2.770		
Crosswalk LOS	B			A			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	990			629			648			667		
d_b, Bicycle Delay [s]	13.38			24.69			24.00			23.33		
I_b,int, Bicycle LOS Score for Intersection	2.386			1.659			2.440			2.284		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.488

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↔↔↔			↔↔↔			↔↔↔			↔↔↔		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	90	4	191	156	718	5	11	575	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	90	4	191	156	718	5	11	575	70
Peak Hour Factor	0.7140	0.7140	0.7140	0.9130	0.9130	0.9130	0.9210	0.9210	0.9210	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	3	25	1	52	42	195	1	3	159	19
Total Analysis Volume [veh/h]	14	3	11	99	4	209	169	780	5	12	637	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	34	37	0	29	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	14	14	40	14	75	75	2	62	62
g / C, Green / Cycle	0.03	0.03	0.03	0.13	0.13	0.36	0.13	0.68	0.68	0.02	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.03	0.03	0.14	0.10	0.22	0.22	0.01	0.19	0.05
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1693	1506	1687	1772	1768	1687	3373	1506
c, Capacity [veh/h]	91	58	49	215	216	544	217	1199	1196	30	1910	853
d1, Uniform Delay [s]	53.62	51.61	51.90	43.23	43.23	26.09	46.46	7.39	7.39	53.49	12.77	10.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	0.37	2.27	0.57	0.57	0.45	5.97	0.73	0.73	8.34	0.47	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.05	0.22	0.24	0.24	0.38	0.78	0.33	0.33	0.40	0.33	0.09
d, Delay for Lane Group [s/veh]	54.40	51.98	54.17	43.80	43.80	26.53	52.44	8.12	8.12	61.83	13.25	11.14
Lane Group LOS	D	D	D	D	D	C	D	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.40	0.09	0.33	1.30	1.30	4.11	4.82	3.76	3.75	0.40	4.20	0.90
50th-Percentile Queue Length [ft/ln]	10.09	2.15	8.17	32.38	32.48	102.74	120.54	94.02	93.83	9.95	104.89	22.58
95th-Percentile Queue Length [veh/ln]	0.73	0.16	0.59	2.33	2.34	7.40	8.42	6.77	6.76	0.72	7.55	1.63
95th-Percentile Queue Length [ft/ln]	18.16	3.88	14.71	58.29	58.47	184.93	210.57	169.24	168.89	17.90	188.81	40.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.40	51.98	54.17	43.80	43.80	26.53	52.44	8.12	8.12	61.83	13.25	11.14
Movement LOS	D	D	D	D	D	C	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	54.05			32.23			15.97			13.82		
Approach LOS	D			C			B			B		
d_I, Intersection Delay [s/veh]	18.23											
Intersection LOS	B											
Intersection V/C	0.488											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.153			2.278			2.683			0.000		
Crosswalk LOS	B			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			545			600			509		
d_b, Bicycle Delay [s]	49.16			29.09			26.95			30.56		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.074			2.347			2.159		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	220	297	58	153	588	99	106	407	285	53	346	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	297	58	153	588	99	106	407	285	53	346	85
Peak Hour Factor	0.8820	0.8820	0.8820	0.8520	0.8520	0.8520	0.9210	0.9210	0.9210	0.8340	0.8340	0.8340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	84	16	45	173	29	29	110	77	16	104	25
Total Analysis Volume [veh/h]	249	337	66	180	690	116	115	442	309	64	415	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	37	0	14	37	0	15	44	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	52	52	8	49	49	9	25	25	5	21	21
g / C, Green / Cycle	0.09	0.49	0.49	0.07	0.47	0.47	0.08	0.23	0.23	0.05	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.08	0.05	0.16	0.16	0.07	0.13	0.21	0.04	0.12	0.07
s, saturation flow rate [veh/h]	3277	3373	1629	3277	3373	1645	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	309	1651	798	244	1583	772	142	791	353	83	673	301
d1, Uniform Delay [s]	46.65	14.89	14.92	47.65	17.62	17.65	47.29	35.43	38.74	49.38	38.40	36.12
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.90	0.21	0.45	4.35	0.59	1.22	10.30	0.62	7.08	13.76	0.92	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.16	0.17	0.74	0.34	0.34	0.81	0.56	0.87	0.77	0.62	0.34
d, Delay for Lane Group [s/veh]	51.55	15.10	15.37	52.00	18.21	18.86	57.59	36.05	45.82	63.14	39.32	36.78
Lane Group LOS	D	B	B	D	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.38	1.80	1.84	2.45	4.17	4.24	3.35	5.02	8.26	1.97	4.93	2.30
50th-Percentile Queue Length [ft/ln]	84.61	45.09	46.06	61.16	104.34	106.02	83.76	125.44	206.51	49.32	123.33	57.41
95th-Percentile Queue Length [veh/ln]	6.09	3.25	3.32	4.40	7.51	7.62	6.03	8.69	12.97	3.55	8.58	4.13
95th-Percentile Queue Length [ft/ln]	152.29	81.16	82.90	110.08	187.82	190.46	150.77	217.28	324.35	88.78	214.39	103.35

Movement, Approach, & Intersection Results

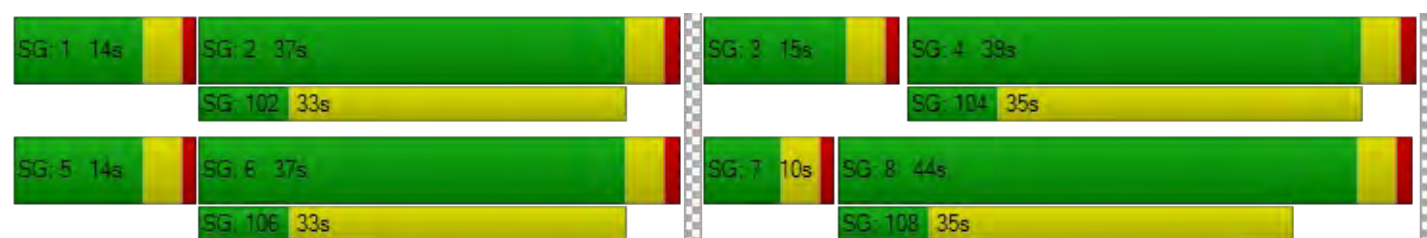
d_M, Delay for Movement [s/veh]	51.55	15.15	15.37	52.00	18.35	18.86	57.59	36.05	45.82	63.14	39.32	36.78
Movement LOS	D	B	B	D	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	29.07			24.55			42.40			41.50		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.71											
Intersection LOS	C											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.942			2.920			2.728			2.666		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	629			629			762			667		
d_b, Bicycle Delay [s]	24.69			24.69			20.12			23.33		
I_b,int, Bicycle LOS Score for Intersection	1.918			2.102			2.274			2.039		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.265

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	20	260	106	66	247	19	32	10	55	76	4	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	260	106	66	247	19	32	10	55	76	4	54
Peak Hour Factor	0.9200	0.9200	0.9200	0.9030	0.9030	0.9030	0.6380	0.6380	0.6380	0.9310	0.9310	0.9310
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	71	29	18	68	5	13	4	22	20	1	15
Total Analysis Volume [veh/h]	22	283	115	73	274	21	50	16	86	82	4	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	29	42	0	18	31	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	58	58	5	60	60	15	15	15	15
g / C, Green / Cycle	0.03	0.64	0.64	0.06	0.67	0.67	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.12	0.04	0.08	0.08	0.04	0.07	0.06	0.04
s, saturation flow rate [veh/h]	1687	1772	1602	1687	1772	1728	1340	1542	1292	1521
c, Capacity [veh/h]	49	1140	1031	95	1189	1160	220	257	184	253
d1, Uniform Delay [s]	43.01	6.47	6.50	41.88	5.31	5.32	37.52	33.47	40.65	32.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.43	0.35	0.40	11.99	0.22	0.22	0.52	0.99	1.69	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.18	0.19	0.77	0.13	0.13	0.23	0.40	0.45	0.24
d, Delay for Lane Group [s/veh]	49.44	6.82	6.90	53.87	5.53	5.54	38.04	34.46	42.35	33.08
Lane Group LOS	D	A	A	D	A	A	D	C	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.56	1.52	1.43	1.90	0.94	0.93	1.04	2.03	1.85	1.19
50th-Percentile Queue Length [ft/ln]	14.10	37.97	35.87	47.45	23.51	23.21	26.10	50.72	46.13	29.84
95th-Percentile Queue Length [veh/ln]	1.02	2.73	2.58	3.42	1.69	1.67	1.88	3.65	3.32	2.15
95th-Percentile Queue Length [ft/ln]	25.38	68.35	64.56	85.41	42.31	41.79	46.98	91.29	83.03	53.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.44	6.84	6.90	53.87	5.53	5.54	38.04	34.46	34.46	42.35	33.08	33.08
Movement LOS	D	A	A	D	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.09			15.12			35.64			38.36		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	18.75											
Intersection LOS	B											
Intersection V/C	0.265											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.584			2.518			2.004			2.053		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	844			600			578			578		
d_b, Bicycle Delay [s]	15.02			22.05			22.76			22.76		
I_b,int, Bicycle LOS Score for Intersection	1.906			1.863			1.810			1.797		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	21	309	394	39	278	20	23	13	25	362	6	71
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	309	394	39	278	20	23	13	25	362	6	71
Peak Hour Factor	0.9560	0.9560	0.9560	0.8510	0.8510	0.8510	0.8970	0.8970	0.8970	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	81	103	11	82	6	6	4	7	104	2	20
Total Analysis Volume [veh/h]	22	323	412	46	327	24	26	14	28	417	7	82
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	57	57	65	58	58	5	5	18	18
g / C, Green / Cycle	0.65	0.57	0.57	0.65	0.58	0.58	0.05	0.05	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.18	0.27	0.06	0.10	0.10	0.02	0.02	0.15	0.15
s, saturation flow rate [veh/h]	1078	1772	1506	817	1772	1729	1716	1506	1687	1625
c, Capacity [veh/h]	754	1003	853	513	1031	1007	88	78	301	290
d1, Uniform Delay [s]	6.34	11.51	12.96	7.86	9.71	9.72	46.09	45.87	39.85	39.85
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.85	1.96	0.34	0.36	0.37	3.59	2.81	6.91	7.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.32	0.48	0.09	0.17	0.17	0.45	0.36	0.86	0.86
d, Delay for Lane Group [s/veh]	6.36	12.36	14.92	8.20	10.07	10.09	49.69	48.68	46.76	47.01
Lane Group LOS	A	B	B	A	B	B	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	3.85	5.65	0.37	1.81	1.79	1.05	0.73	6.65	6.42
50th-Percentile Queue Length [ft/ln]	3.89	96.28	141.33	9.30	45.37	44.77	26.25	18.26	166.19	160.54
95th-Percentile Queue Length [veh/ln]	0.28	6.93	9.55	0.67	3.27	3.22	1.89	1.31	10.88	10.58
95th-Percentile Queue Length [ft/ln]	6.99	173.30	238.81	16.74	81.67	80.59	47.24	32.87	271.90	264.43

Movement, Approach, & Intersection Results

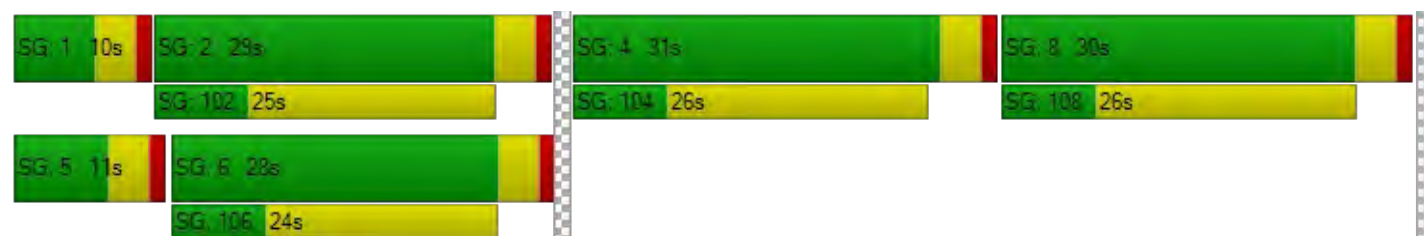
d_M, Delay for Movement [s/veh]	6.36	12.36	14.92	8.20	10.08	10.09	49.69	49.69	48.68	46.86	47.01	47.01
Movement LOS	A	B	B	A	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.58			9.86			49.27			46.88		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	23.88											
Intersection LOS	C											
Intersection V/C	0.524											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.603			2.466			2.003			2.301		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	480			500			520			540		
d_b, Bicycle Delay [s]	28.88			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.184			1.887			1.672			2.395		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	34.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	160	23	86	57	18	485	620	333	28	82	555	33
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	23	86	57	18	485	620	333	28	82	555	33
Peak Hour Factor	0.8300	0.8300	0.8300	0.8970	0.8970	0.8970	0.9440	0.9440	0.9440	0.8860	0.8860	0.8860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	7	26	16	5	135	164	88	7	23	157	9
Total Analysis Volume [veh/h]	193	28	104	64	20	541	657	353	30	93	626	37
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	13	13	35	31	0	39	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	9	9	61	31	73	73	8	51	51
g / C, Green / Cycle	0.11	0.11	0.11	0.08	0.08	0.51	0.26	0.61	0.61	0.07	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.07	0.04	0.01	0.36	0.20	0.11	0.11	0.06	0.19	0.19
s, saturation flow rate [veh/h]	1417	1509	1506	1687	1612	1506	3277	1772	1723	1687	1772	1737
c, Capacity [veh/h]	194	220	166	128	122	767	841	1082	1053	118	751	737
d1, Uniform Delay [s]	50.58	52.12	51.04	53.32	51.94	22.56	41.49	10.20	10.20	54.98	24.55	24.56
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.51	2.85	3.83	3.02	0.62	5.40	1.62	0.36	0.37	11.11	1.91	1.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.62	0.63	0.50	0.16	0.71	0.78	0.18	0.18	0.79	0.45	0.45
d, Delay for Lane Group [s/veh]	52.09	54.97	54.87	56.34	52.56	27.96	43.11	10.57	10.58	66.08	26.46	26.51
Lane Group LOS	D	D	D	E	D	C	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.48	4.20	3.17	1.97	0.59	12.55	9.19	2.31	2.25	3.13	7.12	7.00
50th-Percentile Queue Length [ft/ln]	61.90	105.09	79.19	49.16	14.68	313.66	229.87	57.64	56.15	78.33	178.05	174.99
95th-Percentile Queue Length [veh/ln]	4.46	7.57	5.70	3.54	1.06	18.36	14.17	4.15	4.04	5.64	11.50	11.34
95th-Percentile Queue Length [ft/ln]	111.42	189.15	142.54	88.48	26.42	458.88	354.20	103.75	101.07	140.99	287.47	283.46

Movement, Approach, & Intersection Results

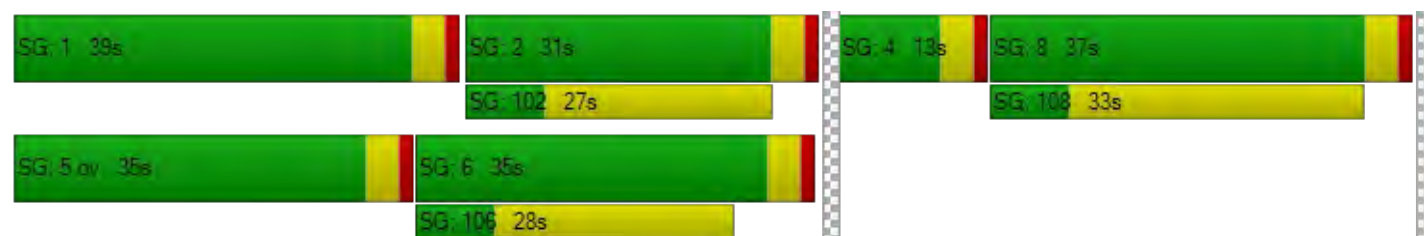
d_M, Delay for Movement [s/veh]	53.67	54.97	54.87	56.34	52.56	27.96	43.11	10.57	10.58	66.08	26.48	26.51
Movement LOS	D	D	D	E	D	C	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	54.19			31.65			31.13			31.35		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	34.04											
Intersection LOS	C											
Intersection V/C	0.846											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.405			2.576			0.000			2.563		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			150			450			517		
d_b, Bicycle Delay [s]	31.54			51.34			36.04			33.00		
I_b,int, Bicycle LOS Score for Intersection	2.096			2.075			2.418			2.183		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.766

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	327	710	189	200	738	257	300	1052	259	329	1149	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	710	189	200	738	257	300	1052	259	329	1149	167
Peak Hour Factor	0.9070	0.9070	0.9070	0.9640	0.9640	0.9640	0.9710	0.9710	0.9710	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	196	52	52	191	67	77	271	67	86	299	43
Total Analysis Volume [veh/h]	361	783	208	207	766	267	309	1083	267	343	1197	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	46	0	13	39	0	18	42	0	19	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	31	31	9	25	25	13	49	49	14	50	50
g / C, Green / Cycle	0.13	0.26	0.26	0.08	0.21	0.21	0.11	0.41	0.41	0.12	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.16	0.14	0.06	0.16	0.18	0.09	0.27	0.27	0.10	0.25	0.12
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1598	3277	4826	1506
c, Capacity [veh/h]	416	1260	393	250	1016	317	364	1377	653	397	2019	630
d1, Uniform Delay [s]	51.46	39.15	38.05	54.70	44.50	45.51	52.41	28.86	28.88	51.82	27.02	22.97
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.16	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.65	0.51	1.11	6.88	1.16	8.63	5.56	2.55	5.31	5.71	1.29	1.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.62	0.53	0.83	0.75	0.84	0.85	0.66	0.67	0.86	0.59	0.28
d, Delay for Lane Group [s/veh]	57.11	39.65	39.16	61.59	45.66	54.14	57.97	31.40	34.18	57.53	28.31	24.06
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.65	6.84	5.37	3.33	7.23	8.37	4.85	11.05	11.00	5.38	8.99	3.43
50th-Percentile Queue Length [ft/ln]	141.27	170.93	134.28	83.16	180.66	209.27	121.23	276.30	274.99	134.50	224.65	85.81
95th-Percentile Queue Length [veh/ln]	9.55	11.13	9.17	5.99	11.64	13.12	8.46	16.50	16.44	9.18	13.90	6.18
95th-Percentile Queue Length [ft/ln]	238.73	278.13	229.30	149.68	290.88	327.89	211.52	412.61	410.97	229.60	347.55	154.46

Movement, Approach, & Intersection Results

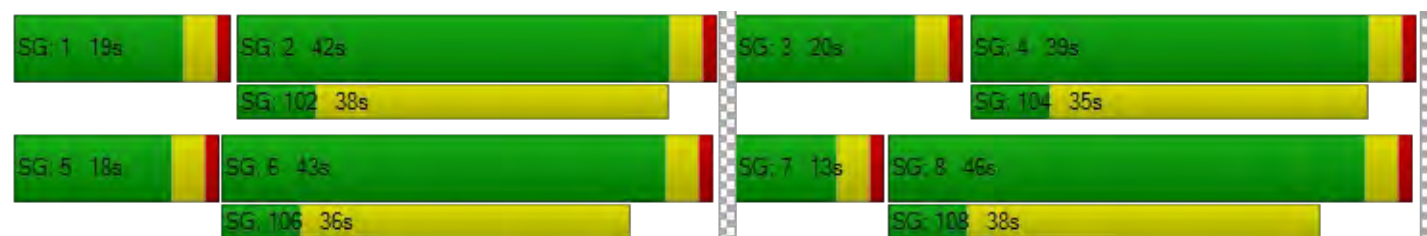
d_M, Delay for Movement [s/veh]	57.11	39.65	39.16	61.59	45.66	54.14	57.97	31.83	34.18	57.53	28.31	24.06
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	44.24			50.15			37.08			33.72		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	40.45											
Intersection LOS	D											
Intersection V/C	0.766											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.159			3.134			3.164			3.211		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	700			583			633			650		
d_b, Bicycle Delay [s]	25.35			30.10			28.02			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.303			2.242			2.472			2.502		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.494

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	25	29	89	115	40	109	66	1209	34	73	1246	141
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	29	89	115	40	109	66	1209	34	73	1246	141
Peak Hour Factor	0.8200	0.8200	0.8200	0.7710	0.7710	0.7710	0.9890	0.9890	0.9890	0.9120	0.9120	0.9120
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	9	27	37	13	35	17	306	9	20	342	39
Total Analysis Volume [veh/h]	30	35	109	149	52	141	67	1222	34	80	1366	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	10	28	0	29	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	17	17	17	5	61	61	6	61	61
g / C, Green / Cycle	0.18	0.18	0.18	0.18	0.18	0.18	0.05	0.64	0.64	0.06	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.07	0.11	0.02	0.09	0.04	0.25	0.25	0.05	0.28	0.10
s, saturation flow rate [veh/h]	1352	1772	1506	1373	3373	1506	1687	3373	1747	1687	4826	1506
c, Capacity [veh/h]	261	310	263	259	590	263	89	2151	1114	103	3117	973
d1, Uniform Delay [s]	36.18	33.00	34.88	40.03	32.86	35.69	44.38	8.26	8.26	43.96	8.30	6.64
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.16	1.04	2.02	0.06	1.69	11.86	0.52	1.01	11.68	0.45	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.41	0.58	0.09	0.54	0.75	0.38	0.38	0.78	0.44	0.16
d, Delay for Lane Group [s/veh]	36.38	33.16	35.92	42.05	32.92	37.38	56.23	8.78	9.27	55.64	8.75	6.99
Lane Group LOS	D	C	D	D	C	D	E	A	A	E	A	A
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.62	0.69	2.29	3.48	0.50	3.06	1.84	3.82	4.11	2.17	4.24	1.21
50th-Percentile Queue Length [ft/ln]	15.59	17.19	57.36	87.08	12.59	76.51	45.93	95.53	102.73	54.34	105.94	30.31
95th-Percentile Queue Length [veh/ln]	1.12	1.24	4.13	6.27	0.91	5.51	3.31	6.88	7.40	3.91	7.61	2.18
95th-Percentile Queue Length [ft/ln]	28.07	30.95	103.24	156.74	22.67	137.71	82.67	171.96	184.91	97.82	190.34	54.55

Movement, Approach, & Intersection Results

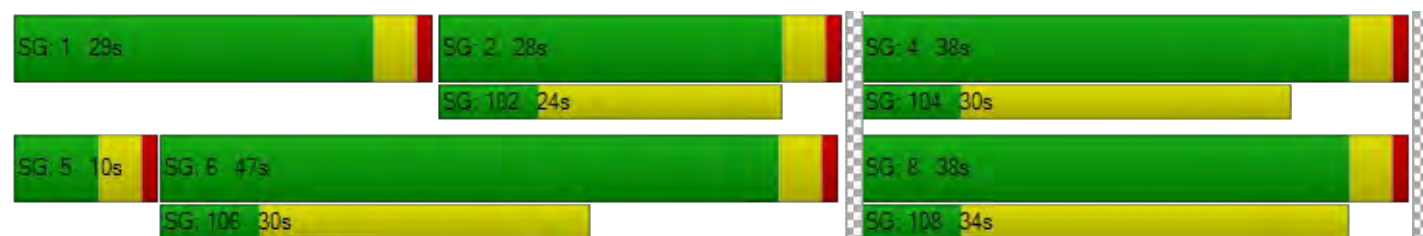
d_M, Delay for Movement [s/veh]	36.38	33.16	35.92	42.05	32.92	37.38	56.23	8.94	9.27	55.64	8.75	6.99
Movement LOS	D	C	D	D	C	D	E	A	A	E	A	A
d_A, Approach Delay [s/veh]	35.44			38.74			11.34			10.93		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	15.09											
Intersection LOS	B											
Intersection V/C	0.494											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.368			2.419			3.037			3.315		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	716			716			505			905		
d_b, Bicycle Delay [s]	19.58			19.58			26.53			14.23		
I_b,int, Bicycle LOS Score for Intersection	1.847			1.842			2.287			2.440		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	43.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.907

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	380	449	248	247	787	165	168	1313	243	317	1243	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	380	449	248	247	787	165	168	1313	243	317	1243	138
Peak Hour Factor	0.9240	0.9240	0.9240	0.9170	0.9170	0.9170	0.9130	0.9130	0.9130	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	121	67	67	215	45	46	360	67	89	349	39
Total Analysis Volume [veh/h]	411	486	268	269	858	180	184	1438	266	356	1397	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	41	0	19	39	0	12	42	0	18	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	38	38	12	33	33	8	40	40	14	46	46
g / C, Green / Cycle	0.14	0.32	0.32	0.10	0.27	0.27	0.07	0.34	0.34	0.12	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.10	0.18	0.08	0.25	0.12	0.06	0.30	0.18	0.11	0.29	0.10
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	461	1518	474	327	923	412	221	1618	505	384	1858	580
d1, Uniform Delay [s]	50.69	31.37	34.31	53.00	42.47	35.97	55.32	37.78	32.22	52.50	31.95	25.31
k, delay calibration	0.11	0.11	0.12	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.17	0.12	1.14	5.18	4.82	0.73	7.99	7.70	3.90	9.95	2.86	1.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.32	0.57	0.82	0.93	0.44	0.83	0.89	0.53	0.93	0.75	0.27
d, Delay for Lane Group [s/veh]	56.86	31.49	35.45	58.18	47.29	36.70	63.31	45.49	36.11	62.45	34.81	26.43
Lane Group LOS	E	C	D	E	D	D	E	D	D	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.45	3.61	6.65	4.21	12.88	4.44	3.00	14.32	6.78	5.83	12.04	3.23
50th-Percentile Queue Length [ft/ln]	161.28	90.29	166.37	105.30	322.08	111.04	74.90	357.98	169.40	145.86	300.97	80.65
95th-Percentile Queue Length [veh/ln]	10.62	6.50	10.89	7.58	18.77	7.90	5.39	20.52	11.04	9.80	17.73	5.81
95th-Percentile Queue Length [ft/ln]	265.42	162.52	272.14	189.44	469.25	197.45	134.82	513.12	276.12	244.89	443.23	145.16

Movement, Approach, & Intersection Results

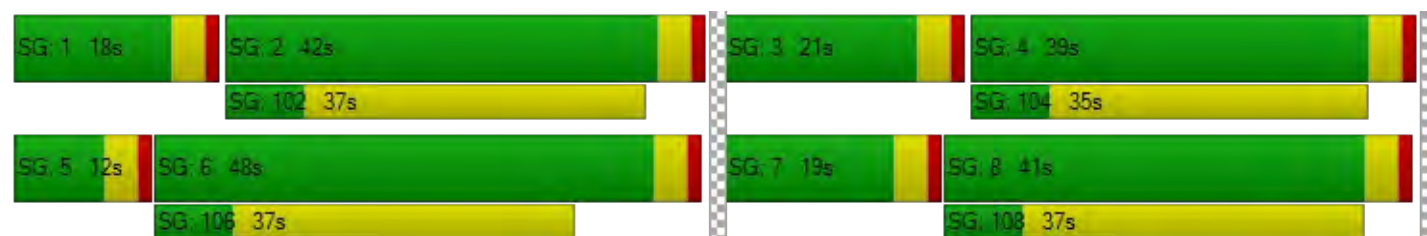
d_M, Delay for Movement [s/veh]	56.86	31.49	35.45	58.18	47.29	36.70	63.31	45.49	36.11	62.45	34.81	26.43
Movement LOS	E	C	D	E	D	D	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	41.35			48.08			45.90			39.29		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.50											
Intersection LOS	D											
Intersection V/C	0.907											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.062			2.999			3.283			3.284		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			633			733		
d_b, Bicycle Delay [s]	28.70			30.10			28.02			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.200			2.638			2.598			2.609		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	49.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.922

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	64	36	164	379	72	271	292	1354	30	104	1487	429
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	36	164	379	72	271	292	1354	30	104	1487	429
Peak Hour Factor	0.8250	0.8250	0.8250	0.9010	0.9010	0.9010	0.9400	0.9400	0.9400	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	11	50	105	20	75	78	360	8	26	379	109
Total Analysis Volume [veh/h]	78	44	199	421	80	301	311	1440	32	106	1514	437
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	40	0	16	46	0	13	43	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	19	19	32	32	12	44	44	9	41	41
g / C, Green / Cycle	0.16	0.16	0.16	0.27	0.27	0.10	0.36	0.36	0.08	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.15	0.13	0.25	0.09	0.29	0.29	0.06	0.31	0.29
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1555	3277	3373	1752	1687	4826	1506
c, Capacity [veh/h]	272	285	221	873	414	329	1227	637	128	1635	510
d1, Uniform Delay [s]	44.30	43.33	49.43	37.07	42.80	53.66	34.10	34.11	54.73	38.25	36.98
k, delay calibration	0.11	0.11	0.14	0.11	0.32	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.58	0.25	15.78	0.41	20.54	13.11	5.22	9.65	12.79	10.49	16.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.15	0.90	0.48	0.92	0.94	0.79	0.79	0.83	0.93	0.86
d, Delay for Lane Group [s/veh]	44.87	43.57	65.21	37.49	63.34	66.77	39.33	43.76	67.52	48.74	53.73
Lane Group LOS	D	D	E	D	E	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.10	1.15	6.81	5.26	13.25	5.26	13.33	14.64	3.61	15.67	14.16
50th-Percentile Queue Length [ft/ln]	52.39	28.80	170.23	131.57	331.36	131.46	333.32	366.08	90.36	391.69	354.00
95th-Percentile Queue Length [veh/ln]	3.77	2.07	11.09	9.03	19.23	9.02	19.32	20.92	6.51	22.16	20.33
95th-Percentile Queue Length [ft/ln]	94.30	51.83	277.22	225.63	480.63	225.48	483.02	522.97	162.65	553.98	508.29

Movement, Approach, & Intersection Results

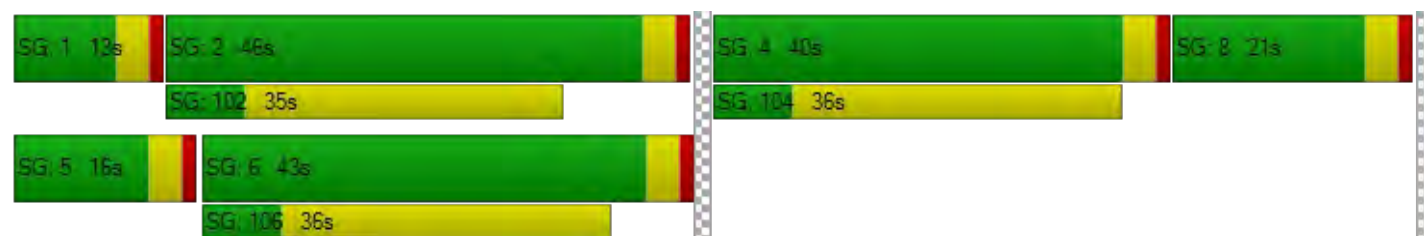
d_M, Delay for Movement [s/veh]	44.87	43.57	65.21	37.49	63.34	63.34	66.77	40.78	43.76	67.52	48.74	53.73
Movement LOS	D	D	E	D	E	E	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	57.30			49.77			45.37			50.77		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	49.09											
Intersection LOS	D											
Intersection V/C	0.922											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	49.50	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.276	2.624	3.187	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	283	600	700	650
d_b, Bicycle Delay [s]	44.20	29.40	25.35	27.34
I_b,int, Bicycle LOS Score for Intersection	1.824	2.883	2.540	2.691
Bicycle LOS	A	C	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	123.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.267

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	252	475	535	534	358	169	126	1420	168	603	1679	878
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	252	475	535	534	358	169	126	1420	168	603	1679	878
Peak Hour Factor	0.9800	0.9800	0.9800	0.8330	0.8330	0.8330	0.9250	0.9250	0.9250	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	121	136	160	107	51	34	384	45	163	455	238
Total Analysis Volume [veh/h]	257	485	546	641	430	203	136	1535	182	653	1819	951
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	23	41	0	25	43	0	10	34	0	20	44	44
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	37	37	21	46	46	6	30	30	16	40	65
g / C, Green / Cycle	0.10	0.31	0.31	0.18	0.39	0.39	0.05	0.25	0.25	0.13	0.33	0.54
(v / s)_i Volume / Saturation Flow Rate	0.08	0.14	0.36	0.27	0.19	0.19	0.04	0.27	0.27	0.20	0.38	0.63
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1583	3277	4826	1650	3277	4826	1506
c, Capacity [veh/h]	319	1036	463	414	682	609	164	1211	414	437	1613	817
d1, Uniform Delay [s]	53.06	33.64	41.57	49.50	27.94	28.01	56.48	44.95	44.95	52.00	39.95	27.45
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.82	0.33	101.48	249.11	0.54	0.62	10.02	42.10	59.89	224.80	66.07	87.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.47	1.18	1.55	0.49	0.49	0.83	1.06	1.06	1.49	1.13	1.16
d, Delay for Lane Group [s/veh]	57.88	33.97	143.05	298.62	28.49	28.63	66.50	87.05	104.84	276.80	106.02	114.46
Lane Group LOS	E	C	F	F	C	C	E	F	F	F	F	F
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.01	5.77	26.52	20.51	7.31	6.63	2.27	16.63	19.11	20.21	25.47	41.86
50th-Percentile Queue Length [ft/ln]	100.18	144.16	663.11	512.82	182.79	165.68	56.77	415.85	477.85	505.24	636.79	1046.53
95th-Percentile Queue Length [veh/ln]	7.21	9.70	38.65	33.13	11.75	10.85	4.09	24.08	27.16	31.99	36.45	58.93
95th-Percentile Queue Length [ft/ln]	180.33	242.62	966.18	828.23	293.65	271.23	102.18	602.02	678.92	799.72	911.27	1473.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.88	33.97	143.05	298.62	28.52	28.63	66.50	90.01	104.84	276.80	106.02	114.46
Movement LOS	E	C	F	F	C	C	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	84.98			164.43			89.74			140.95		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	123.46											
Intersection LOS	F											
Intersection V/C	1.267											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.963			2.929			3.311			3.579		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			650			500			667		
d_b, Bicycle Delay [s]	28.70			27.34			33.75			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.622			2.611			2.324			3.442		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↲		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	510	0	691	0	1805	963	0	2338	336
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	510	0	691	0	1805	963	0	2338	336
Peak Hour Factor	1.0000	1.0000	1.0000	0.9240	1.0000	0.9240	1.0000	0.9460	0.9460	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	138	0	187	0	477	254	0	601	86
Total Analysis Volume [veh/h]	0	0	0	552	0	748	0	1908	1018	0	2403	345
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	56	0	0	0	34	0	0	34	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		30	30	30	52	52
g / C, Green / Cycle		0.33	0.33	0.33	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate		0.26	0.28	0.29	0.40	0.50
s, saturation flow rate [veh/h]		1687	1551	1506	4826	4826
c, Capacity [veh/h]		563	518	502	2786	2786
d1, Uniform Delay [s]		26.84	27.67	28.00	13.27	15.99
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.26	3.68	4.52	1.39	3.82
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.84	0.86	0.68	0.86
d, Delay for Lane Group [s/veh]		29.10	31.35	32.53	14.66	19.80
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		8.37	8.79	8.99	8.44	13.25
50th-Percentile Queue Length [ft/ln]		209.18	219.81	224.83	211.10	331.21
95th-Percentile Queue Length [veh/ln]		13.11	13.66	13.91	13.21	19.22
95th-Percentile Queue Length [ft/ln]		327.78	341.38	347.79	330.24	480.45

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	29.58	0.00	32.03	0.00	14.66	0.00	0.00	19.80	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			30.99			14.66			19.80		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	20.65											
Intersection LOS	C											
Intersection V/C	0.862											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.447			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			667			667		
d_b, Bicycle Delay [s]	45.00			45.00			20.00			20.00		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.277			2.609			2.881		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	34.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.867

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1201	149	526	0	0	225	247	1645	528	0	1687	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1201	149	526	0	0	225	247	1645	528	0	1687	30
Peak Hour Factor	0.9320	0.9320	0.9320	1.0000	1.0000	0.8040	0.9340	0.9340	0.9340	1.0000	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	322	40	141	0	0	70	66	440	141	0	443	8
Total Analysis Volume [veh/h]	1289	160	564	0	0	280	264	1761	565	0	1774	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	58	0	0	0	22	22	57	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44	44	18	18	63	40	40
g / C, Green / Cycle	0.39	0.39	0.39	0.16	0.16	0.54	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.30	0.30	0.34	0.11	0.16	0.36	0.28	0.26
s, saturation flow rate [veh/h]	3277	1691	1506	2665	1687	4826	4826	1750
c, Capacity [veh/h]	1267	654	582	418	265	2624	1699	616
d1, Uniform Delay [s]	31.01	30.98	32.72	45.64	48.42	18.83	33.55	32.52
k, delay calibration	0.11	0.20	0.26	0.11	0.16	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	3.82	9.82	1.86	30.19	1.39	3.99	7.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.78	0.88	0.67	1.00	0.67	0.80	0.73
d, Delay for Lane Group [s/veh]	32.11	34.80	42.54	47.50	78.61	20.22	37.54	40.07
Lane Group LOS	C	C	D	D	E	C	D	D
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.07	12.91	14.49	3.87	9.75	11.14	11.80	12.13
50th-Percentile Queue Length [ft/ln]	301.72	322.81	362.34	96.74	243.67	278.52	295.12	303.18
95th-Percentile Queue Length [veh/ln]	17.77	18.81	20.74	6.97	14.87	16.61	17.44	17.84
95th-Percentile Queue Length [ft/ln]	444.16	470.13	518.43	174.14	371.68	415.37	435.99	445.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.71	34.80	41.71	0.00	0.00	47.50	78.61	20.22	0.00	0.00	38.14	40.07
Movement LOS	C	C	D			D	E	C			D	D
d_A, Approach Delay [s/veh]	35.44			47.50			27.83			38.17		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	34.28											
Intersection LOS	C											
Intersection V/C	0.867											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.704	2.191	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	939	0	922	539
d_b, Bicycle Delay [s]	16.18	57.50	16.71	30.68
I_b,int, Bicycle LOS Score for Intersection	4.881	4.132	2.673	2.305
Bicycle LOS	E	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	36.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.810

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	227	172	104	309	222	171	201	1573	228	137	1380	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	172	104	309	222	171	201	1573	228	137	1380	195
Peak Hour Factor	0.9140	0.9140	0.9140	0.8970	0.8970	0.8970	0.9020	0.9020	0.9020	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	47	28	86	62	48	56	436	63	36	364	51
Total Analysis Volume [veh/h]	248	188	114	344	247	191	223	1744	253	144	1454	205
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	23	48	0	22	43	0	15	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	15	15	15	19	19	18	64	64	11	57	57
g / C, Green / Cycle	0.08	0.12	0.12	0.12	0.16	0.16	0.15	0.53	0.53	0.09	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.09	0.10	0.14	0.13	0.13	0.39	0.40	0.09	0.26	0.26
s, saturation flow rate [veh/h]	3277	1772	1553	3277	1772	1506	1687	3373	1660	1687	4826	1631
c, Capacity [veh/h]	275	216	189	405	286	244	248	1784	878	156	2287	773
d1, Uniform Delay [s]	54.50	50.85	50.97	51.50	49.02	48.31	50.32	22.01	22.26	54.08	22.36	22.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.49	4.84	5.99	5.01	7.57	5.50	11.13	2.89	6.11	19.57	0.93	2.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.74	0.75	0.85	0.86	0.78	0.90	0.75	0.76	0.93	0.54	0.54
d, Delay for Lane Group [s/veh]	64.99	55.70	56.96	56.51	56.59	53.81	61.45	24.90	28.37	73.65	23.28	25.08
Lane Group LOS	E	E	E	E	E	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.11	4.91	4.47	5.34	7.80	5.86	7.34	14.78	15.74	5.16	8.34	8.84
50th-Percentile Queue Length [ft/ln]	102.81	122.68	111.70	133.60	194.96	146.41	183.38	369.54	393.46	128.96	208.39	221.03
95th-Percentile Queue Length [veh/ln]	7.40	8.54	7.93	9.13	12.38	9.82	11.78	21.09	22.24	8.88	13.07	13.72
95th-Percentile Queue Length [ft/ln]	185.06	213.51	198.37	228.37	309.45	245.62	294.42	527.17	556.11	222.08	326.76	342.94

Movement, Approach, & Intersection Results

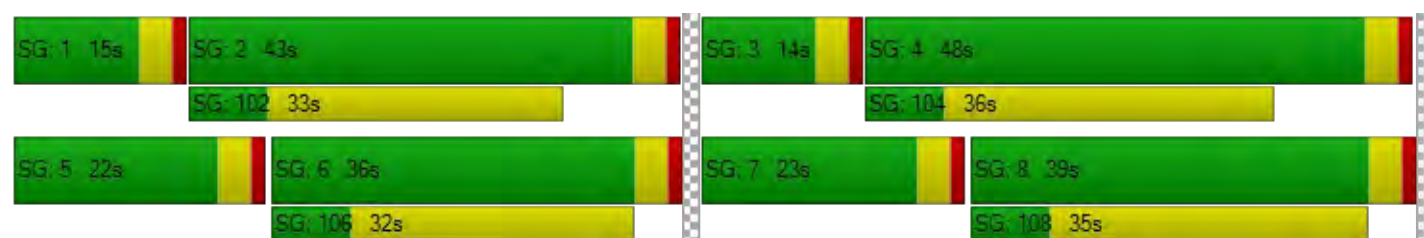
d_M, Delay for Movement [s/veh]	64.99	55.89	56.96	56.51	56.59	53.81	61.45	25.72	28.37	73.65	23.55	25.08
Movement LOS	E	E	E	E	E	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	60.21			55.88			29.61			27.72		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	35.95											
Intersection LOS	D											
Intersection V/C	0.810											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.546			2.694			3.241			3.227		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			733			650			533		
d_b, Bicycle Delay [s]	30.10			24.07			27.34			32.27		
I_b,int, Bicycle LOS Score for Intersection	2.013			2.850			2.781			2.303		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	24.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	147	16	220	24	10	11	23	1730	259	190	1645	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	147	16	220	24	10	11	23	1730	259	190	1645	43
Peak Hour Factor	0.9770	0.9770	0.9770	0.8650	0.8650	0.8650	0.9010	0.9010	0.9010	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	4	56	7	3	3	6	480	72	53	455	12
Total Analysis Volume [veh/h]	150	16	225	28	12	13	26	1920	287	210	1822	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	32	0	0	10	0	10	32	0	26	48	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	5	5	3	48	48	14	59	59
g / C, Green / Cycle	0.17	0.17	0.17	0.05	0.05	0.03	0.47	0.47	0.14	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.15	0.02	0.02	0.02	0.40	0.19	0.12	0.36	0.37
s, saturation flow rate [veh/h]	1687	1703	1506	1687	1623	1687	4826	1506	1687	3373	1748
c, Capacity [veh/h]	294	297	262	80	77	54	2286	713	245	1979	1026
d1, Uniform Delay [s]	35.91	35.91	40.15	46.21	46.15	47.64	23.03	17.13	41.81	13.47	13.49
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.52	0.51	7.97	2.60	2.42	6.47	3.92	1.69	8.50	1.48	2.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.28	0.86	0.35	0.33	0.48	0.84	0.40	0.86	0.62	0.62
d, Delay for Lane Group [s/veh]	36.43	36.42	48.12	48.81	48.57	54.11	26.95	18.82	50.31	14.95	16.34
Lane Group LOS	D	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.79	1.80	5.89	0.73	0.65	0.73	13.28	4.49	5.59	8.71	9.45
50th-Percentile Queue Length [ft/ln]	44.67	45.06	147.29	18.25	16.28	18.30	332.00	112.20	139.73	217.76	236.33
95th-Percentile Queue Length [veh/ln]	3.22	3.24	9.87	1.31	1.17	1.32	19.26	7.96	9.47	13.55	14.50
95th-Percentile Queue Length [ft/ln]	80.41	81.10	246.81	32.85	29.31	32.94	481.41	199.06	236.66	338.76	362.39

Movement, Approach, & Intersection Results

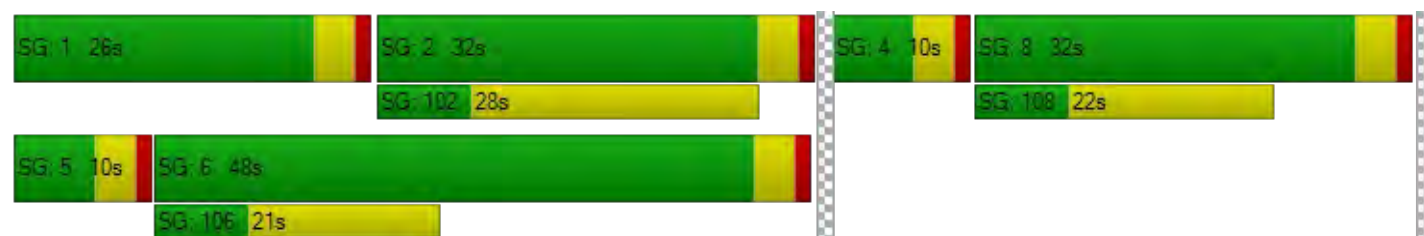
d_M, Delay for Movement [s/veh]	36.42	36.42	48.12	48.81	48.57	48.57	54.11	26.95	18.82	50.31	15.40	16.34
Movement LOS	D	D	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	43.15			48.70			26.22			18.95		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	24.68											
Intersection LOS	C											
Intersection V/C	0.819											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			0.00			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.355			1.992			0.000			3.191		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	560			120			560			880		
d_b, Bicycle Delay [s]	25.92			44.18			25.92			15.68		
I_b,int, Bicycle LOS Score for Intersection	2.205			1.647			2.788			2.704		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	32.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.735

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	279	277	69	260	603	122	158	1046	276	112	1110	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	279	277	69	260	603	122	158	1046	276	112	1110	99
Peak Hour Factor	0.8830	0.8830	0.8830	0.8790	0.8790	0.8790	0.9500	0.9500	0.9500	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	78	20	74	172	35	42	275	73	30	301	27
Total Analysis Volume [veh/h]	316	314	78	296	686	139	166	1101	291	121	1203	107
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	30	0	21	35	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	24	24	11	23	23	6	43	43	6	43	43
g / C, Green / Cycle	0.12	0.24	0.24	0.11	0.23	0.23	0.06	0.43	0.43	0.06	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.11	0.09	0.20	0.09	0.05	0.28	0.28	0.04	0.26	0.26
s, saturation flow rate [veh/h]	3277	1772	1652	3277	3373	1506	3277	3373	1589	3277	3373	1698
c, Capacity [veh/h]	380	418	389	372	787	351	199	1457	686	193	1451	730
d1, Uniform Delay [s]	43.31	33.01	33.03	43.25	36.94	32.42	46.52	22.45	22.45	46.05	21.93	21.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.76	0.87	0.94	3.90	3.17	0.72	8.70	2.25	4.72	3.33	1.85	3.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.48	0.49	0.80	0.87	0.40	0.83	0.65	0.65	0.63	0.60	0.60
d, Delay for Lane Group [s/veh]	48.07	33.88	33.98	47.16	40.11	33.14	55.21	24.70	27.17	49.38	23.78	25.56
Lane Group LOS	D	C	C	D	D	C	E	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.05	4.30	4.04	3.74	8.28	2.89	2.27	8.92	8.88	1.55	7.97	8.39
50th-Percentile Queue Length [ft/ln]	101.16	107.42	100.90	93.59	207.07	72.32	56.80	223.07	222.00	38.81	199.21	209.68
95th-Percentile Queue Length [veh/ln]	7.28	7.70	7.27	6.74	13.00	5.21	4.09	13.82	13.77	2.79	12.60	13.14
95th-Percentile Queue Length [ft/ln]	182.08	192.41	181.63	168.46	325.06	130.18	102.24	345.54	344.18	69.85	314.95	328.42

Movement, Approach, & Intersection Results

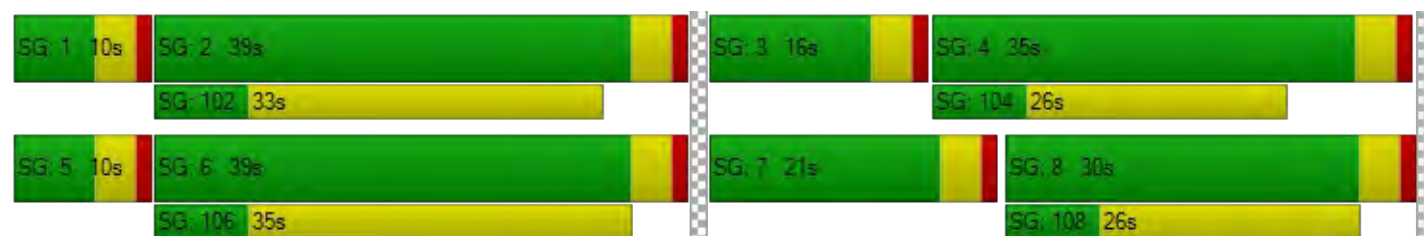
d_M, Delay for Movement [s/veh]	48.07	33.92	33.98	47.16	40.11	33.14	55.21	25.05	27.17	49.38	24.27	25.56
Movement LOS	D	C	C	D	D	C	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	40.24			41.11			28.66			26.49		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.61											
Intersection LOS	C											
Intersection V/C	0.735											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.751			2.837			3.122			3.084		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			620			700			700		
d_b, Bicycle Delay [s]	27.38			23.81			21.13			21.13		
I_b,int, Bicycle LOS Score for Intersection	2.144			2.484			2.417			2.347		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	37.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	75	479	324	195	667	355	372	816	74	296	777	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	479	324	195	667	355	372	816	74	296	777	164
Peak Hour Factor	0.9000	0.9000	0.9000	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550	0.9150	0.9150	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	133	90	51	174	93	97	214	19	81	212	45
Total Analysis Volume [veh/h]	83	532	360	204	697	371	390	854	77	323	849	179
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	43	43	13	45	45	24	46	0	18	40	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	27	45	9	29	53	20	54	54	14	48	48
g / C, Green / Cycle	0.06	0.22	0.37	0.08	0.24	0.44	0.17	0.45	0.45	0.12	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.16	0.24	0.06	0.21	0.25	0.12	0.18	0.05	0.10	0.21	0.21
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1618
c, Capacity [veh/h]	100	747	560	248	803	660	547	2184	682	384	1359	652
d1, Uniform Delay [s]	55.90	43.21	31.14	54.70	43.94	25.15	47.29	21.85	18.96	51.91	26.96	26.96
k, delay calibration	0.11	0.11	0.42	0.11	0.11	0.26	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.05	1.28	4.72	6.73	3.04	1.79	1.74	0.53	0.34	5.03	1.38	2.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.71	0.64	0.82	0.87	0.56	0.71	0.39	0.11	0.84	0.51	0.51
d, Delay for Lane Group [s/veh]	71.95	44.49	35.85	61.43	46.99	26.94	49.04	22.38	19.29	56.94	28.33	29.81
Lane Group LOS	E	D	D	E	D	C	D	C	B	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.93	7.42	9.28	3.27	10.23	8.13	5.64	5.41	1.31	5.03	7.70	7.66
50th-Percentile Queue Length [ft/ln]	73.30	185.54	232.09	81.79	255.86	203.32	141.08	135.37	32.72	125.67	192.48	191.48
95th-Percentile Queue Length [veh/ln]	5.28	11.89	14.28	5.89	15.48	12.81	9.54	9.23	2.36	8.70	12.25	12.20
95th-Percentile Queue Length [ft/ln]	131.95	297.24	357.02	147.22	387.02	320.24	238.48	230.77	58.90	217.59	306.25	304.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.95	44.49	35.85	61.43	46.99	26.94	49.04	22.38	19.29	56.94	28.60	29.81
Movement LOS	E	D	D	E	D	C	D	C	B	E	C	C
d_A, Approach Delay [s/veh]	43.64			43.46			30.07			35.54		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	37.72											
Intersection LOS	D											
Intersection V/C	0.686											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.803			2.938			3.147			3.077		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			683			700			600		
d_b, Bicycle Delay [s]	27.34			26.00			25.35			29.40		
I_b,int, Bicycle LOS Score for Intersection	2.364			2.609			2.286			2.303		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	37.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.686

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	283	735	449	137	428	282	281	763	216	38	741	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	283	735	449	137	428	282	281	763	216	38	741	162
Peak Hour Factor	0.8670	0.8670	0.8670	0.8450	0.8450	0.8450	0.9130	0.9130	0.9130	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	212	129	41	127	83	77	209	59	10	204	45
Total Analysis Volume [veh/h]	326	848	518	162	507	334	308	836	237	42	814	178
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	50	0	11	44	44	16	49	49	10	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	33	7	27	43	12	59	76	5	52	52
g / C, Green / Cycle	0.11	0.28	0.06	0.23	0.36	0.10	0.49	0.63	0.04	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.10	0.25	0.05	0.11	0.22	0.09	0.25	0.16	0.01	0.20	0.20
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1614
c, Capacity [veh/h]	357	936	193	1099	544	329	1659	954	126	1450	694
d1, Uniform Delay [s]	52.94	41.87	55.92	40.02	31.45	53.61	20.62	9.55	56.21	24.35	24.40
k, delay calibration	0.11	0.11	0.11	0.11	0.21	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.36	3.69	9.19	0.30	2.23	12.04	1.10	0.62	1.53	1.06	2.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.91	0.84	0.46	0.61	0.94	0.50	0.25	0.33	0.46	0.47
d, Delay for Lane Group [s/veh]	62.30	45.56	65.10	40.32	33.68	65.64	21.72	10.17	57.74	25.42	26.64
Lane Group LOS	E	D	E	D	C	E	C	B	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.32	12.49	2.68	4.35	8.24	5.16	8.05	2.78	0.65	6.94	6.93
50th-Percentile Queue Length [ft/ln]	133.03	312.30	66.89	108.75	206.03	128.99	201.35	69.56	16.19	173.47	173.24
95th-Percentile Queue Length [veh/ln]	9.10	18.29	4.82	7.77	12.95	8.88	12.71	5.01	1.17	11.26	11.25
95th-Percentile Queue Length [ft/ln]	227.61	457.21	120.40	194.26	323.73	222.12	317.71	125.21	29.15	281.46	281.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.30	45.56	0.00	65.10	40.32	33.68	65.64	21.72	10.17	57.74	25.63	26.64
Movement LOS	E	D		E	D	C	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	50.21			42.11			29.53			27.11		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	37.02											
Intersection LOS	D											
Intersection V/C	0.686											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.978			3.024			3.087			2.891		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	767			667			750			650		
d_b, Bicycle Delay [s]	22.82			26.67			23.44			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.528			2.111			2.699			2.128		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-II

EXISTING PLUS PROJECT TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	26.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.663

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	51	147	95	145	318	73	81	1159	126	111	1101	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	51	147	95	145	318	73	81	1159	126	111	1101	55
Peak Hour Factor	0.8300	0.8300	0.8300	0.8190	0.8190	0.8190	0.8940	0.8940	0.8940	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	15	44	29	44	97	22	23	324	35	30	302	15
Total Analysis Volume [veh/h]	61	177	114	177	388	89	91	1296	141	122	1210	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	32	0	19	38	0	11	31	0	13	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	11	11	12	18	18	6	48	48	8	50	50
g / C, Green / Cycle	0.05	0.12	0.12	0.12	0.19	0.19	0.07	0.50	0.50	0.09	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.09	0.10	0.14	0.14	0.05	0.28	0.28	0.07	0.25	0.25
s, saturation flow rate [veh/h]	1687	1772	1548	1687	1772	1659	1687	3373	1684	1687	3373	1729
c, Capacity [veh/h]	87	206	180	211	336	314	116	1690	844	151	1760	902
d1, Uniform Delay [s]	44.39	40.62	40.83	40.71	36.28	36.32	43.62	16.55	16.55	42.51	14.48	14.48
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.67	5.01	6.93	8.65	3.07	3.36	10.99	1.39	2.76	9.66	0.93	1.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.70	0.73	0.77	0.84	0.73	0.74	0.78	0.57	0.57	0.81	0.48	0.48
d, Delay for Lane Group [s/veh]	54.06	45.64	47.76	49.36	39.35	39.68	54.61	17.94	19.31	52.17	15.41	16.29
Lane Group LOS	D	D	D	D	D	D	D	B	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.64	3.68	3.49	4.51	5.57	5.28	2.44	7.19	7.50	3.19	5.65	6.01
50th-Percentile Queue Length [ft/ln]	40.95	91.91	87.14	112.73	139.20	131.97	61.10	179.82	187.61	79.76	141.29	150.35
95th-Percentile Queue Length [veh/ln]	2.95	6.62	6.27	7.99	9.44	9.05	4.40	11.59	12.00	5.74	9.55	10.04
95th-Percentile Queue Length [ft/ln]	73.70	165.45	156.86	199.80	235.95	226.17	109.98	289.78	299.93	143.57	238.76	250.90

Movement, Approach, & Intersection Results

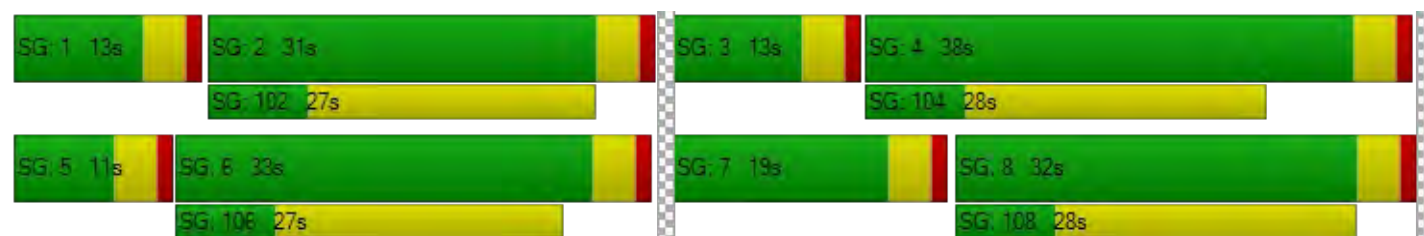
d_M, Delay for Movement [s/veh]	54.06	45.94	47.76	49.36	39.47	39.68	54.61	18.30	19.31	52.17	15.68	16.29
Movement LOS	D	D	D	D	D	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	47.94			42.18			20.55			18.90		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	26.02											
Intersection LOS	C											
Intersection V/C	0.663											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.498			2.494			2.998			3.011		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	589			716			568			611		
d_b, Bicycle Delay [s]	23.63			19.58			24.34			22.93		
I_b,int, Bicycle LOS Score for Intersection	1.850			2.099			2.400			2.325		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	38.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.810

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	198	322	137	107	847	246	84	1118	279	188	1148	133
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	198	322	137	107	847	246	84	1118	279	188	1148	133
Peak Hour Factor	0.8680	0.8680	0.8680	0.9380	0.9380	0.9380	0.9390	0.9390	0.9390	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	93	39	29	226	66	22	298	74	50	303	35
Total Analysis Volume [veh/h]	228	371	158	114	903	262	89	1191	297	199	1212	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	19	44	0	11	42	0	20	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	35	35	10	35	35	7	43	43	16	52	52
g / C, Green / Cycle	0.08	0.29	0.29	0.08	0.29	0.29	0.06	0.36	0.36	0.13	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.10	0.07	0.27	0.17	0.05	0.25	0.20	0.12	0.27	0.27
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1679
c, Capacity [veh/h]	275	992	443	139	988	441	100	1723	538	224	1454	724
d1, Uniform Delay [s]	54.14	33.61	33.42	54.19	41.00	36.35	56.11	32.95	30.91	51.16	26.54	26.54
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.33	0.23	0.49	11.06	3.83	1.28	22.31	2.30	4.05	11.17	2.00	3.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.37	0.36	0.82	0.91	0.59	0.89	0.69	0.55	0.89	0.62	0.62
d, Delay for Lane Group [s/veh]	60.48	33.84	33.90	65.25	44.83	37.63	78.42	35.25	34.96	62.34	28.54	30.52
Lane Group LOS	E	C	C	E	D	D	E	D	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.63	4.33	3.70	3.82	13.27	6.71	3.30	10.15	7.47	6.57	10.32	10.67
50th-Percentile Queue Length [ft/ln]	90.80	108.30	92.54	95.41	331.80	167.87	82.38	253.71	186.77	164.23	257.95	266.85
95th-Percentile Queue Length [veh/ln]	6.54	7.75	6.66	6.87	19.25	10.96	5.93	15.37	11.95	10.77	15.59	16.03
95th-Percentile Queue Length [ft/ln]	163.45	193.64	166.57	171.74	481.17	274.12	148.29	384.32	298.83	269.31	389.65	400.80

Movement, Approach, & Intersection Results

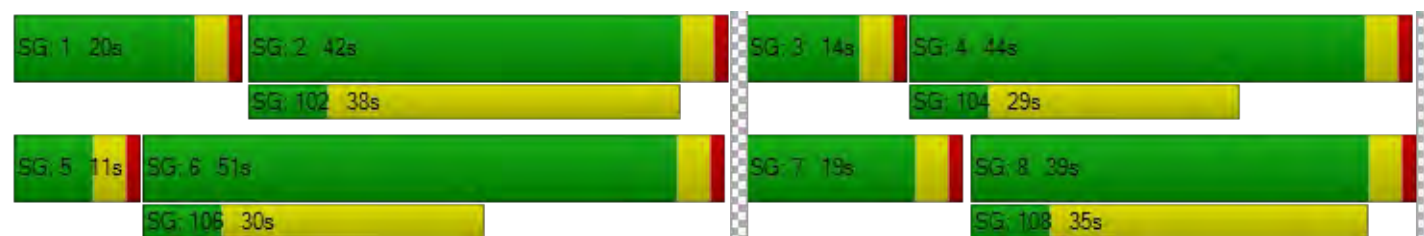
d_M, Delay for Movement [s/veh]	60.48	33.84	33.90	65.25	44.83	37.63	78.42	35.25	34.96	62.34	29.05	30.52
Movement LOS	E	C	C	E	D	D	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	41.88			45.17			37.63			33.45		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	38.87											
Intersection LOS	D											
Intersection V/C	0.810											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.908			2.772			3.139			3.027		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			667			633			783		
d_b, Bicycle Delay [s]	30.10			26.67			28.02			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.184			2.615			2.427			2.413		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	35.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.791

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↔↔↔			↔↔↔			↔↔↔			↔↔↔		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	144	186	133	824	558	8	13	1162	187	418	1447	509
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	144	186	133	824	558	8	13	1162	187	418	1447	509
Peak Hour Factor	0.9130	0.9130	0.9130	0.9700	0.9700	0.9700	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	51	36	212	144	2	3	305	49	110	379	133
Total Analysis Volume [veh/h]	158	204	146	849	575	8	14	1218	196	438	1517	534
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	13	0	43	44	0	11	40	0	24	53	53
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	11	11	11	35	38	38	2	40	40	18	56	95
g / C, Green / Cycle	0.06	0.09	0.09	0.09	0.29	0.32	0.32	0.02	0.34	0.34	0.15	0.47	0.79
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.07	0.07	0.26	0.16	0.17	0.00	0.22	0.22	0.13	0.31	0.35
s, saturation flow rate [veh/h]	3277	1772	1678	1506	3277	1772	1763	3277	4826	1615	3277	4826	1506
c, Capacity [veh/h]	211	159	151	136	950	559	556	64	1620	542	495	2255	1190
d1, Uniform Delay [s]	55.20	53.43	53.48	53.57	40.85	33.69	33.69	57.95	33.92	33.98	49.94	24.85	4.08
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.21	7.73	8.53	10.33	3.23	0.76	0.76	1.68	2.06	6.12	5.47	1.62	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.77	0.78	0.80	0.89	0.52	0.52	0.22	0.65	0.66	0.89	0.67	0.45
d, Delay for Lane Group [s/veh]	60.41	61.15	62.00	63.90	44.08	34.44	34.46	59.63	35.98	40.10	55.42	26.48	5.31
Lane Group LOS	E	E	E	E	D	C	C	E	D	D	E	C	A
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.50	3.98	3.85	3.60	12.34	7.09	7.07	0.22	9.00	9.72	6.80	11.29	3.78
50th-Percentile Queue Length [ft/ln]	62.58	99.54	96.24	90.02	308.51	177.29	176.68	5.62	225.01	242.91	170.11	282.34	94.51
95th-Percentile Queue Length [veh/ln]	4.51	7.17	6.93	6.48	18.10	11.46	11.43	0.40	13.92	14.83	11.08	16.80	6.80
95th-Percentile Queue Length [ft/ln]	112.6	179.1	173.2	162.0	452.54	286.47	285.67	10.11	348.01	370.71	277.05	420.12	170.12

Movement, Approach, & Intersection Results

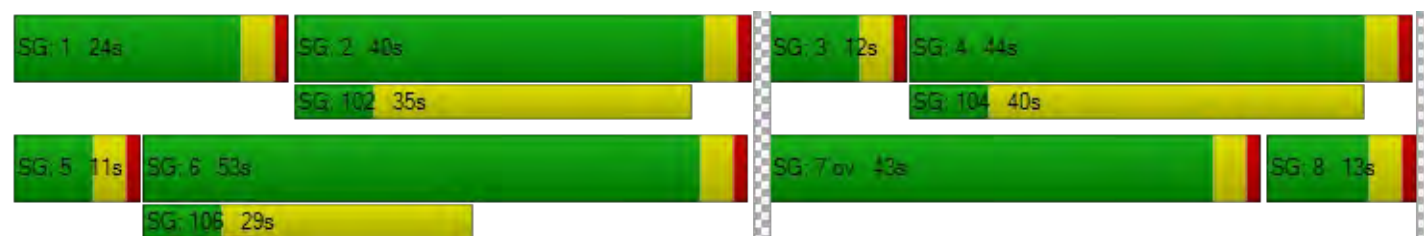
d_M, Delay for Movement [s/veh]	60.41	61.49	63.49	44.08	34.45	34.46	59.63	36.53	40.10	55.42	26.48	5.31
Movement LOS	E	E	E	D	C	C	E	D	D	E	C	A
d_A, Approach Delay [s/veh]	61.71			40.16			37.24			27.03		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	35.74											
Intersection LOS	D											
Intersection V/C	0.791											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.847			2.822			3.200			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	150			667			600			817		
d_b, Bicycle Delay [s]	51.34			26.67			29.40			21.00		
I_b,int, Bicycle LOS Score for Intersection	1.979			2.741			2.149			2.929		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.912

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				T T T			U U U			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	977	0	494	0	1586	538	207	1933	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	977	0	494	0	1586	538	207	1933	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8640	1.0000	0.8640	1.0000	0.9400	0.9400	0.9190	0.9190	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	283	0	143	0	422	143	56	526	0
Total Analysis Volume [veh/h]	0	0	0	1131	0	572	0	1687	572	225	2103	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	59	0	0	0	48	0	13	61	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		49	49	49	50	50	50	9	63
g / C, Green / Cycle		0.41	0.41	0.41	0.42	0.42	0.42	0.08	0.53
(v / s)_i Volume / Saturation Flow Rate		0.34	0.34	0.38	0.33	0.36	0.38	0.07	0.44
s, saturation flow rate [veh/h]		1687	1686	1506	3373	1562	1506	3277	4826
c, Capacity [veh/h]		688	688	614	1404	650	627	248	2535
d1, Uniform Delay [s]		31.68	31.69	33.74	30.72	32.00	32.69	55.01	23.95
k, delay calibration		0.27	0.27	0.34	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.19	6.23	16.31	4.99	14.65	18.47	11.90	3.31
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.83	0.92	0.80	0.87	0.90	0.91	0.83
d, Delay for Lane Group [s/veh]		37.86	37.92	50.05	35.71	46.65	51.16	66.91	27.26
Lane Group LOS		D	D	D	D	D	D	E	C
Critical Lane Group		No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		15.59	15.60	18.13	15.03	17.30	18.18	3.78	16.85
50th-Percentile Queue Length [ft/ln]		389.70	390.06	453.15	375.87	432.38	454.53	94.59	421.33
95th-Percentile Queue Length [veh/ln]		22.06	22.08	25.11	21.39	24.12	25.17	6.81	23.59
95th-Percentile Queue Length [ft/ln]		551.58	552.00	627.70	534.84	602.88	629.36	170.27	589.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	37.89	0.00	49.96	0.00	36.88	51.10	66.91	27.26	0.00
Movement LOS				D		D		D	D	E	C	
d_A, Approach Delay [s/veh]	0.00			41.94			42.31			31.09		
Approach LOS	A			D			D			C		
d_I, Intersection Delay [s/veh]	38.06											
Intersection LOS	D											
Intersection V/C	0.912											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.117			2.507			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			733			950		
d_b, Bicycle Delay [s]	60.00			60.00			24.07			16.54		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.942			2.802			2.840		
Bicycle LOS	D			F			C			C		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.921

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	970	0	459	0	0	0	266	2287	0	0	1181	452
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	970	0	459	0	0	0	266	2287	0	0	1181	452
Peak Hour Factor	0.8940	1.0000	0.8940	1.0000	1.0000	1.0000	0.9710	0.9710	1.0000	1.0000	0.8830	0.8830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	271	0	128	0	0	0	68	589	0	0	334	128
Total Analysis Volume [veh/h]	1085	0	513	0	0	0	274	2355	0	0	1337	512
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	70	0	0	0	0	0	16	50	0	0	34	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	120	120		120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	46	46		12	66	50	50	50
g / C, Green / Cycle	0.38	0.38		0.10	0.55	0.42	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.33	0.34		0.08	0.49	0.27	0.30	0.31
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1545	1506
c, Capacity [veh/h]	1257	578		325	2652	1407	645	628
d1, Uniform Delay [s]	34.05	34.55		53.11	23.76	28.06	29.07	29.39
k, delay calibration	0.11	0.19		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.89	7.97		5.97	4.90	2.41	6.73	7.51
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.89		0.84	0.89	0.66	0.72	0.74
d, Delay for Lane Group [s/veh]	35.95	42.52		59.08	28.66	30.47	35.79	36.90
Lane Group LOS	D	D		E	C	C	D	D
Critical Lane Group	No	Yes		No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	14.64	15.01		4.33	19.80	11.00	12.11	12.34
50th-Percentile Queue Length [ft/ln]	366.09	375.26		108.17	495.04	275.11	302.85	308.57
95th-Percentile Queue Length [veh/ln]	20.92	21.36		7.74	27.10	16.44	17.82	18.10
95th-Percentile Queue Length [ft/ln]	522.99	534.11		193.45	677.49	411.12	445.56	452.61

Movement, Approach, & Intersection Results

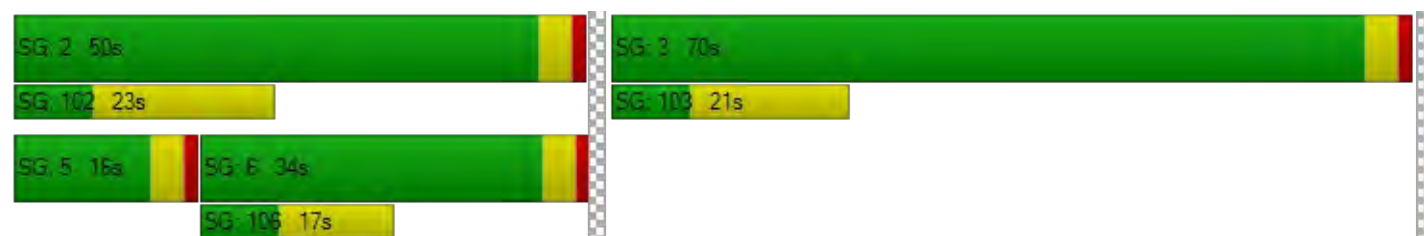
d_M, Delay for Movement [s/veh]	35.95	0.00	42.52	0.00	0.00	0.00	59.08	28.66	0.00	0.00	30.89	36.79
Movement LOS	D		D				E	C			C	D
d_A, Approach Delay [s/veh]	38.06			0.00			31.83			33.41		
Approach LOS	D			A			C			C		
d_I, Intersection Delay [s/veh]	33.95											
Intersection LOS	C											
Intersection V/C	0.921											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	49.50
I_p,int, Pedestrian LOS Score for Intersection	2.473	2.112	0.000	3.265
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	767	500
d_b, Bicycle Delay [s]	60.00	60.00	22.82	33.75
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	3.006	2.577
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:
Analysis Method:
Analysis Period:

Signalized
HCM 6th Edition
15 minutes

Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):

33.1
C
0.892

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	272	105	32	18	200	302	90	602	988	253	677	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	272	105	32	18	200	302	90	602	988	253	677	12
Peak Hour Factor	0.7870	0.7870	0.7870	0.8900	0.8900	0.8900	0.9170	0.9170	0.9170	0.9370	0.9370	0.9370
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	33	10	5	56	85	25	164	269	68	181	3
Total Analysis Volume [veh/h]	346	133	41	20	225	339	98	656	1077	270	723	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	49	49	10	42	0	15	37	37	14	36	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	38	52	3	27	27	8	44	61	10	46	46
g / C, Green / Cycle	0.12	0.34	0.47	0.03	0.25	0.25	0.07	0.40	0.55	0.09	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.08	0.03	0.01	0.13	0.23	0.06	0.19	0.40	0.08	0.14	0.14
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1756
c, Capacity [veh/h]	389	605	706	44	440	374	123	1335	1468	300	1399	728
d1, Uniform Delay [s]	47.81	25.83	15.95	52.85	35.61	40.12	50.25	24.94	18.63	49.51	22.02	22.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.20	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.07	0.18	0.03	7.22	0.92	14.11	11.14	1.29	3.28	9.63	0.68	1.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.22	0.06	0.46	0.51	0.91	0.80	0.49	0.73	0.90	0.35	0.35
d, Delay for Lane Group [s/veh]	54.88	26.01	15.98	60.07	36.53	54.23	61.39	26.23	21.91	59.15	22.70	23.33
Lane Group LOS	D	C	B	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.04	2.51	0.57	0.63	5.29	10.26	3.03	6.58	10.46	4.06	4.36	4.67
50th-Percentile Queue Length [ft/ln]	125.91	62.78	14.24	15.81	132.28	256.45	75.76	164.41	261.39	101.61	109.12	116.86
95th-Percentile Queue Length [veh/ln]	8.72	4.52	1.02	1.14	9.06	15.51	5.45	10.78	15.76	7.32	7.79	8.22
95th-Percentile Queue Length [ft/ln]	217.93	113.01	25.62	28.46	226.59	387.76	136.37	269.55	393.96	182.89	194.78	205.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.88	26.01	15.98	60.07	36.53	54.23	61.39	26.23	21.91	59.15	22.91	23.33
Movement LOS	D	C	B	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	44.43			47.61			25.57			32.64		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.13											
Intersection LOS	C											
Intersection V/C	0.892											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.802			2.342			3.130			2.843		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	818			691			600			582		
d_b, Bicycle Delay [s]	19.20			23.56			26.95			27.65		
I_b,int, Bicycle LOS Score for Intersection	2.418			2.523			3.070			2.113		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.527

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	26	404	181	328	950	57	46	66	11	247	68	222
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	404	181	328	950	57	46	66	11	247	68	222
Peak Hour Factor	0.8300	0.8300	0.8300	0.9210	0.9210	0.9210	0.8710	0.8710	0.8710	0.7670	0.7670	0.7670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	122	55	89	258	15	13	19	3	81	22	72
Total Analysis Volume [veh/h]	31	487	218	356	1031	62	53	76	13	322	89	289
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	28	0	19	34	0	14	37	0	26	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	58	58	15	70	70	5	7	13	16	35
g / C, Green / Cycle	0.03	0.53	0.53	0.14	0.63	0.63	0.04	0.07	0.12	0.14	0.32
(v / s)_i Volume / Saturation Flow Rate	0.02	0.14	0.15	0.11	0.21	0.21	0.03	0.05	0.10	0.05	0.19
s, saturation flow rate [veh/h]	1687	3373	1512	3277	3373	1721	1687	1727	3277	1772	1506
c, Capacity [veh/h]	58	1790	802	448	2135	1089	75	115	395	253	475
d1, Uniform Delay [s]	52.29	14.15	14.24	46.03	9.45	9.45	51.87	50.56	47.20	42.60	31.90
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.41	0.37	0.87	3.24	0.43	0.85	11.24	10.42	4.11	0.83	1.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.27	0.28	0.79	0.34	0.34	0.70	0.77	0.81	0.35	0.61
d, Delay for Lane Group [s/veh]	59.69	14.52	15.10	49.27	9.88	10.29	63.11	60.97	51.32	43.44	33.16
Lane Group LOS	E	B	B	D	A	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.96	3.30	3.20	4.90	3.95	4.16	1.68	2.74	4.51	2.24	6.62
50th-Percentile Queue Length [ft/ln]	24.03	82.57	79.93	122.43	98.85	103.97	41.91	68.52	112.80	56.12	165.51
95th-Percentile Queue Length [veh/ln]	1.73	5.95	5.76	8.53	7.12	7.49	3.02	4.93	8.00	4.04	10.84
95th-Percentile Queue Length [ft/ln]	43.25	148.63	143.88	213.16	177.93	187.15	75.44	123.34	199.89	101.02	271.00

Movement, Approach, & Intersection Results

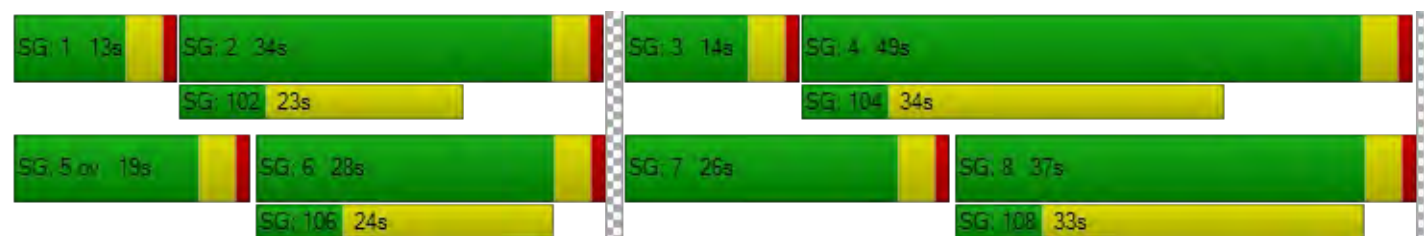
d_M, Delay for Movement [s/veh]	59.69	14.53	15.10	49.27	10.00	10.29	63.11	60.97	60.97	51.32	43.44	33.16
Movement LOS	E	B	B	D	B	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	16.60			19.66			61.77			42.82		
Approach LOS	B			B			E			D		
d_I, Intersection Delay [s/veh]	26.25											
Intersection LOS	C											
Intersection V/C	0.527											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.896			3.013			2.055			2.682		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	436			545			600			818		
d_b, Bicycle Delay [s]	33.62			29.09			26.95			19.20		
I_b,int, Bicycle LOS Score for Intersection	1.964			2.357			1.794			2.715		
Bicycle LOS	A			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.378

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	32	40	83	35	34	24	37	528	95	68	446	41
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	40	83	35	34	24	37	528	95	68	446	41
Peak Hour Factor	0.8140	0.8140	0.8140	0.7190	0.7190	0.7190	0.8220	0.8220	0.8220	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	12	25	12	12	8	11	161	29	19	125	11
Total Analysis Volume [veh/h]	39	49	102	49	47	33	45	642	116	76	499	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	13	30	0	32	49	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	12	12	4	70	70	6	72	72
g / C, Green / Cycle	0.12	0.12	0.12	0.12	0.12	0.04	0.70	0.70	0.06	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.07	0.04	0.05	0.03	0.22	0.22	0.05	0.15	0.03
s, saturation flow rate [veh/h]	1318	1772	1506	1356	1651	1687	1772	1678	1687	3373	1506
c, Capacity [veh/h]	139	212	180	168	198	73	1244	1179	98	2420	1080
d1, Uniform Delay [s]	46.41	39.86	41.57	44.79	40.73	47.04	5.67	5.67	46.47	4.69	4.12
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.09	0.55	2.78	0.95	1.33	8.31	0.66	0.69	12.40	0.19	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.28	0.23	0.57	0.29	0.41	0.62	0.31	0.31	0.78	0.21	0.04
d, Delay for Lane Group [s/veh]	47.50	40.41	44.35	45.74	42.06	55.35	6.33	6.37	58.87	4.88	4.20
Lane Group LOS	D	D	D	D	D	E	A	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.98	1.12	2.50	1.21	1.88	1.26	2.92	2.78	2.19	1.53	0.26
50th-Percentile Queue Length [ft/ln]	24.62	27.96	62.42	30.22	47.12	31.59	72.95	69.56	54.75	38.13	6.47
95th-Percentile Queue Length [veh/ln]	1.77	2.01	4.49	2.18	3.39	2.27	5.25	5.01	3.94	2.75	0.47
95th-Percentile Queue Length [ft/ln]	44.31	50.33	112.35	54.39	84.82	56.85	131.31	125.21	98.55	68.64	11.65

Movement, Approach, & Intersection Results

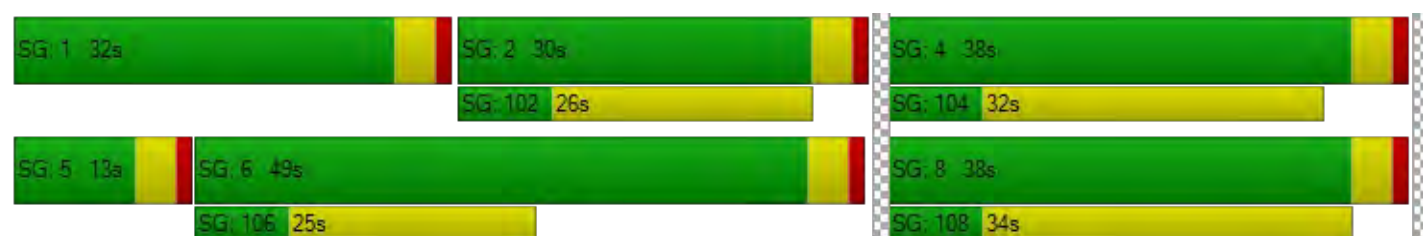
d_M, Delay for Movement [s/veh]	47.50	40.41	44.35	45.74	42.06	42.06	55.35	6.34	6.37	58.87	4.88	4.20
Movement LOS	D	D	D	D	D	D	E	A	A	E	A	A
d_A, Approach Delay [s/veh]	43.98			43.46			9.09			11.44		
Approach LOS	D			D			A			B		
d_I, Intersection Delay [s/veh]	16.27											
Intersection LOS	B											
Intersection V/C	0.378											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.240			2.032			2.628			2.757		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			520			900		
d_b, Bicycle Delay [s]	21.78			21.78			27.38			15.13		
I_b,int, Bicycle LOS Score for Intersection	1.873			1.772			2.222			2.072		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	38.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.659

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	72	124	94	598	754	138	71	480	45	78	530	260
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	72	124	94	598	754	138	71	480	45	78	530	260
Peak Hour Factor	0.8430	0.8430	0.8430	0.8910	0.8910	0.8910	0.8600	0.8600	0.8600	0.7640	0.7640	0.7640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	37	28	168	212	39	21	140	13	26	173	85
Total Analysis Volume [veh/h]	85	147	112	671	846	155	83	558	52	102	694	340
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	26	39	0	32	45	0	11	39	0	10	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	18	18	27	39	39	6	54	54	6	54	54
g / C, Green / Cycle	0.05	0.15	0.15	0.22	0.32	0.32	0.05	0.45	0.45	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.03	0.04	0.07	0.20	0.29	0.29	0.03	0.17	0.03	0.03	0.21	0.23
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1679	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	157	497	222	727	569	539	156	1513	675	161	1518	677
d1, Uniform Delay [s]	55.87	45.63	47.15	45.72	38.74	39.18	55.86	21.88	18.92	56.02	22.87	23.46
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.18	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.90	0.33	1.77	5.55	7.66	10.46	2.79	0.69	0.22	4.08	1.00	2.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.30	0.50	0.92	0.89	0.92	0.53	0.37	0.08	0.63	0.46	0.50
d, Delay for Lane Group [s/veh]	58.77	45.96	48.92	51.26	46.40	49.64	58.65	22.58	19.14	60.11	23.87	26.11
Lane Group LOS	E	D	D	D	D	D	E	C	B	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.32	1.99	3.20	10.29	15.24	15.39	1.29	5.32	0.88	1.61	6.95	7.27
50th-Percentile Queue Length [ft/ln]	33.07	49.66	80.04	257.30	381.04	384.66	32.26	133.00	21.88	40.22	173.76	181.84
95th-Percentile Queue Length [veh/ln]	2.38	3.58	5.76	15.55	21.64	21.82	2.32	9.10	1.58	2.90	11.27	11.70
95th-Percentile Queue Length [ft/ln]	59.53	89.40	144.06	388.83	541.11	545.48	58.06	227.57	39.39	72.40	281.85	292.41

Movement, Approach, & Intersection Results

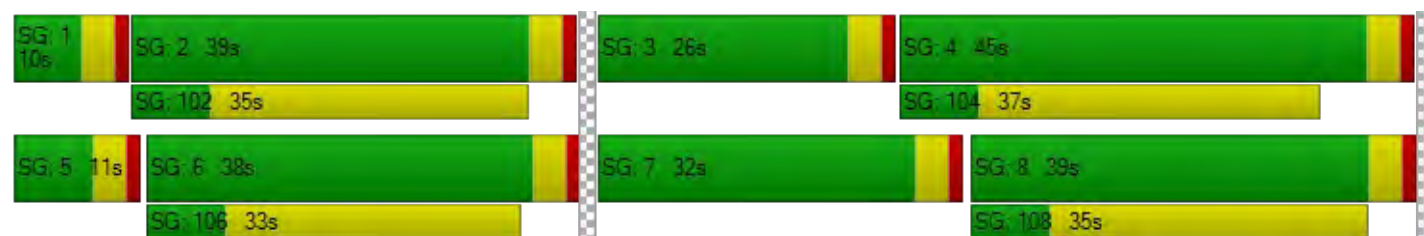
d_M, Delay for Movement [s/veh]	58.77	45.96	48.92	51.26	47.70	49.64	58.65	22.58	19.14	60.11	23.87	26.11
Movement LOS	E	D	D	D	D	D	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	50.09			49.31			26.64			27.79		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	38.94											
Intersection LOS	D											
Intersection V/C	0.659											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.795			2.831			2.834			2.953		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			683			583			567		
d_b, Bicycle Delay [s]	30.10			26.00			30.10			30.82		
I_b,int, Bicycle LOS Score for Intersection	1.843			2.939			2.131			2.497		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.820

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	223	6	292	52	27	8	2	872	288	325	716	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	223	6	292	52	27	8	2	872	288	325	716	10
Peak Hour Factor	0.8160	0.8160	0.8160	0.7410	0.7410	0.7410	0.8560	0.8560	0.8560	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	2	89	18	9	3	1	255	84	89	196	3
Total Analysis Volume [veh/h]	273	7	358	70	36	11	2	1019	336	356	783	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	61	61	0	37	0	10	38	0	21	49	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	27	48	10	10	0	64	64	17	81	81
g / C, Green / Cycle	0.10	0.22	0.40	0.09	0.09	0.00	0.54	0.54	0.14	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.08	0.00	0.24	0.05	0.03	0.00	0.40	0.40	0.11	0.22	0.22
s, saturation flow rate [veh/h]	3277	1772	1506	1408	1701	1687	1772	1624	3277	1772	1763
c, Capacity [veh/h]	336	392	597	151	145	6	951	872	464	1196	1191
d1, Uniform Delay [s]	52.74	36.54	28.69	55.26	51.62	59.66	21.31	21.50	49.59	8.16	8.16
k, delay calibration	0.11	0.11	0.42	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.77	0.02	3.68	2.21	1.27	31.21	5.12	5.83	2.68	0.75	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.02	0.60	0.46	0.32	0.34	0.74	0.75	0.77	0.33	0.33
d, Delay for Lane Group [s/veh]	57.51	36.56	32.37	57.47	52.90	90.87	26.43	27.32	52.27	8.90	8.91
Lane Group LOS	E	D	C	E	D	F	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.25	0.16	8.70	2.18	1.38	0.11	15.98	15.12	5.31	4.33	4.31
50th-Percentile Queue Length [ft/ln]	106.22	4.10	217.49	54.39	34.62	2.79	399.52	377.92	132.77	108.26	107.78
95th-Percentile Queue Length [veh/ln]	7.63	0.30	13.54	3.92	2.49	0.20	22.54	21.49	9.09	7.74	7.72
95th-Percentile Queue Length [ft/ln]	190.73	7.38	338.41	97.91	62.31	5.02	563.42	537.33	227.25	193.57	192.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.51	36.56	32.37	57.47	52.90	52.90	90.87	26.71	27.32	52.27	8.91	8.91
Movement LOS	E	D	C	E	D	D	F	C	C	D	A	A
d_A, Approach Delay [s/veh]	43.18			55.63			26.95			22.33		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	29.53											
Intersection LOS	C											
Intersection V/C	0.820											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.689			1.999			2.786			2.988		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	950			550			567			750		
d_b, Bicycle Delay [s]	16.54			31.54			30.82			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.612			1.753			2.679			2.508		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.792

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	5	149	2	428	303	800	16	8	689	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	5	149	2	428	303	800	16	8	689	77
Peak Hour Factor	0.5500	0.5500	0.5500	0.8490	0.8490	0.8490	0.8890	0.8890	0.8890	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	2	44	1	126	85	225	4	2	196	22
Total Analysis Volume [veh/h]	5	5	9	176	2	504	341	900	18	9	783	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	44	36	0	40	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	3	3	28	28	69	30	71	71	2	43	43
g / C, Green / Cycle	0.02	0.02	0.02	0.24	0.24	0.57	0.25	0.59	0.59	0.01	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.01	0.05	0.05	0.33	0.20	0.26	0.26	0.01	0.23	0.06
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1689	1506	1687	1772	1759	1687	3373	1506
c, Capacity [veh/h]	75	43	37	397	397	865	418	1050	1043	23	1210	540
d1, Uniform Delay [s]	58.93	57.29	57.47	37.05	37.05	16.34	42.54	13.44	13.44	58.68	32.14	26.21
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.17	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.16	3.37	0.28	0.28	2.86	5.97	1.33	1.34	9.94	2.68	0.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.12	0.24	0.22	0.22	0.58	0.81	0.44	0.44	0.38	0.65	0.16
d, Delay for Lane Group [s/veh]	59.30	58.45	60.83	37.34	37.34	19.20	48.51	14.77	14.78	68.62	34.82	26.86
Lane Group LOS	E	E	E	D	D	B	D	B	B	E	C	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.16	0.16	0.30	2.15	2.16	9.25	10.17	7.02	6.98	0.34	9.88	1.83
50th-Percentile Queue Length [ft/ln]	3.97	4.07	7.58	53.85	53.90	231.31	254.35	175.53	174.53	8.41	246.93	45.63
95th-Percentile Queue Length [veh/ln]	0.29	0.29	0.55	3.88	3.88	14.24	15.40	11.37	11.31	0.61	15.03	3.29
95th-Percentile Queue Length [ft/ln]	7.14	7.32	13.64	96.93	97.02	356.03	385.12	284.17	282.86	15.14	375.79	82.13

Movement, Approach, & Intersection Results

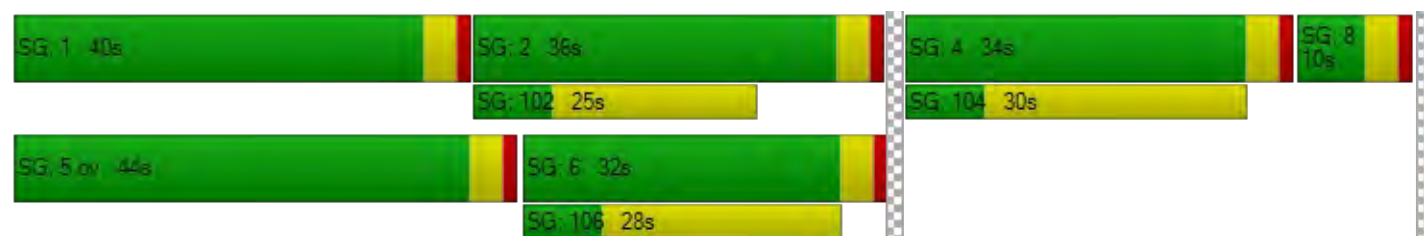
d_M, Delay for Movement [s/veh]	59.30	58.45	60.83	37.34	37.34	19.20	48.51	14.78	14.78	68.62	34.82	26.86
Movement LOS	E	E	E	D	D	B	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	59.80			23.93			23.91			34.37		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	27.40											
Intersection LOS	C											
Intersection V/C	0.792											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.157			2.417			2.818			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			500			533			467		
d_b, Bicycle Delay [s]	54.15			33.75			32.27			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.591			2.685			2.598			2.286		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.691

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	127	205	87	419	939	173	38	525	328	59	404	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	205	87	419	939	173	38	525	328	59	404	205
Peak Hour Factor	0.8520	0.8520	0.8520	0.8550	0.8550	0.8550	0.9040	0.9040	0.9040	0.7250	0.7250	0.7250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	60	26	123	275	51	11	145	91	20	139	71
Total Analysis Volume [veh/h]	149	241	102	490	1098	202	42	581	363	81	557	283
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	37	0	24	41	0	10	43	0	11	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	42	42	19	54	54	4	31	31	7	33	33
g / C, Green / Cycle	0.06	0.37	0.37	0.17	0.47	0.47	0.04	0.27	0.27	0.06	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.07	0.15	0.26	0.26	0.02	0.17	0.24	0.05	0.17	0.19
s, saturation flow rate [veh/h]	3277	3373	1525	3277	3373	1635	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	210	1236	559	545	1580	766	67	902	403	102	974	435
d1, Uniform Delay [s]	52.80	24.81	24.93	47.01	21.94	21.97	54.44	37.29	40.67	53.33	34.86	35.84
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.36	0.34	0.80	5.63	1.40	2.90	9.44	0.78	15.05	12.66	0.53	1.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.19	0.20	0.90	0.55	0.56	0.63	0.64	0.90	0.79	0.57	0.65
d, Delay for Lane Group [s/veh]	57.15	25.15	25.73	52.64	23.34	24.87	63.89	38.07	55.72	65.99	35.39	37.49
Lane Group LOS	E	C	C	D	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.24	2.21	2.21	7.27	8.62	8.72	1.37	7.30	11.50	2.67	6.69	7.11
50th-Percentile Queue Length [ft/ln]	55.93	55.36	55.30	181.78	215.50	217.90	34.33	182.43	287.42	66.74	167.22	177.79
95th-Percentile Queue Length [veh/ln]	4.03	3.99	3.98	11.69	13.44	13.56	2.47	11.73	17.06	4.81	10.93	11.49
95th-Percentile Queue Length [ft/ln]	100.67	99.65	99.54	292.33	335.88	338.95	61.79	293.19	426.44	120.14	273.26	287.13

Movement, Approach, & Intersection Results

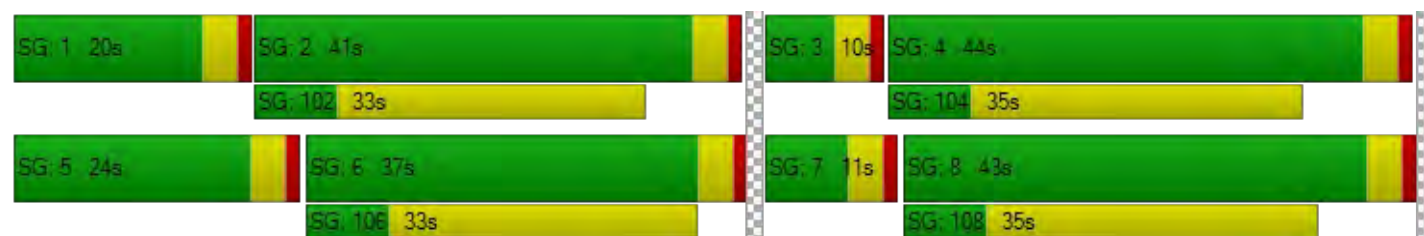
d_M, Delay for Movement [s/veh]	57.15	25.17	25.73	52.64	23.65	24.87	63.89	38.07	55.72	65.99	35.39	37.49
Movement LOS	E	C	C	D	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	34.97			31.72			45.67			38.73		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	36.93											
Intersection LOS	D											
Intersection V/C	0.691											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.985			3.024			2.772			2.805		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	574			643			678			696		
d_b, Bicycle Delay [s]	29.23			26.45			25.11			24.46		
I_b,int, Bicycle LOS Score for Intersection	1.830			2.544			2.373			2.319		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.159

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	24	138	8	6	124	13	30	2	54	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	138	8	6	124	13	30	2	54	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.6500	0.6500	0.6500	0.5970	0.5970	0.5970	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	38	2	2	48	5	13	1	23	0	0	0
Total Analysis Volume [veh/h]	27	153	9	9	191	20	50	3	90	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	26	0	10	26	0	0	59	0	0	59	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	74	74	1	72	72	8	8	8	8
g / C, Green / Cycle	0.03	0.78	0.78	0.01	0.76	0.76	0.08	0.08	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.05	0.01	0.06	0.06	0.04	0.06	0.00	0.00
s, saturation flow rate [veh/h]	1687	1772	1737	1687	1772	1714	1417	1513	1303	1772
c, Capacity [veh/h]	56	1374	1348	25	1341	1297	168	126	83	148
d1, Uniform Delay [s]	45.12	2.51	2.51	46.39	2.99	2.99	43.06	42.52	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.22	0.08	0.09	8.89	0.12	0.12	0.98	8.05	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.06	0.06	0.37	0.08	0.08	0.30	0.74	0.00	0.00
d, Delay for Lane Group [s/veh]	51.35	2.59	2.59	55.28	3.10	3.11	44.04	50.57	0.00	0.00
Lane Group LOS	D	A	A	E	A	A	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.72	0.29	0.29	0.27	0.44	0.44	1.18	2.39	0.00	0.00
50th-Percentile Queue Length [ft/ln]	17.96	7.20	7.17	6.75	10.99	10.89	29.39	59.86	0.00	0.00
95th-Percentile Queue Length [veh/ln]	1.29	0.52	0.52	0.49	0.79	0.78	2.12	4.31	0.00	0.00
95th-Percentile Queue Length [ft/ln]	32.33	12.96	12.91	12.15	19.77	19.60	52.91	107.74	0.00	0.00

Movement, Approach, & Intersection Results

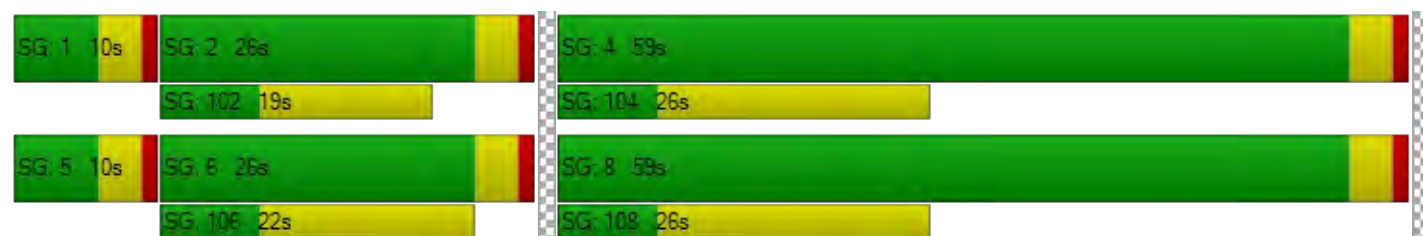
d_M, Delay for Movement [s/veh]	51.35	2.59	2.59	55.28	3.11	3.11	44.04	50.57	50.57	0.00	0.00	0.00
Movement LOS	D	A	A	E	A	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	9.56			5.24			48.29			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	17.87											
Intersection LOS	B											
Intersection V/C	0.159											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.394			2.456			2.004			1.949		
Crosswalk LOS	B			B			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	463			463			1158			1158		
d_b, Bicycle Delay [s]	28.05			28.05			8.42			8.42		
I_b,int, Bicycle LOS Score for Intersection	1.716			1.741			1.796			1.560		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.199

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	12	155	124	25	134	6	1	0	1	103	0	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	155	124	25	134	6	1	0	1	103	0	19
Peak Hour Factor	0.8280	0.8280	0.8280	0.9050	0.9050	0.9050	0.2500	0.2500	0.2500	0.6000	0.6000	0.6000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	47	37	7	37	2	1	0	1	43	0	8
Total Analysis Volume [veh/h]	14	187	150	28	148	7	4	0	4	172	0	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	29	0	10	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	78	71	71	78	72	72	1	1	8	8
g / C, Green / Cycle	0.78	0.71	0.71	0.78	0.72	0.72	0.01	0.01	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.01	0.10	0.11	0.03	0.04	0.04	0.00	0.00	0.06	0.06
s, saturation flow rate [veh/h]	1255	1772	1521	1087	1772	1744	1687	1506	1687	1625
c, Capacity [veh/h]	1066	1257	1079	915	1280	1260	21	19	143	138
d1, Uniform Delay [s]	2.40	4.68	4.72	2.48	4.02	4.02	48.90	48.92	44.64	44.67
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.23	0.29	0.06	0.09	0.09	4.21	5.42	6.69	7.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.14	0.15	0.03	0.06	0.06	0.19	0.21	0.72	0.73
d, Delay for Lane Group [s/veh]	2.40	4.92	5.01	2.55	4.11	4.12	53.12	54.34	51.33	51.89
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.05	1.09	1.01	0.11	0.42	0.42	0.12	0.13	2.75	2.70
50th-Percentile Queue Length [ft/ln]	1.14	27.31	25.37	2.63	10.56	10.52	3.08	3.18	68.69	67.44
95th-Percentile Queue Length [veh/ln]	0.08	1.97	1.83	0.19	0.76	0.76	0.22	0.23	4.95	4.86
95th-Percentile Queue Length [ft/ln]	2.06	49.16	45.66	4.73	19.00	18.93	5.55	5.72	123.64	121.38

Movement, Approach, & Intersection Results

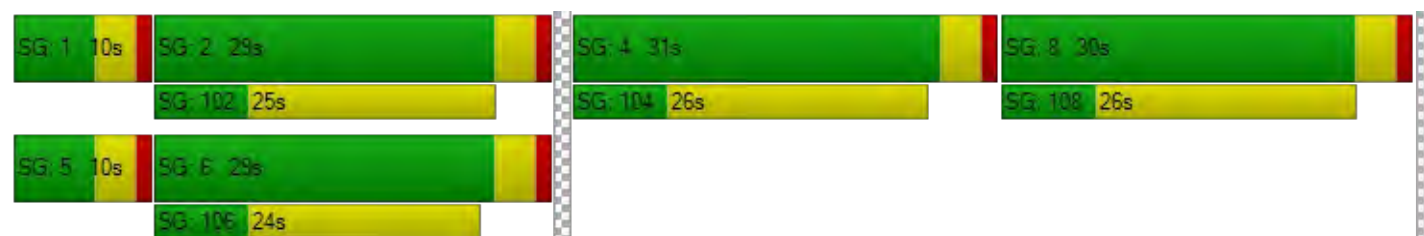
d_M, Delay for Movement [s/veh]	2.40	4.92	5.01	2.55	4.12	4.12	53.12	53.12	54.34	51.55	51.89	51.89
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	4.86			3.88			53.73			51.60		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	17.92											
Intersection LOS	B											
Intersection V/C	0.199											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.436			2.384			1.969			2.098		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			500			520			540		
d_b, Bicycle Delay [s]	28.13			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	1.849			1.711			1.573			1.896		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.303

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	30	5	14	16	2	70	150	227	14	26	304	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	5	14	16	2	70	150	227	14	26	304	26
Peak Hour Factor	0.5830	0.5830	0.5830	0.5500	0.5500	0.5500	0.8240	0.8240	0.8240	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	2	6	7	1	32	46	69	4	7	81	7
Total Analysis Volume [veh/h]	51	9	24	29	4	127	182	275	17	28	323	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	31	34	0	29	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	6	6	30	10	79	79	3	72	72
g / C, Green / Cycle	0.05	0.05	0.05	0.05	0.05	0.27	0.09	0.72	0.72	0.03	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.02	0.02	0.00	0.08	0.06	0.08	0.08	0.02	0.10	0.10
s, saturation flow rate [veh/h]	1417	1557	1506	1687	1612	1506	3277	1772	1736	1687	1772	1723
c, Capacity [veh/h]	114	138	77	93	89	407	302	1270	1244	54	1164	1131
d1, Uniform Delay [s]	50.20	50.88	50.38	50.00	49.27	31.98	48.03	4.81	4.81	52.44	7.20	7.21
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	1.29	2.31	1.90	0.21	0.43	1.94	0.19	0.19	7.58	0.28	0.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.31	0.31	0.31	0.05	0.31	0.60	0.12	0.12	0.52	0.15	0.15
d, Delay for Lane Group [s/veh]	50.79	52.16	52.69	51.90	49.47	32.41	49.97	4.99	5.00	60.02	7.48	7.50
Lane Group LOS	D	D	D	D	D	C	D	A	A	E	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.46	1.21	0.69	0.82	0.11	2.74	2.48	0.99	0.97	0.87	1.58	1.56
50th-Percentile Queue Length [ft/ln]	11.57	30.22	17.16	20.41	2.73	68.57	61.93	24.68	24.36	21.84	39.58	39.00
95th-Percentile Queue Length [veh/ln]	0.83	2.18	1.24	1.47	0.20	4.94	4.46	1.78	1.75	1.57	2.85	2.81
95th-Percentile Queue Length [ft/ln]	20.83	54.40	30.89	36.73	4.92	123.43	111.47	44.43	43.84	39.32	71.25	70.20

Movement, Approach, & Intersection Results

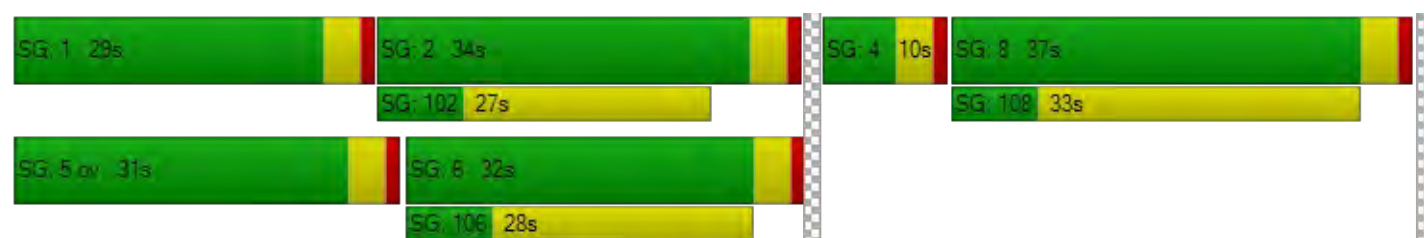
d_M, Delay for Movement [s/veh]	51.67	52.16	52.69	51.90	49.47	32.41	49.97	5.00	5.00	60.02	7.49	7.50
Movement LOS	D	D	D	D	D	C	D	A	A	E	A	A
d_A, Approach Delay [s/veh]	52.04			36.37			22.27			11.37		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	22.84											
Intersection LOS	C											
Intersection V/C	0.303											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			0.00			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.335			2.383			0.000			2.447		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	600			109			545			509		
d_b, Bicycle Delay [s]	26.95			49.16			29.09			30.56		
I_b,int, Bicycle LOS Score for Intersection	1.698			1.692			1.951			1.872		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	46.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	288	572	247	141	1182	266	174	1248	344	269	1101	98
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	572	247	141	1182	266	174	1248	344	269	1101	98
Peak Hour Factor	0.8230	0.8230	0.8230	0.9630	0.9630	0.9630	0.8630	0.8630	0.8630	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	87	174	75	37	307	69	50	362	100	69	281	25
Total Analysis Volume [veh/h]	350	695	300	146	1227	276	202	1446	399	274	1123	100
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	45	0	11	39	0	13	49	0	15	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	39	39	7	33	33	9	47	47	11	49	49
g / C, Green / Cycle	0.11	0.33	0.33	0.06	0.28	0.28	0.08	0.39	0.39	0.09	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.11	0.14	0.20	0.04	0.25	0.18	0.06	0.37	0.38	0.08	0.23	0.07
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1585	3277	4826	1506
c, Capacity [veh/h]	356	1583	494	192	1343	419	247	1309	615	301	1952	609
d1, Uniform Delay [s]	53.39	31.65	33.83	55.66	41.93	38.28	54.69	35.69	36.06	54.00	27.73	22.79
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.18	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.65	0.19	1.71	6.04	2.86	2.98	6.58	16.06	29.75	10.34	1.24	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.44	0.61	0.76	0.91	0.66	0.82	0.95	0.97	0.91	0.58	0.16
d, Delay for Lane Group [s/veh]	72.04	31.84	35.54	61.70	44.79	41.26	61.26	51.75	65.81	64.34	28.97	23.37
Lane Group LOS	E	C	D	E	D	D	E	D	E	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.18	5.30	7.54	2.34	11.96	7.50	3.23	20.29	21.85	4.53	8.51	1.92
50th-Percentile Queue Length [ft/ln]	154.49	132.62	188.46	58.48	299.05	187.45	80.84	507.20	546.37	113.20	212.63	47.90
95th-Percentile Queue Length [veh/ln]	10.26	9.08	12.04	4.21	17.63	11.99	5.82	27.68	29.52	8.02	13.29	3.45
95th-Percentile Queue Length [ft/ln]	256.42	227.05	301.03	105.26	440.85	299.72	145.51	691.88	738.04	200.44	332.20	86.23

Movement, Approach, & Intersection Results

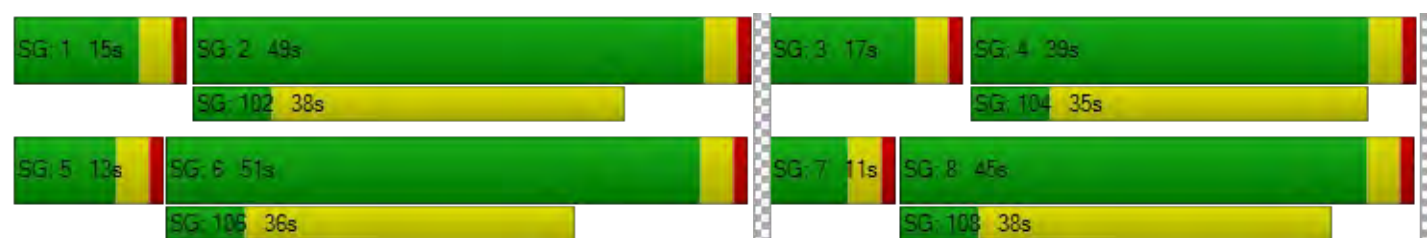
d_M, Delay for Movement [s/veh]	72.04	31.84	35.54	61.70	44.79	41.26	61.26	53.67	65.81	64.34	28.97	23.37
Movement LOS	E	C	D	E	D	D	E	D	E	E	C	C
d_A, Approach Delay [s/veh]	43.13			45.70			56.79			35.07		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	46.21											
Intersection LOS	D											
Intersection V/C	0.948											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.215			3.150			3.202			3.230		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			583			750			783		
d_b, Bicycle Delay [s]	26.00			30.10			23.44			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.299			2.467			2.685			2.383		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	56	108	149	119	80	127	208	1270	74	49	1155	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	108	149	119	80	127	208	1270	74	49	1155	152
Peak Hour Factor	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510	0.8710	0.8710	0.8710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	30	42	35	24	37	60	365	21	13	299	39
Total Analysis Volume [veh/h]	63	121	166	140	94	149	239	1458	85	51	1194	157
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	28	41	0	21	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	21	21	16	62	62	5	51	51
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.21	0.21	0.16	0.62	0.62	0.05	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.11	0.11	0.03	0.10	0.14	0.30	0.30	0.03	0.25	0.10
s, saturation flow rate [veh/h]	1302	1772	1506	1270	3373	1506	1687	3373	1722	1687	4826	1506
c, Capacity [veh/h]	295	377	320	245	717	320	273	2097	1071	77	2440	761
d1, Uniform Delay [s]	36.07	33.26	34.83	41.91	31.88	34.40	40.94	10.26	10.26	46.98	16.23	13.64
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	0.49	1.30	2.09	0.08	1.05	8.75	0.81	1.59	9.45	0.70	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.21	0.32	0.52	0.57	0.13	0.47	0.88	0.49	0.49	0.66	0.49	0.21
d, Delay for Lane Group [s/veh]	36.43	33.75	36.13	44.00	31.96	35.45	49.69	11.07	11.85	56.43	16.94	14.25
Lane Group LOS	D	C	D	D	C	D	D	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.36	2.52	3.66	3.47	0.93	3.24	6.34	5.80	6.17	1.44	5.89	2.03
50th-Percentile Queue Length [ft/ln]	34.08	62.97	91.51	86.64	23.17	80.89	158.60	145.09	154.20	36.11	147.18	50.70
95th-Percentile Queue Length [veh/ln]	2.45	4.53	6.59	6.24	1.67	5.82	10.47	9.75	10.24	2.60	9.87	3.65
95th-Percentile Queue Length [ft/ln]	61.34	113.34	164.72	155.95	41.71	145.60	261.86	243.86	256.03	64.99	246.66	91.26

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.43	33.75	36.13	44.00	31.96	35.45	49.69	11.30	11.85	56.43	16.94	14.25
Movement LOS	D	C	D	D	C	D	D	B	B	E	B	B
d_A, Approach Delay [s/veh]	35.36			37.72			16.48			18.07		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	20.81											
Intersection LOS	C											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.418			2.480			3.132			3.315		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			740			600		
d_b, Bicycle Delay [s]	21.78			21.78			19.85			24.50		
I_b,int, Bicycle LOS Score for Intersection	2.137			1.876			2.540			2.331		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	46.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.940

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	406	430	151	120	899	155	124	1437	329	156	1365	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	430	151	120	899	155	124	1437	329	156	1365	60
Peak Hour Factor	0.7960	0.7960	0.7960	0.9500	0.9500	0.9500	0.9210	0.9210	0.9210	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	128	135	47	32	237	41	34	390	89	45	393	17
Total Analysis Volume [veh/h]	510	540	190	126	946	163	135	1560	357	180	1571	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	50	0	15	41	0	10	44	0	11	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	49	49	7	36	36	6	41	41	7	42	42
g / C, Green / Cycle	0.17	0.41	0.41	0.05	0.30	0.30	0.05	0.34	0.34	0.06	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.16	0.11	0.13	0.04	0.28	0.11	0.04	0.32	0.24	0.05	0.33	0.05
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	547	1973	616	181	1002	447	166	1658	517	193	1698	530
d1, Uniform Delay [s]	49.35	23.62	24.01	55.73	41.22	33.26	56.42	38.21	33.90	56.24	37.38	26.42
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.82	0.07	0.28	4.76	5.38	0.50	9.11	11.90	7.35	17.29	10.07	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.27	0.31	0.70	0.94	0.36	0.81	0.94	0.69	0.93	0.92	0.13
d, Delay for Lane Group [s/veh]	57.17	23.70	24.29	60.49	46.60	33.75	65.52	50.12	41.25	73.53	47.45	26.93
Lane Group LOS	E	C	C	E	D	C	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.11	3.42	3.70	2.00	14.25	3.82	2.24	16.43	9.95	3.18	16.12	1.43
50th-Percentile Queue Length [ft/ln]	202.83	85.48	92.54	49.89	356.18	95.38	55.91	410.73	248.71	79.47	403.04	35.72
95th-Percentile Queue Length [veh/ln]	12.78	6.15	6.66	3.59	20.44	6.87	4.03	23.08	15.12	5.72	22.71	2.57
95th-Percentile Queue Length [ft/ln]	319.61	153.86	166.57	89.79	510.94	171.68	100.64	576.91	378.03	143.05	567.66	64.30

Movement, Approach, & Intersection Results

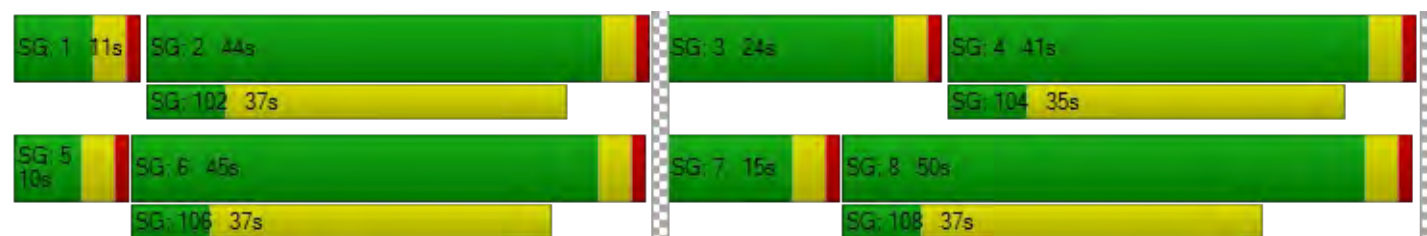
d_M, Delay for Movement [s/veh]	57.17	23.70	24.29	60.49	46.60	33.75	65.52	50.12	41.25	73.53	47.45	26.93
Movement LOS	E	C	C	E	D	C	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	37.55			46.32			49.59			49.25		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.50											
Intersection LOS	D											
Intersection V/C	0.940											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.071			2.980			3.328			3.263		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	767			617			667			683		
d_b, Bicycle Delay [s]	22.82			28.70			26.67			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.242			2.578			2.688			2.561		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.576

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	50	161	13	64	102	1444	9	23	1396	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	50	161	13	64	102	1444	9	23	1396	150
Peak Hour Factor	0.7700	0.7700	0.7700	0.8070	0.8070	0.8070	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	16	50	4	20	28	403	3	7	410	44
Total Analysis Volume [veh/h]	18	17	65	200	16	79	114	1613	10	27	1640	176
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	40	0	10	40	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	9	9	6	66	66	3	63	63
g / C, Green / Cycle	0.06	0.06	0.06	0.09	0.09	0.06	0.65	0.65	0.03	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.05	0.06	0.06	0.03	0.32	0.32	0.02	0.34	0.12
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1545	3277	3373	1766	1687	4826	1506
c, Capacity [veh/h]	110	116	90	290	137	191	2203	1154	55	3029	945
d1, Uniform Delay [s]	44.20	44.15	45.91	44.29	44.31	45.99	8.80	8.80	47.59	10.51	7.86
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.68	0.57	10.51	2.90	6.16	2.95	0.76	1.45	6.47	0.70	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.15	0.72	0.69	0.69	0.60	0.48	0.48	0.49	0.54	0.19
d, Delay for Lane Group [s/veh]	44.88	44.73	56.41	47.19	50.47	48.94	9.56	10.25	54.07	11.21	8.29
Lane Group LOS	D	D	E	D	D	D	A	B	D	B	A
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	0.42	1.84	2.51	2.51	1.45	5.46	5.94	0.76	6.35	1.59
50th-Percentile Queue Length [ft/ln]	11.04	10.38	45.97	62.73	62.70	36.36	136.53	148.50	18.97	158.70	39.87
95th-Percentile Queue Length [veh/ln]	0.79	0.75	3.31	4.52	4.51	2.62	9.29	9.94	1.37	10.48	2.87
95th-Percentile Queue Length [ft/ln]	19.86	18.68	82.74	112.91	112.85	65.45	232.34	248.43	34.14	262.00	71.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.88	44.73	56.41	47.19	50.47	50.47	48.94	9.80	10.25	54.07	11.21	8.29
Movement LOS	D	D	E	D	D	D	D	A	B	D	B	A
d_A, Approach Delay [s/veh]	52.35			48.25			12.37			11.56		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	15.66											
Intersection LOS	B											
Intersection V/C	0.576											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.173			2.422			3.154			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	120			720			720			720		
d_b, Bicycle Delay [s]	44.18			20.48			20.48			20.48		
I_b,int, Bicycle LOS Score for Intersection	1.642			2.046			2.515			2.573		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	35.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.880

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	95	150	378	109	341	25	31	1480	171	410	1456	186
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	95	150	378	109	341	25	31	1480	171	410	1456	186
Peak Hour Factor	0.9050	0.9050	0.9050	0.9420	0.9420	0.9420	0.9090	0.9090	0.9090	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	41	104	29	90	7	9	407	47	114	404	52
Total Analysis Volume [veh/h]	105	166	418	116	362	27	34	1628	188	456	1618	207
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	41	0	10	39	0	10	34	0	20	44	44
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	31	31	6	32	32	4	36	36	16	48	58
g / C, Green / Cycle	0.05	0.30	0.30	0.06	0.30	0.30	0.04	0.34	0.34	0.15	0.46	0.55
(v / s)_i Volume / Saturation Flow Rate	0.03	0.05	0.28	0.05	0.11	0.11	0.01	0.28	0.28	0.14	0.34	0.14
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1729	3277	4826	1653	3277	4826	1506
c, Capacity [veh/h]	180	1003	448	136	531	519	120	1642	563	500	2202	831
d1, Uniform Delay [s]	48.47	27.28	35.90	49.06	28.95	28.97	49.28	31.77	31.77	43.82	23.36	12.23
k, delay calibration	0.11	0.11	0.30	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.98	0.08	20.40	13.62	0.43	0.44	1.29	4.83	12.88	6.89	2.22	0.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.17	0.93	0.85	0.37	0.37	0.28	0.82	0.82	0.91	0.73	0.25
d, Delay for Lane Group [s/veh]	51.45	27.36	56.30	62.68	29.38	29.41	50.56	36.60	44.65	50.71	25.58	12.94
Lane Group LOS	D	C	E	E	C	C	D	D	D	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.41	1.55	12.72	1.76	3.93	3.86	0.45	10.99	12.56	6.26	10.99	2.61
50th-Percentile Queue Length [ft/ln]	35.35	38.67	317.94	43.98	98.28	96.55	11.37	274.84	313.96	156.59	274.76	65.35
95th-Percentile Queue Length [veh/ln]	2.54	2.78	18.57	3.17	7.08	6.95	0.82	16.43	18.37	10.37	16.43	4.71
95th-Percentile Queue Length [ft/ln]	63.62	69.60	464.16	79.16	176.90	173.80	20.47	410.78	459.26	259.20	410.68	117.63

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.45	27.36	56.30	62.68	29.39	29.41	50.56	37.96	44.65	50.71	25.58	12.94
Movement LOS	D	C	E	E	C	C	D	D	D	D	C	B
d_A, Approach Delay [s/veh]	48.59			37.04			38.87			29.46		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	35.92											
Intersection LOS	D											
Intersection V/C	0.880											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.837			2.608			3.246			3.407		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	705			667			571			762		
d_b, Bicycle Delay [s]	22.02			23.33			26.79			20.12		
I_b,int, Bicycle LOS Score for Intersection	2.128			1.976			2.323			2.814		
Bicycle LOS	B			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	16.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	547	0	447	0	1383	631	0	1626	171
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	547	0	447	0	1383	631	0	1626	171
Peak Hour Factor	1.0000	1.0000	1.0000	0.8810	1.0000	0.8810	1.0000	0.9270	0.9270	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	155	0	127	0	373	170	0	432	45
Total Analysis Volume [veh/h]	0	0	0	621	0	507	0	1492	681	0	1730	182
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		26	26	26	56	56
g / C, Green / Cycle		0.29	0.29	0.29	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate		0.22	0.23	0.25	0.31	0.36
s, saturation flow rate [veh/h]		1687	1619	1506	4826	4826
c, Capacity [veh/h]		493	473	440	2985	2985
d1, Uniform Delay [s]		28.94	29.29	29.98	9.46	10.19
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.47	3.07	4.82	0.60	0.83
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.76	0.79	0.85	0.50	0.58
d, Delay for Lane Group [s/veh]		31.41	32.36	34.79	10.06	11.01
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		7.49	7.64	7.99	4.96	6.21
50th-Percentile Queue Length [ft/ln]		187.18	190.98	199.83	123.93	155.28
95th-Percentile Queue Length [veh/ln]		11.97	12.17	12.63	8.61	10.30
95th-Percentile Queue Length [ft/ln]		299.36	304.30	315.75	215.21	257.46

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.79	0.00	34.17	0.00	10.06	0.00	0.00	11.01	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			32.86			10.06			11.01		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	16.35											
Intersection LOS	B											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.406			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			5.994			2.380			2.511		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.746

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	817	167	746	0	0	91	154	1250	514	0	1366	6
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	817	167	746	0	0	91	154	1250	514	0	1366	6
Peak Hour Factor	0.9080	0.9080	0.9080	1.0000	1.0000	0.6820	0.8790	0.8790	0.8790	1.0000	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	225	46	205	0	0	33	44	356	146	0	382	2
Total Analysis Volume [veh/h]	900	184	822	0	0	133	175	1422	585	0	1528	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	68	0	0	0	18	18	52	0	0	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	45	45	45	14	14	67	49	49
g / C, Green / Cycle	0.38	0.38	0.38	0.12	0.12	0.55	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.27	0.33	0.32	0.05	0.10	0.29	0.24	0.22
s, saturation flow rate [veh/h]	3277	1590	1506	2665	1687	4826	4826	1766
c, Capacity [veh/h]	1240	602	570	312	197	2678	1952	714
d1, Uniform Delay [s]	31.94	34.51	34.12	49.21	52.16	16.85	27.93	27.17
k, delay calibration	0.11	0.18	0.17	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	6.55	5.67	0.92	12.37	0.76	1.32	2.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.87	0.85	0.43	0.89	0.53	0.59	0.54
d, Delay for Lane Group [s/veh]	32.76	41.06	39.79	50.13	64.53	17.61	29.25	30.06
Lane Group LOS	C	D	D	D	E	B	C	C
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.20	14.97	13.59	1.90	5.86	8.22	8.79	8.89
50th-Percentile Queue Length [ft/ln]	279.98	374.13	339.74	47.45	146.53	205.56	219.64	222.20
95th-Percentile Queue Length [veh/ln]	16.69	21.31	19.64	3.42	9.83	12.92	13.65	13.78
95th-Percentile Queue Length [ft/ln]	417.19	532.74	490.88	85.41	245.80	323.12	341.16	344.44

Movement, Approach, & Intersection Results

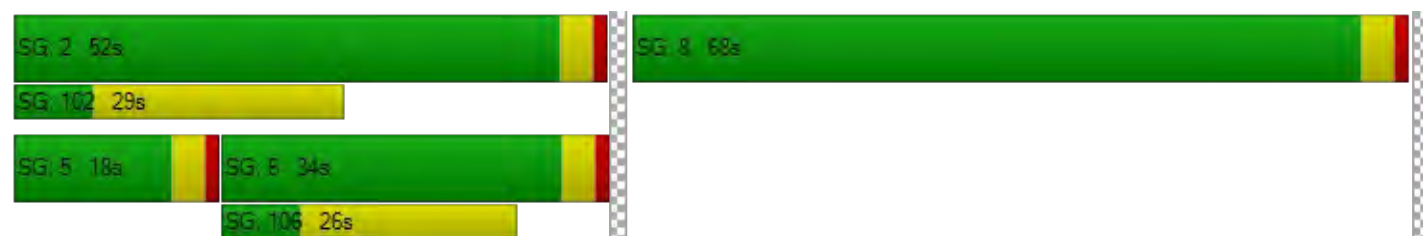
d_M, Delay for Movement [s/veh]	32.76	41.06	40.31	0.00	0.00	50.13	64.53	17.61	0.00	0.00	29.45	30.06
Movement LOS	C	D	D			D	E	B			C	C
d_A, Approach Delay [s/veh]	36.82			50.13			22.75			29.45		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.63											
Intersection LOS	C											
Intersection V/C	0.746											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.685			2.116			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1067			0			800			500		
d_b, Bicycle Delay [s]	13.07			60.00			21.60			33.75		
I_b,int, Bicycle LOS Score for Intersection	4.705			4.132			2.438			2.193		
Bicycle LOS	E			D			B			B		

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	141	192	66	138	305	139	139	1734	95	85	1492	78
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	192	66	138	305	139	139	1734	95	85	1492	78
Peak Hour Factor	0.8870	0.8870	0.8870	0.9320	0.9320	0.9320	0.9120	0.9120	0.9120	0.9620	0.9620	0.9620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	54	19	37	82	37	38	475	26	22	388	20
Total Analysis Volume [veh/h]	159	216	74	148	327	149	152	1901	104	88	1551	81
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	19	48	0	16	41	0	11	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	22	22	7	23	23	12	58	58	7	53	53
g / C, Green / Cycle	0.05	0.20	0.20	0.06	0.21	0.21	0.11	0.53	0.53	0.06	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.09	0.05	0.18	0.10	0.09	0.39	0.39	0.05	0.25	0.25
s, saturation flow rate [veh/h]	3277	1772	1621	3277	1772	1506	1687	3373	1725	1687	4826	1714
c, Capacity [veh/h]	181	353	323	211	369	314	180	1776	909	109	2338	831
d1, Uniform Delay [s]	51.63	38.57	38.66	50.46	42.32	38.30	48.30	20.30	20.38	50.84	19.49	19.49
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.46	0.81	0.92	4.17	7.20	1.12	10.35	2.89	5.65	13.22	0.81	2.28
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.42	0.43	0.70	0.89	0.48	0.85	0.75	0.75	0.81	0.51	0.52
d, Delay for Lane Group [s/veh]	64.09	39.38	39.58	54.62	49.52	39.41	58.66	23.19	26.03	64.06	20.30	21.77
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.49	3.61	3.40	2.12	9.29	3.62	4.60	13.30	14.43	2.79	7.04	7.85
50th-Percentile Queue Length [ft/ln]	62.17	90.27	85.08	52.90	232.25	90.60	114.99	332.60	360.83	69.69	176.12	196.25
95th-Percentile Queue Length [veh/ln]	4.48	6.50	6.13	3.81	14.29	6.52	8.12	19.29	20.66	5.02	11.40	12.44
95th-Percentile Queue Length [ft/ln]	111.90	162.48	153.15	95.23	357.22	163.08	202.92	482.15	516.59	125.44	284.94	311.12

Movement, Approach, & Intersection Results

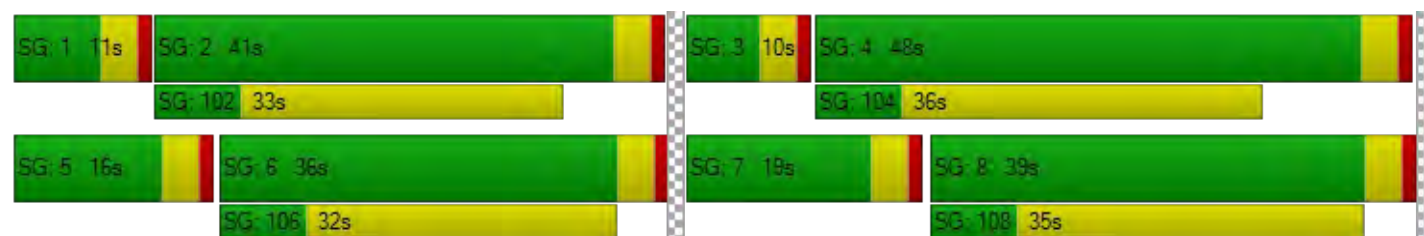
d_M, Delay for Movement [s/veh]	64.09	39.44	39.58	54.62	49.52	39.41	58.66	24.06	26.03	64.06	20.63	21.77
Movement LOS	E	D	D	D	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	48.19			48.32			26.59			22.90		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	30.01											
Intersection LOS	C											
Intersection V/C	0.796											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.498			2.637			3.224			3.203		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			800			673			582		
d_b, Bicycle Delay [s]	25.57			19.80			24.22			27.65		
I_b,int, Bicycle LOS Score for Intersection	1.930			2.589			2.746			2.269		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.750

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	171	11	134	23	26	13	12	1688	339	162	1354	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	171	11	134	23	26	13	12	1688	339	162	1354	30
Peak Hour Factor	0.8320	0.8320	0.8320	0.6740	0.6740	0.6740	0.9510	0.9510	0.9510	0.8930	0.8930	0.8930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	51	3	40	9	10	5	3	444	89	45	379	8
Total Analysis Volume [veh/h]	206	13	161	34	39	19	13	1775	356	181	1516	34
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	5	5	2	45	45	12	55	55
g / C, Green / Cycle	0.13	0.13	0.13	0.06	0.06	0.02	0.50	0.50	0.13	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.11	0.02	0.03	0.01	0.37	0.24	0.11	0.30	0.30
s, saturation flow rate [veh/h]	1687	1697	1506	1687	1675	1687	4826	1506	1687	3373	1752
c, Capacity [veh/h]	228	229	203	103	102	34	2400	749	218	2046	1063
d1, Uniform Delay [s]	36.09	36.08	37.79	40.56	41.17	43.65	18.01	14.91	38.30	10.00	10.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.57	1.56	6.83	1.84	4.85	7.13	2.09	2.16	7.92	0.87	1.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.48	0.79	0.33	0.57	0.39	0.74	0.48	0.83	0.50	0.50
d, Delay for Lane Group [s/veh]	37.65	37.64	44.62	42.41	46.02	50.78	20.10	17.07	46.22	10.87	11.67
Lane Group LOS	D	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.29	2.30	3.77	0.77	1.38	0.35	9.51	4.95	4.32	5.31	5.75
50th-Percentile Queue Length [ft/ln]	57.28	57.57	94.24	19.21	34.42	8.76	237.66	123.82	107.91	132.75	143.87
95th-Percentile Queue Length [veh/ln]	4.12	4.15	6.79	1.38	2.48	0.63	14.56	8.60	7.72	9.09	9.69
95th-Percentile Queue Length [ft/ln]	103.10	103.63	169.64	34.58	61.96	15.76	364.07	215.07	193.09	227.23	242.23

Movement, Approach, & Intersection Results

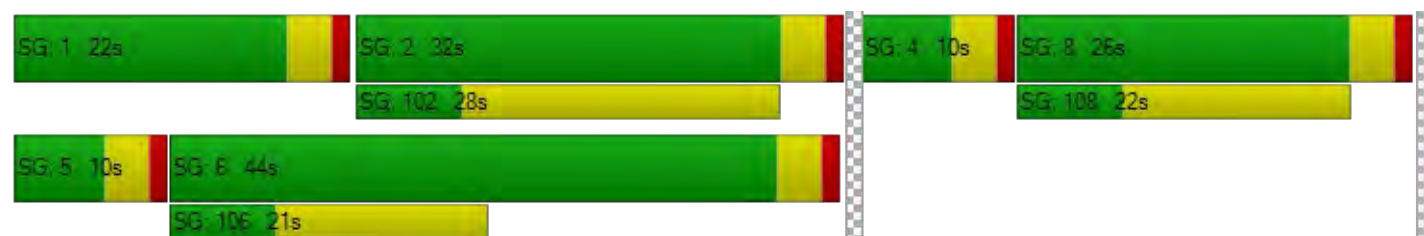
d_M, Delay for Movement [s/veh]	37.65	37.64	44.62	42.41	46.02	46.02	50.78	20.10	17.07	46.22	11.13	11.67
Movement LOS	D	D	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	40.60			44.68			19.79			14.81		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	20.15											
Intersection LOS	C											
Intersection V/C	0.750											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			0.00			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.364			1.989			0.000			3.109		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	489			133			622			889		
d_b, Bicycle Delay [s]	25.69			39.20			21.36			13.89		
I_b,int, Bicycle LOS Score for Intersection	2.187			1.711			2.739			2.512		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.703

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	160	226	79	302	596	103	125	1178	223	66	979	82
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	226	79	302	596	103	125	1178	223	66	979	82
Peak Hour Factor	0.8020	0.8020	0.8020	0.9340	0.9340	0.9340	0.8920	0.8920	0.8920	0.9780	0.9780	0.9780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	70	25	81	160	28	35	330	63	17	250	21
Total Analysis Volume [veh/h]	200	282	99	323	638	110	140	1321	250	67	1001	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	30	0	16	35	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	17	17	11	21	21	6	46	46	5	45	45
g / C, Green / Cycle	0.07	0.18	0.18	0.12	0.22	0.22	0.06	0.48	0.48	0.05	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.06	0.11	0.11	0.10	0.19	0.07	0.04	0.31	0.31	0.02	0.21	0.21
s, saturation flow rate [veh/h]	3277	1772	1617	3277	3373	1506	3277	3373	1631	3277	3373	1702
c, Capacity [veh/h]	244	311	284	391	744	332	205	1630	788	175	1599	807
d1, Uniform Delay [s]	43.40	36.40	36.46	40.93	35.65	31.18	43.68	18.51	18.53	43.51	16.73	16.74
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.67	2.15	2.45	4.44	3.00	0.58	3.97	2.02	4.14	1.36	0.92	1.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.64	0.64	0.83	0.86	0.33	0.68	0.65	0.65	0.38	0.45	0.45
d, Delay for Lane Group [s/veh]	50.08	38.55	38.91	45.37	38.65	31.76	47.64	20.53	22.68	44.88	17.65	18.56
Lane Group LOS	D	D	D	D	D	C	D	C	C	D	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.52	4.39	4.10	3.89	7.28	2.15	1.71	8.73	8.94	0.79	5.23	5.50
50th-Percentile Queue Length [ft/ln]	63.09	109.84	102.41	97.34	181.93	53.87	42.84	218.27	223.45	19.75	130.83	137.39
95th-Percentile Queue Length [veh/ln]	4.54	7.83	7.37	7.01	11.70	3.88	3.08	13.58	13.84	1.42	8.99	9.34
95th-Percentile Queue Length [ft/ln]	113.56	195.78	184.34	175.22	292.54	96.97	77.11	339.42	346.03	35.55	224.63	233.51

Movement, Approach, & Intersection Results

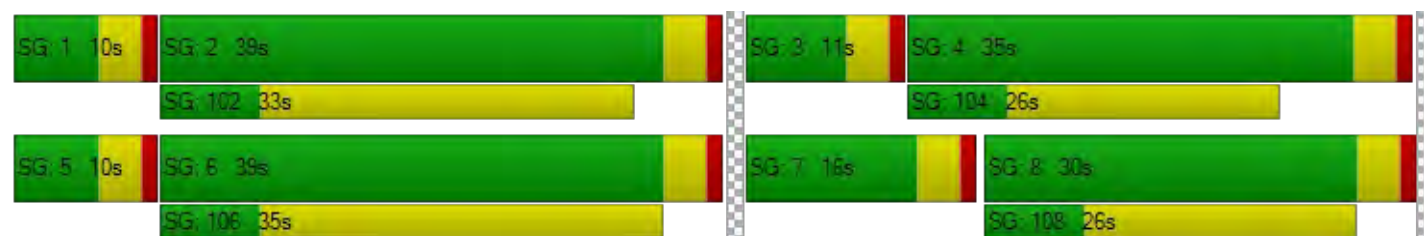
d_M, Delay for Movement [s/veh]	50.08	38.66	38.91	45.37	38.65	31.76	47.64	20.96	22.68	44.88	17.90	18.56
Movement LOS	D	D	D	D	D	C	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	42.63			39.97			23.39			19.52		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	28.81											
Intersection LOS	C											
Intersection V/C	0.703											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.705			2.816			3.096			3.081		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	547			653			737			737		
d_b, Bicycle Delay [s]	25.06			21.56			18.95			18.95		
I_b,int, Bicycle LOS Score for Intersection	2.039			2.443			2.501			2.193		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.845

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	138	536	238	225	904	385	243	1064	144	287	1076	134
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	536	238	225	904	385	243	1064	144	287	1076	134
Peak Hour Factor	0.8190	0.8190	0.8190	0.9240	0.9240	0.9240	0.8870	0.8870	0.8870	0.9290	0.9290	0.9290
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	164	73	61	245	104	68	300	41	77	290	36
Total Analysis Volume [veh/h]	168	654	291	244	978	417	274	1200	162	309	1158	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	47	47	13	45	45	16	46	0	14	44	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	40	54	9	38	54	12	45	45	10	43	43
g / C, Green / Cycle	0.09	0.33	0.45	0.08	0.32	0.45	0.10	0.38	0.38	0.08	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.10	0.19	0.19	0.07	0.29	0.28	0.08	0.25	0.11	0.09	0.26	0.26
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1673
c, Capacity [veh/h]	155	1120	676	247	1063	676	329	1814	566	274	1212	601
d1, Uniform Delay [s]	54.50	33.23	22.60	55.44	39.63	25.21	53.02	31.12	26.20	55.00	33.21	33.22
k, delay calibration	0.11	0.11	0.28	0.11	0.11	0.32	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	58.26	0.49	1.14	24.05	3.79	2.73	5.54	1.92	1.27	68.00	3.68	7.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.58	0.43	0.99	0.92	0.62	0.83	0.66	0.29	1.13	0.72	0.72
d, Delay for Lane Group [s/veh]	112.76	33.72	23.74	79.50	43.41	27.94	58.56	33.04	27.47	122.99	36.89	40.45
Lane Group LOS	F	C	C	E	D	C	E	C	C	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.19	7.93	5.80	4.51	14.28	9.44	4.31	9.87	3.45	6.73	11.46	11.97
50th-Percentile Queue Length [ft/ln]	179.77	198.37	144.94	112.71	357.11	235.99	107.66	246.67	86.36	168.14	286.40	299.18
95th-Percentile Queue Length [veh/ln]	11.93	12.55	9.75	7.99	20.48	14.48	7.71	15.02	6.22	11.43	17.01	17.64
95th-Percentile Queue Length [ft/ln]	298.16	313.87	243.67	199.76	512.07	361.96	192.75	375.45	155.44	285.74	425.18	441.02

Movement, Approach, & Intersection Results

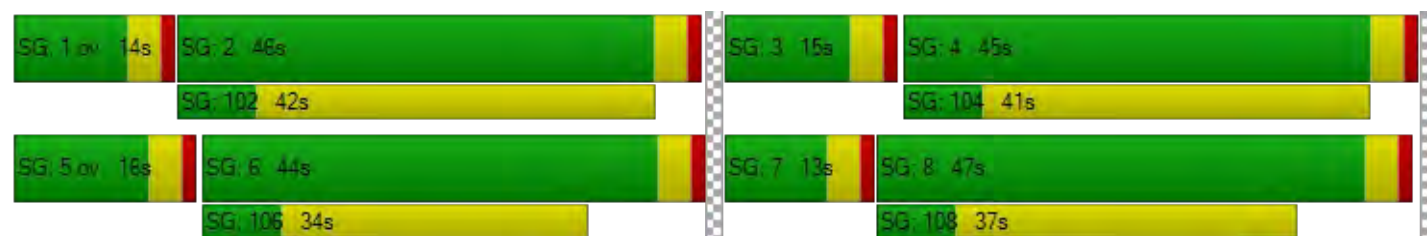
d_M, Delay for Movement [s/veh]	112.76	33.72	23.74	79.50	43.41	27.94	58.56	33.04	27.47	122.99	37.78	40.45
Movement LOS	F	C	C	E	D	C	E	C	C	F	D	D
d_A, Approach Delay [s/veh]	43.04			44.85			36.76			54.36		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.86											
Intersection LOS	D											
Intersection V/C	0.845											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.883			2.985			3.229			3.147		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	717			683			700			667		
d_b, Bicycle Delay [s]	24.70			26.00			25.35			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.478			2.912			2.459			2.446		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	33.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	257	251	14	150	876	209	244	824	507	23	955	109
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	257	251	14	150	876	209	244	824	507	23	955	109
Peak Hour Factor	0.9290	0.9290	0.9290	0.9170	0.9170	0.9170	0.9110	0.9110	0.9110	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	68	4	41	239	57	67	226	139	6	256	29
Total Analysis Volume [veh/h]	277	270	15	164	955	228	268	905	557	25	1025	117
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	48	0	13	45	45	16	49	49	10	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	32	8	28	44	12	60	76	3	52	52
g / C, Green / Cycle	0.10	0.27	0.07	0.24	0.37	0.10	0.50	0.64	0.03	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.05	0.20	0.15	0.08	0.27	0.37	0.01	0.23	0.23
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1680
c, Capacity [veh/h]	329	910	218	1138	557	329	1691	956	96	1450	722
d1, Uniform Delay [s]	53.05	34.80	55.06	43.71	28.11	52.89	20.41	12.69	57.01	25.20	25.22
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.78	0.18	5.15	1.74	0.48	4.87	1.22	2.59	1.43	1.37	2.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.30	0.75	0.84	0.41	0.81	0.54	0.58	0.26	0.53	0.53
d, Delay for Lane Group [s/veh]	58.83	34.98	60.21	45.45	28.59	57.76	21.63	15.28	58.45	26.57	27.96
Lane Group LOS	E	C	E	D	C	E	C	B	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.37	3.17	2.59	9.15	4.95	4.18	8.77	8.88	0.39	8.20	8.46
50th-Percentile Queue Length [ft/ln]	109.16	79.32	64.86	228.80	123.74	104.50	219.30	222.00	9.77	204.97	211.62
95th-Percentile Queue Length [veh/ln]	7.79	5.71	4.67	14.11	8.60	7.52	13.63	13.77	0.70	12.89	13.24
95th-Percentile Queue Length [ft/ln]	194.83	142.77	116.75	352.84	214.96	188.09	340.73	344.18	17.58	322.37	330.91

Movement, Approach, & Intersection Results

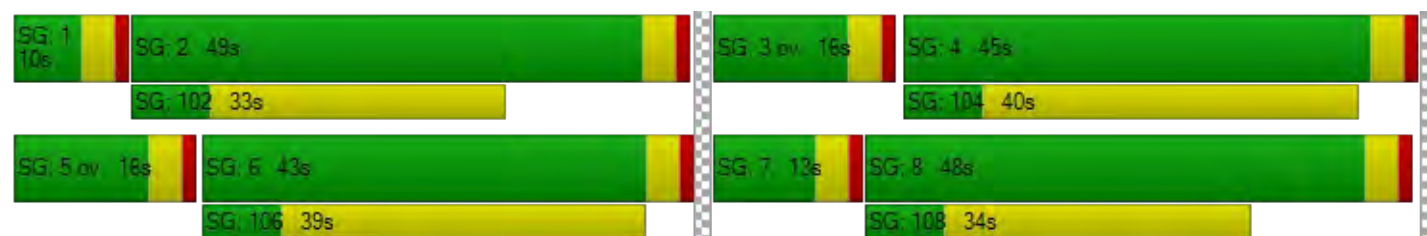
d_M, Delay for Movement [s/veh]	58.83	34.98	0.00	60.21	45.45	28.59	57.76	21.63	15.28	58.45	26.93	27.96
Movement LOS	E	C		E	D	C	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	47.06			44.39			25.18			27.70		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.70											
Intersection LOS	C											
Intersection V/C	0.712											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.993			2.983			3.137			2.919		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	733			683			750			650		
d_b, Bicycle Delay [s]	24.07			26.00			23.44			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.011			2.300			2.987			2.201		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	27.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	112	364	129	85	155	123	80	1057	71	76	1400	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	112	364	129	85	155	123	80	1057	71	76	1400	128
Peak Hour Factor	0.8320	0.8320	0.8320	0.8070	0.8070	0.8070	0.8830	0.8830	0.8830	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	109	39	26	48	38	23	299	20	20	368	34
Total Analysis Volume [veh/h]	135	438	155	105	192	152	91	1197	80	80	1471	134
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	34	0	11	32	0	10	35	0	10	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	19	19	7	17	17	6	43	43	5	42	42
g / C, Green / Cycle	0.10	0.21	0.21	0.08	0.19	0.19	0.07	0.48	0.48	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.17	0.18	0.06	0.10	0.11	0.05	0.25	0.25	0.05	0.32	0.32
s, saturation flow rate [veh/h]	1687	1772	1616	1687	1772	1521	1687	3373	1715	1687	3373	1697
c, Capacity [veh/h]	166	366	333	132	330	283	114	1608	818	103	1586	798
d1, Uniform Delay [s]	39.83	34.41	34.45	40.83	33.26	33.42	41.44	16.49	16.49	41.73	18.52	18.53
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.13	5.42	6.09	10.13	1.43	1.83	11.92	1.24	2.42	11.73	2.30	4.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.85	0.85	0.79	0.55	0.57	0.80	0.53	0.53	0.78	0.67	0.67
d, Delay for Lane Group [s/veh]	48.96	39.82	40.54	50.96	34.68	35.25	53.36	17.73	18.91	53.45	20.82	23.05
Lane Group LOS	D	D	D	D	C	D	D	B	B	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.31	6.92	6.41	2.63	3.67	3.32	2.35	6.03	6.40	2.07	8.59	9.14
50th-Percentile Queue Length [ft/ln]	82.77	172.90	160.24	65.83	91.69	83.12	58.64	150.68	160.00	51.70	214.63	228.55
95th-Percentile Queue Length [veh/ln]	5.96	11.23	10.56	4.74	6.60	5.98	4.22	10.05	10.55	3.72	13.39	14.10
95th-Percentile Queue Length [ft/ln]	148.99	280.72	264.04	118.49	165.03	149.61	105.56	251.34	263.72	93.07	334.76	352.52

Movement, Approach, & Intersection Results

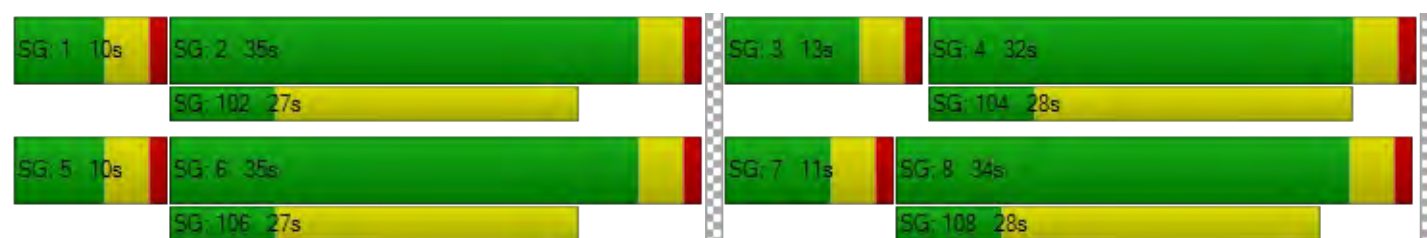
d_M, Delay for Movement [s/veh]	48.96	40.03	40.54	50.96	34.71	35.25	53.36	18.08	18.91	53.45	21.44	23.05
Movement LOS	D	D	D	D	C	D	D	B	B	D	C	C
d_A, Approach Delay [s/veh]	41.80			38.69			20.47			23.08		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	27.12											
Intersection LOS	C											
Intersection V/C	0.740											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.510			2.516			3.029			3.031		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			622			689			689		
d_b, Bicycle Delay [s]	20.00			21.36			19.34			19.34		
I_b,int, Bicycle LOS Score for Intersection	2.160			1.930			2.312			2.486		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.758

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	400	653	171	66	305	91	150	1117	357	204	1173	74
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	400	653	171	66	305	91	150	1117	357	204	1173	74
Peak Hour Factor	0.9000	0.9000	0.9000	0.9430	0.9430	0.9430	0.9070	0.9070	0.9070	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	111	181	48	17	81	24	41	308	98	58	336	21
Total Analysis Volume [veh/h]	444	726	190	70	323	97	165	1232	394	234	1345	85
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	45	0	10	33	0	17	42	0	23	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	29	29	6	17	17	13	50	50	18	56	56
g / C, Green / Cycle	0.15	0.24	0.24	0.05	0.14	0.14	0.11	0.42	0.42	0.15	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.14	0.22	0.13	0.04	0.10	0.06	0.10	0.26	0.26	0.14	0.28	0.28
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1718
c, Capacity [veh/h]	492	819	366	86	484	216	184	2024	632	259	1566	798
d1, Uniform Delay [s]	50.14	43.85	39.38	56.43	48.72	47.09	52.84	27.17	27.40	49.92	23.96	23.96
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.34	3.46	1.14	16.87	1.60	1.46	14.29	1.37	4.60	12.42	1.74	3.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.89	0.52	0.82	0.67	0.45	0.90	0.61	0.62	0.90	0.60	0.61
d, Delay for Lane Group [s/veh]	56.47	47.31	40.52	73.30	50.32	48.55	67.14	28.54	32.01	62.35	25.70	27.36
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.97	10.74	4.98	2.50	4.70	2.75	5.64	9.33	9.59	7.78	10.23	10.79
50th-Percentile Queue Length [ft/ln]	174.24	268.44	124.46	62.57	117.38	68.77	140.93	233.26	239.67	194.48	255.71	269.86
95th-Percentile Queue Length [veh/ln]	11.30	16.11	8.64	4.51	8.25	4.95	9.53	14.34	14.66	12.35	15.47	16.18
95th-Percentile Queue Length [ft/ln]	282.48	402.79	215.94	112.63	206.23	123.79	238.28	358.49	366.62	308.84	386.83	404.57

Movement, Approach, & Intersection Results

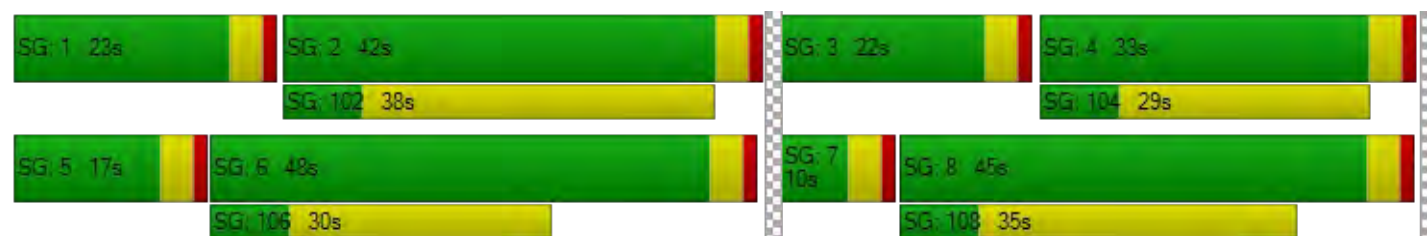
d_M, Delay for Movement [s/veh]	56.47	47.31	40.52	73.30	50.32	48.55	67.14	28.54	32.01	62.35	26.19	27.36
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	49.35			53.25			32.86			31.33		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	38.49											
Intersection LOS	D											
Intersection V/C	0.758											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.930			2.705			3.187			3.047		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			483			633			733		
d_b, Bicycle Delay [s]	26.00			34.50			28.02			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.682			1.964			2.545			2.475		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	38.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.810

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	288	552	248	519	360	14	36	1086	233	315	960	653
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	288	552	248	519	360	14	36	1086	233	315	960	653
Peak Hour Factor	0.9470	0.9470	0.9470	0.9220	0.9220	0.9220	0.8360	0.8360	0.8360	0.9740	0.9740	0.9740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	146	65	141	98	4	11	325	70	81	246	168
Total Analysis Volume [veh/h]	304	583	262	563	390	15	43	1299	279	323	986	670
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	19	35	0	28	44	0	10	39	0	18	47	47
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	23	23	23	24	34	34	5	43	43	14	52	80
g / C, Green / Cycle	0.11	0.19	0.19	0.19	0.20	0.28	0.28	0.04	0.36	0.36	0.11	0.43	0.67
(v / s)_i Volume / Saturation Flow Rate	0.09	0.17	0.17	0.17	0.17	0.12	0.12	0.01	0.25	0.25	0.10	0.20	0.44
s, saturation flow rate [veh/h]	3277	1772	1762	1506	3277	1772	1749	3277	4826	1572	3277	4826	1506
c, Capacity [veh/h]	360	344	342	292	656	503	497	128	1729	563	375	2093	1005
d1, Uniform Delay [s]	52.43	46.85	46.85	46.89	46.38	34.76	34.76	56.18	32.80	32.84	52.23	24.19	11.98
k, delay calibration	0.11	0.19	0.19	0.20	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.44	10.91	10.97	13.02	3.42	0.52	0.53	1.54	2.26	6.78	5.91	0.76	3.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.86	0.86	0.87	0.86	0.40	0.40	0.34	0.69	0.69	0.86	0.47	0.67
d, Delay for Lane Group [s/veh]	57.87	57.76	57.82	59.91	49.80	35.29	35.29	57.73	35.06	39.62	58.14	24.95	15.49
Lane Group LOS	E	E	E	E	D	D	D	E	D	D	E	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.76	9.59	9.55	8.36	8.40	4.91	4.84	0.66	10.09	10.61	5.08	6.75	10.87
50th-Percentile Queue Length [ft/ln]	119.0	239.7	238.6	209.1	209.93	122.64	121.08	16.57	252.32	265.33	127.06	168.68	271.76
95th-Percentile Queue Length [veh/ln]	8.34	14.67	14.61	13.11	13.15	8.54	8.45	1.19	15.30	15.96	8.78	11.01	16.28
95th-Percentile Queue Length [ft/ln]	208.5	366.6	365.3	327.6	328.74	213.46	211.30	29.83	382.57	398.91	219.50	275.18	406.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.87	57.79	59.91	49.80	35.29	35.29	57.73	35.44	39.62	58.14	24.95	15.49
Movement LOS	E	E	E	D	D	D	E	D	D	E	C	B
d_A, Approach Delay [s/veh]	58.28			43.73			36.75			27.16		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	38.94											
Intersection LOS	D											
Intersection V/C	0.810											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.906			2.835			3.180			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			667			583			717		
d_b, Bicycle Delay [s]	33.00			26.67			30.10			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.508			2.358			2.228			2.648		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	21.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.761

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	422	0	672	0	1069	710	215	1538	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	422	0	672	0	1069	710	215	1538	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9480	1.0000	0.9480	1.0000	0.8820	0.8820	0.9530	0.9530	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	111	0	177	0	303	201	56	403	0
Total Analysis Volume [veh/h]	0	0	0	445	0	709	0	1212	805	226	1614	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	55	0	0	0	23	0	12	35	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		27	27	27	43	43	43	8	55
g / C, Green / Cycle		0.30	0.30	0.30	0.48	0.48	0.48	0.09	0.61
(v / s)_i Volume / Saturation Flow Rate		0.23	0.25	0.26	0.30	0.33	0.33	0.07	0.33
s, saturation flow rate [veh/h]		1687	1532	1506	3373	1506	1506	3277	4826
c, Capacity [veh/h]		507	460	453	1607	717	717	294	2946
d1, Uniform Delay [s]		28.53	29.41	29.58	17.61	18.56	18.56	40.07	10.26
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.36	4.06	4.55	1.87	5.70	5.70	4.22	0.74
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.76	0.84	0.85	0.63	0.70	0.70	0.77	0.55
d, Delay for Lane Group [s/veh]		30.88	33.47	34.13	19.48	24.26	24.26	44.29	11.00
Lane Group LOS		C	C	C	B	C	C	D	B
Critical Lane Group		No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		7.61	8.02	8.12	7.75	8.87	8.87	2.59	5.74
50th-Percentile Queue Length [ft/ln]		190.27	200.59	202.99	193.78	221.63	221.63	64.66	143.50
95th-Percentile Queue Length [veh/ln]		12.14	12.67	12.79	12.32	13.75	13.75	4.66	9.67
95th-Percentile Queue Length [ft/ln]		303.38	316.73	319.82	307.93	343.70	343.70	116.39	241.73

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.23	0.00	33.83	0.00	19.48	24.26	44.29	11.00	0.00
Movement LOS				C		C		B	C	D	B	
d_A, Approach Delay [s/veh]	0.00			32.83			21.87			15.09		
Approach LOS	A			C			C			B		
d_I, Intersection Delay [s/veh]	21.90											
Intersection LOS	C											
Intersection V/C	0.761											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.217			2.315			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			422			689		
d_b, Bicycle Delay [s]	45.00			45.00			28.01			19.34		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.037			2.669			2.572		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	606	0	248	0	0	0	343	1342	0	0	980	487
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	606	0	248	0	0	0	343	1342	0	0	980	487
Peak Hour Factor	0.8400	1.0000	0.8400	1.0000	1.0000	1.0000	0.8440	0.8440	1.0000	1.0000	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	180	0	74	0	0	0	102	398	0	0	257	128
Total Analysis Volume [veh/h]	721	0	295	0	0	0	406	1590	0	0	1028	511
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	47	0	0	0	0	0	22	43	0	0	21	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24		13	58	41	41	41
g / C, Green / Cycle	0.27	0.27		0.15	0.65	0.45	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.22	0.20		0.12	0.33	0.23	0.26	0.26
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1507	1506
c, Capacity [veh/h]	869	399		491	3117	1523	681	680
d1, Uniform Delay [s]	31.16	30.22		37.15	8.42	17.54	18.18	18.18
k, delay calibration	0.11	0.11		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	2.69		3.63	0.60	1.20	3.38	3.39
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.74		0.83	0.51	0.51	0.57	0.57
d, Delay for Lane Group [s/veh]	33.28	32.91		40.78	9.02	18.74	21.56	21.57
Lane Group LOS	C	C		D	A	B	C	C
Critical Lane Group	Yes	No		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.42	5.98		4.51	4.89	5.65	6.23	6.23
50th-Percentile Queue Length [ft/ln]	185.41	149.55		112.67	122.27	141.16	155.73	155.78
95th-Percentile Queue Length [veh/ln]	11.88	9.99		7.99	8.52	9.54	10.32	10.32
95th-Percentile Queue Length [ft/ln]	297.06	249.82		199.71	212.94	238.58	258.06	258.12

Movement, Approach, & Intersection Results

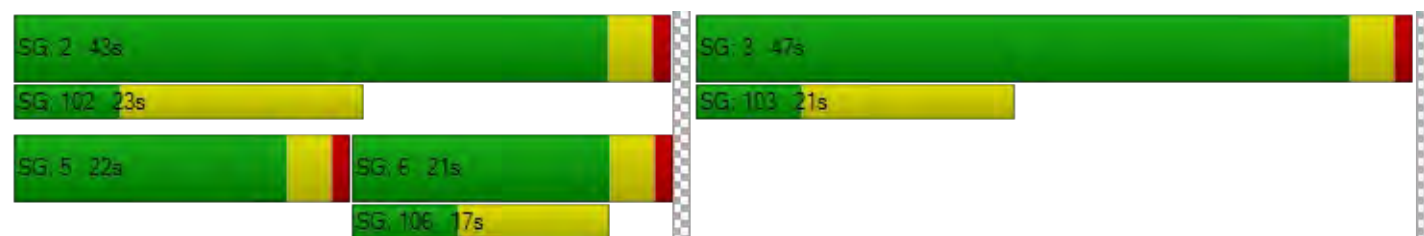
d_M, Delay for Movement [s/veh]	33.28	0.00	32.91	0.00	0.00	0.00	40.78	9.02	0.00	0.00	18.74	21.57
Movement LOS	C		C				D	A			B	C
d_A, Approach Delay [s/veh]	33.17			0.00			15.48			20.15		
Approach LOS	C			A			B			C		
d_I, Intersection Delay [s/veh]	21.01											
Intersection LOS	C											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.270	2.161	0.000	3.070
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	867	378
d_b, Bicycle Delay [s]	45.00	45.00	14.45	29.61
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.657	2.406
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.633

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	465	274	208	4	92	106	169	772	438	81	306	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	465	274	208	4	92	106	169	772	438	81	306	25
Peak Hour Factor	0.9310	0.9310	0.9310	0.9020	0.9020	0.9020	0.7940	0.7940	0.7940	0.8150	0.8150	0.8150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	125	74	56	1	25	29	53	243	138	25	94	8
Total Analysis Volume [veh/h]	499	294	223	4	102	118	213	972	552	99	375	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	57	57	10	42	0	21	43	43	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	31	41	1	12	12	17	66	90	6	55	55
g / C, Green / Cycle	0.17	0.26	0.34	0.01	0.10	0.10	0.14	0.55	0.75	0.05	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.15	0.17	0.15	0.00	0.06	0.08	0.13	0.29	0.21	0.03	0.08	0.08
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1704
c, Capacity [veh/h]	558	463	520	12	174	148	238	1847	2002	166	1542	779
d1, Uniform Delay [s]	48.76	39.30	30.22	59.31	51.82	52.99	50.68	17.25	4.69	55.78	19.21	19.24
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.32	1.45	0.79	14.92	3.13	9.48	11.19	1.08	0.34	3.38	0.25	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.64	0.43	0.33	0.59	0.80	0.89	0.53	0.28	0.60	0.17	0.18
d, Delay for Lane Group [s/veh]	54.08	40.75	31.01	74.23	54.95	62.47	61.87	18.33	5.03	59.15	19.45	19.73
Lane Group LOS	D	D	C	E	D	E	E	B	A	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.71	7.85	5.08	0.17	3.09	3.87	7.02	8.59	1.97	1.55	2.27	2.38
50th-Percentile Queue Length [ft/ln]	192.70	196.34	126.91	4.29	77.36	96.77	175.49	214.66	49.29	38.67	56.66	59.60
95th-Percentile Queue Length [veh/ln]	12.26	12.45	8.77	0.31	5.57	6.97	11.36	13.39	3.55	2.78	4.08	4.29
95th-Percentile Queue Length [ft/ln]	306.53	311.24	219.29	7.72	139.26	174.19	284.11	334.81	88.72	69.61	101.98	107.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.08	40.75	31.01	74.23	54.95	62.47	61.87	18.33	5.03	59.15	19.53	19.73
Movement LOS	D	D	C	E	D	E	E	B	A	E	B	B
d_A, Approach Delay [s/veh]	45.16			59.26			19.44			27.31		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	30.65											
Intersection LOS	C											
Intersection V/C	0.633											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.754			2.331			3.072			2.845		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	883			633			650			467		
d_b, Bicycle Delay [s]	18.70			28.02			27.34			35.27		
I_b,int, Bicycle LOS Score for Intersection	3.236			1.929			2.993			1.837		
Bicycle LOS	C			A			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.497

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	61	743	281	381	611	53	63	86	30	325	141	542
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	61	743	281	381	611	53	63	86	30	325	141	542
Peak Hour Factor	0.9480	0.9480	0.9480	0.9200	0.9200	0.9200	0.9080	0.9080	0.9080	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	196	74	104	166	14	17	24	8	87	38	145
Total Analysis Volume [veh/h]	64	784	296	414	664	58	69	95	33	348	151	581
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	28	0	30	28	0	10	37	0	20	47	47
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	46	46	26	66	66	6	13	14	21	51
g / C, Green / Cycle	0.05	0.40	0.40	0.22	0.58	0.58	0.05	0.11	0.12	0.18	0.44
(v / s)_i Volume / Saturation Flow Rate	0.04	0.22	0.22	0.13	0.14	0.14	0.04	0.08	0.11	0.09	0.39
s, saturation flow rate [veh/h]	1687	3373	1535	3277	3373	1700	1687	1694	3277	1772	1506
c, Capacity [veh/h]	83	1353	616	730	1938	977	88	191	407	327	666
d1, Uniform Delay [s]	54.05	26.45	26.49	39.77	12.14	12.14	53.89	48.98	49.39	41.81	29.13
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.49
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.73	1.60	3.53	0.69	0.31	0.61	13.88	4.01	5.25	1.01	14.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.55	0.55	0.57	0.25	0.25	0.78	0.67	0.86	0.46	0.87
d, Delay for Lane Group [s/veh]	67.78	28.04	30.02	40.47	12.44	12.75	67.77	52.99	54.64	42.82	43.62
Lane Group LOS	E	C	C	D	B	B	E	D	D	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.15	8.01	7.67	5.27	3.07	3.18	2.31	3.74	5.19	3.92	16.81
50th-Percentile Queue Length [ft/ln]	53.68	200.16	191.86	131.81	76.76	79.58	57.81	93.48	129.64	97.91	420.35
95th-Percentile Queue Length [veh/ln]	3.87	12.65	12.22	9.04	5.53	5.73	4.16	6.73	8.92	7.05	23.54
95th-Percentile Queue Length [ft/ln]	96.63	316.17	305.44	225.96	138.16	143.24	104.06	168.26	223.01	176.24	588.47

Movement, Approach, & Intersection Results

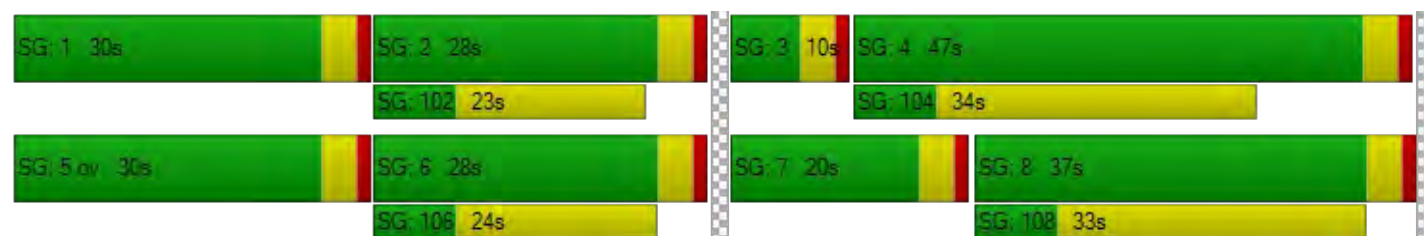
d_M, Delay for Movement [s/veh]	67.78	28.15	30.02	40.47	12.53	12.75	67.77	52.99	52.99	54.64	42.82	43.62
Movement LOS	E	C	C	D	B	B	E	D	D	D	D	D
d_A, Approach Delay [s/veh]	30.85			22.72			58.17			47.06		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	34.69											
Intersection LOS	C											
Intersection V/C	0.497											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.911			3.050			2.105			2.771		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417			417			574			748		
d_b, Bicycle Delay [s]	36.00			36.00			29.23			22.54		
I_b,int, Bicycle LOS Score for Intersection	2.189			2.184			1.885			3.342		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	132	54	155	48	47	101	73	579	106	175	985	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	54	155	48	47	101	73	579	106	175	985	36
Peak Hour Factor	0.8740	0.8740	0.8740	0.7860	0.7860	0.7860	0.9250	0.9250	0.9250	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	15	44	15	15	32	20	156	29	46	258	9
Total Analysis Volume [veh/h]	151	62	177	61	60	128	79	626	115	183	1032	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25	25	25	5	42	42	12	48	48
g / C, Green / Cycle	0.27	0.27	0.27	0.27	0.27	0.06	0.47	0.47	0.13	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.13	0.03	0.12	0.05	0.12	0.05	0.21	0.22	0.11	0.31	0.03
s, saturation flow rate [veh/h]	1195	1772	1506	1340	1582	1687	1772	1677	1687	3373	1506
c, Capacity [veh/h]	265	484	411	383	432	101	823	779	218	1801	804
d1, Uniform Delay [s]	36.79	24.65	26.95	28.23	27.00	41.72	16.43	16.44	38.28	14.09	10.03
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.92	0.12	0.71	0.19	0.69	12.24	1.87	1.97	8.39	1.33	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.57	0.13	0.43	0.16	0.44	0.78	0.46	0.46	0.84	0.57	0.05
d, Delay for Lane Group [s/veh]	38.71	24.77	27.67	28.42	27.69	53.97	18.29	18.41	46.67	15.43	10.15
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.30	1.00	3.15	1.07	3.35	2.05	5.51	5.24	4.38	6.84	0.37
50th-Percentile Queue Length [ft/ln]	82.45	24.99	78.80	26.84	83.74	51.32	137.63	131.09	109.62	171.04	9.15
95th-Percentile Queue Length [veh/ln]	5.94	1.80	5.67	1.93	6.03	3.69	9.35	9.00	7.82	11.13	0.66
95th-Percentile Queue Length [ft/ln]	148.40	44.98	141.84	48.30	150.72	92.37	233.84	224.98	195.47	278.28	16.47

Movement, Approach, & Intersection Results

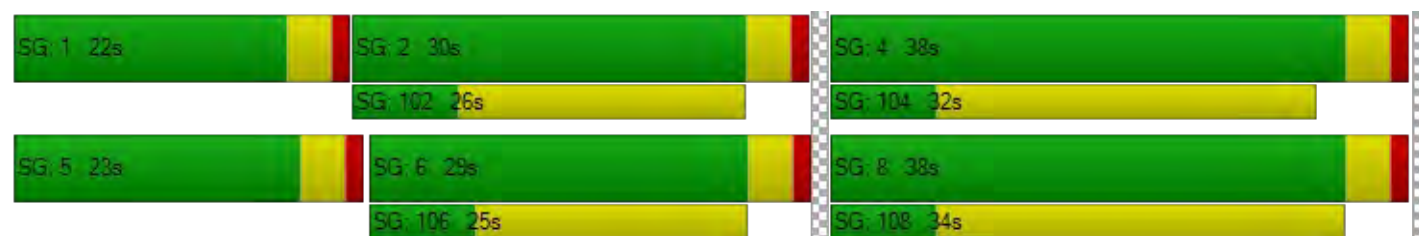
d_M, Delay for Movement [s/veh]	38.71	24.77	27.67	28.42	27.69	27.69	53.97	18.34	18.41	46.67	15.43	10.15
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	31.48			27.87			21.78			19.83		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	22.83											
Intersection LOS	C											
Intersection V/C	0.553											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.313			2.079			2.930			2.883		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.203			1.970			2.236			2.593		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	32.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.808

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	132	346	152	295	329	245	185	707	147	140	905	573
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	132	346	152	295	329	245	185	707	147	140	905	573
Peak Hour Factor	0.9210	0.9210	0.9210	0.9620	0.9620	0.9620	0.9110	0.9110	0.9110	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	94	41	77	85	64	51	194	40	37	237	150
Total Analysis Volume [veh/h]	143	376	165	307	342	255	203	776	161	147	948	600
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	17	46	0	12	39	0	10	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	16	16	12	22	22	8	55	55	6	53	53
g / C, Green / Cycle	0.06	0.15	0.15	0.11	0.21	0.21	0.08	0.52	0.52	0.06	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.04	0.11	0.11	0.09	0.18	0.18	0.06	0.23	0.11	0.04	0.28	0.40
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1523	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	190	520	232	370	370	318	252	1763	787	190	1700	759
d1, Uniform Delay [s]	48.77	42.33	42.24	45.64	40.16	40.16	47.74	15.54	13.40	48.83	18.00	21.51
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.92	1.93	4.00	4.82	6.18	7.12	5.98	0.80	0.59	6.58	1.33	8.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.72	0.71	0.83	0.87	0.87	0.81	0.44	0.20	0.77	0.56	0.79
d, Delay for Lane Group [s/veh]	54.69	44.26	46.24	50.46	46.34	47.28	53.72	16.34	13.99	55.42	19.32	29.75
Lane Group LOS	D	D	D	D	D	D	D	B	B	E	B	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.00	4.75	4.30	4.15	8.55	7.44	2.81	5.74	2.11	2.07	7.94	13.27
50th-Percentile Queue Length [ft/ln]	49.92	118.86	107.50	103.64	213.87	186.12	70.33	143.61	52.83	51.71	198.45	331.83
95th-Percentile Queue Length [veh/ln]	3.59	8.33	7.70	7.46	13.35	11.92	5.06	9.68	3.80	3.72	12.56	19.25
95th-Percentile Queue Length [ft/ln]	89.86	208.26	192.52	186.56	333.78	297.99	126.60	241.88	95.10	93.07	313.97	481.20

Movement, Approach, & Intersection Results

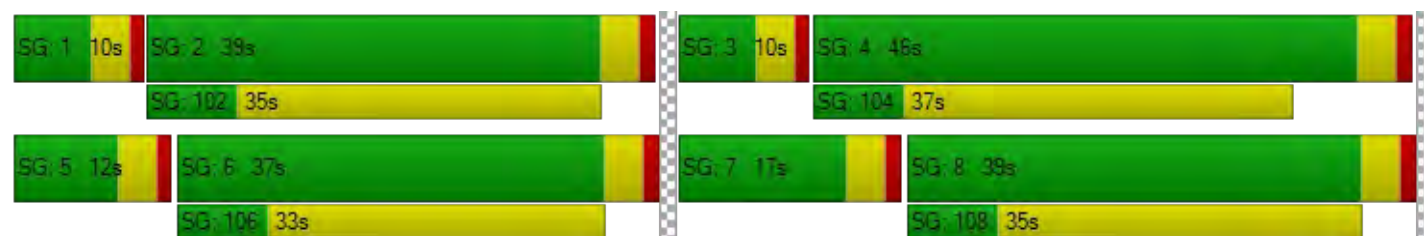
d_M, Delay for Movement [s/veh]	54.69	44.26	46.24	50.46	46.39	47.28	53.72	16.34	13.99	55.42	19.32	29.75
Movement LOS	D	D	D	D	D	D	D	B	B	E	B	C
d_A, Approach Delay [s/veh]	46.92			48.02			22.67			26.15		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.93											
Intersection LOS	C											
Intersection V/C	0.808											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.787			2.799			2.947			3.011		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			800			667			629		
d_b, Bicycle Delay [s]	23.33			18.90			23.33			24.69		
I_b,int, Bicycle LOS Score for Intersection	2.124			2.305			2.500			2.958		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.711

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	438	30	326	10	18	6	12	818	273	270	1163	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	438	30	326	10	18	6	12	818	273	270	1163	16
Peak Hour Factor	0.9370	0.9370	0.9370	0.8500	0.8500	0.8500	0.9910	0.9910	0.9910	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	117	8	87	3	5	2	3	206	69	72	309	4
Total Analysis Volume [veh/h]	467	32	348	12	21	7	12	825	275	287	1235	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	29	66	66	0	37	0	10	38	0	16	44	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	28	45	5	5	2	68	68	12	78	78
g / C, Green / Cycle	0.16	0.24	0.37	0.04	0.04	0.02	0.56	0.56	0.10	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.14	0.02	0.23	0.01	0.02	0.01	0.32	0.32	0.09	0.35	0.35
s, saturation flow rate [veh/h]	3277	1772	1506	1377	1697	1687	1772	1622	3277	1772	1763
c, Capacity [veh/h]	533	420	558	73	69	28	997	913	328	1145	1140
d1, Uniform Delay [s]	49.05	35.59	30.95	59.37	56.13	58.44	16.94	16.96	53.26	11.60	11.62
k, delay calibration	0.11	0.11	0.40	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.74	0.08	4.14	1.04	3.76	10.01	2.41	2.64	7.36	1.88	1.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.08	0.62	0.16	0.40	0.43	0.58	0.58	0.88	0.55	0.55
d, Delay for Lane Group [s/veh]	53.79	35.66	35.08	60.41	59.89	68.45	19.36	19.60	60.62	13.49	13.51
Lane Group LOS	D	D	D	E	E	E	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.17	0.74	8.83	0.39	0.90	0.44	10.60	9.78	4.60	9.25	9.23
50th-Percentile Queue Length [ft/ln]	179.15	18.58	220.70	9.64	22.50	10.98	264.93	244.60	115.00	231.31	230.87
95th-Percentile Queue Length [veh/ln]	11.56	1.34	13.70	0.69	1.62	0.79	15.94	14.91	8.12	14.24	14.22
95th-Percentile Queue Length [ft/ln]	288.90	33.45	342.51	17.35	40.50	19.77	398.40	372.85	202.93	356.02	355.46

Movement, Approach, & Intersection Results

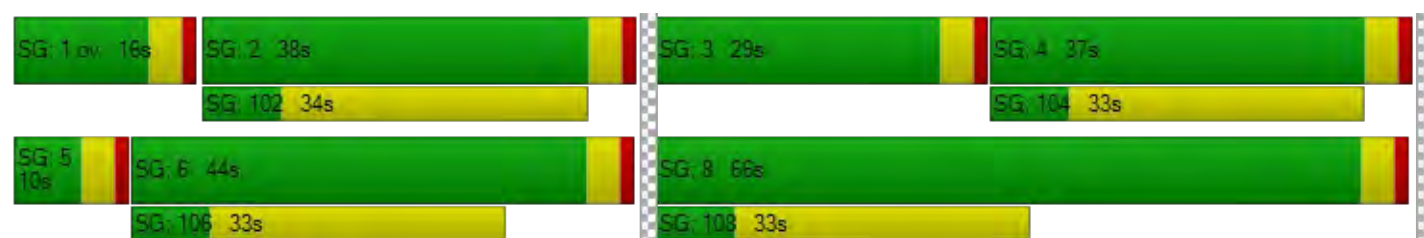
d_M, Delay for Movement [s/veh]	53.79	35.66	35.08	60.41	59.89	59.89	68.45	19.43	19.60	60.62	13.50	13.51
Movement LOS	D	D	D	E	E	E	E	B	B	E	B	B
d_A, Approach Delay [s/veh]	45.42			60.05			20.00			22.29		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	27.54											
Intersection LOS	C											
Intersection V/C	0.711											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.699			1.987			2.864			2.926		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1033			550			567			667		
d_b, Bicycle Delay [s]	14.02			31.54			30.82			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.957			1.626			2.477			2.829		
Bicycle LOS	C			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.866

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	94	3	270	260	853	11	5	1200	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	94	3	270	260	853	11	5	1200	124
Peak Hour Factor	0.7500	0.7500	0.7500	0.8100	0.8100	0.8100	0.9290	0.9290	0.9290	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	3	29	1	83	70	230	3	1	332	34
Total Analysis Volume [veh/h]	16	3	13	116	4	333	280	918	12	6	1327	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	39	61	0	10	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	20	20	54	22	74	74	1	53	53
g / C, Green / Cycle	0.03	0.03	0.03	0.18	0.18	0.47	0.19	0.64	0.64	0.01	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.04	0.04	0.22	0.17	0.26	0.26	0.00	0.39	0.09
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1693	1506	1687	1772	1764	1687	3373	1506
c, Capacity [veh/h]	92	61	52	296	297	709	323	1136	1130	17	1549	692
d1, Uniform Delay [s]	55.83	53.72	54.10	40.58	40.58	20.67	45.07	10.06	10.07	56.58	27.73	18.50
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.34	0.12	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.89	0.33	2.47	0.33	0.33	1.51	7.68	1.10	1.10	11.87	6.31	0.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.05	0.25	0.20	0.20	0.47	0.87	0.41	0.41	0.35	0.86	0.20
d, Delay for Lane Group [s/veh]	56.72	54.05	56.56	40.91	40.91	22.18	52.75	11.16	11.17	68.45	34.04	19.14
Lane Group LOS	E	D	E	D	D	C	D	B	B	E	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.48	0.09	0.40	1.48	1.49	6.30	8.40	5.77	5.74	0.23	17.09	2.29
50th-Percentile Queue Length [ft/ln]	12.07	2.24	10.07	37.11	37.22	157.40	209.88	144.13	143.57	5.74	427.24	57.27
95th-Percentile Queue Length [veh/ln]	0.87	0.16	0.72	2.67	2.68	10.41	13.15	9.70	9.67	0.41	23.87	4.12
95th-Percentile Queue Length [ft/ln]	21.73	4.03	18.12	66.79	67.00	260.28	328.68	242.58	241.82	10.33	596.74	103.09

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.72	54.05	56.56	40.91	40.91	22.18	52.75	11.17	11.17	68.45	34.04	19.14
Movement LOS	E	D	E	D	D	C	D	B	B	E	C	B
d_A, Approach Delay [s/veh]	56.41			27.14			20.79			32.79		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	27.63											
Intersection LOS	C											
Intersection V/C	0.866											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.156			2.356			2.897			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	104			522			991			487		
d_b, Bicycle Delay [s]	51.66			31.41			14.63			32.91		
I_b,int, Bicycle LOS Score for Intersection	1.612			2.307			2.558			2.772		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	48.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.768

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	552	683	115	200	346	103	205	666	273	72	635	197
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	552	683	115	200	346	103	205	666	273	72	635	197
Peak Hour Factor	0.9100	0.9100	0.9100	0.8350	0.8350	0.8350	0.8890	0.8890	0.8890	0.8090	0.8090	0.8090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	152	188	32	60	104	31	58	187	77	22	196	61
Total Analysis Volume [veh/h]	607	751	126	240	414	123	231	749	307	89	785	244
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	37	0	25	37	0	19	47	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	47	47	11	37	37	15	39	39	7	31	31
g / C, Green / Cycle	0.18	0.39	0.39	0.09	0.31	0.31	0.13	0.32	0.32	0.06	0.26	0.26
(v / s)_i Volume / Saturation Flow Rate	0.19	0.17	0.17	0.07	0.11	0.11	0.14	0.22	0.20	0.05	0.23	0.16
s, saturation flow rate [veh/h]	3277	3373	1644	3277	3373	1575	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	575	1321	644	306	1045	488	212	1086	485	101	863	385
d1, Uniform Delay [s]	49.53	26.93	26.93	53.27	32.07	32.17	52.50	35.50	34.69	56.05	43.35	39.69
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.12	0.11	0.15	0.11	0.11	0.13
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.58	1.09	2.23	4.43	0.92	2.03	56.92	0.79	1.85	20.80	4.12	2.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.45	0.45	0.78	0.35	0.36	1.09	0.69	0.63	0.88	0.91	0.63
d, Delay for Lane Group [s/veh]	84.11	28.02	29.16	57.70	32.99	34.20	109.43	36.29	36.54	76.85	47.47	41.78
Lane Group LOS	F	C	C	E	C	C	F	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.34	6.41	6.46	3.73	4.23	4.21	9.74	9.60	7.85	3.26	11.71	6.61
50th-Percentile Queue Length [ft/ln]	283.53	160.30	161.39	93.30	105.76	105.21	243.54	240.12	196.20	81.50	292.66	165.14
95th-Percentile Queue Length [veh/ln]	17.32	10.56	10.62	6.72	7.60	7.57	15.40	14.69	12.44	5.87	17.32	10.82
95th-Percentile Queue Length [ft/ln]	433.06	264.12	265.56	167.94	190.10	189.32	384.88	367.19	311.06	146.70	432.93	270.52

Movement, Approach, & Intersection Results

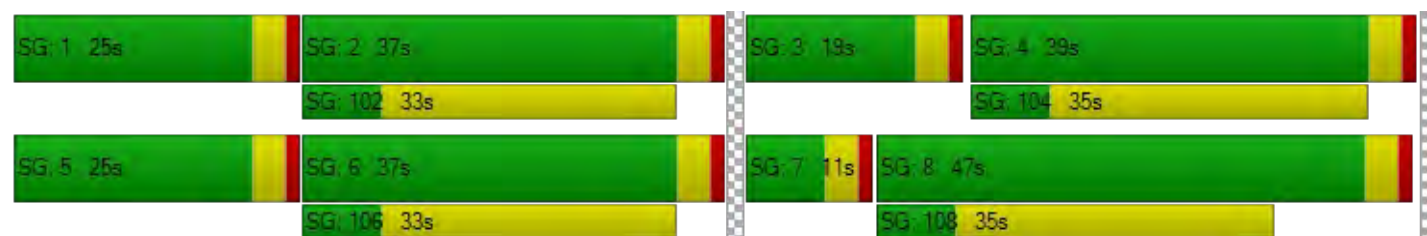
d_M, Delay for Movement [s/veh]	84.11	28.26	29.16	57.70	33.13	34.20	109.43	36.29	36.54	76.85	47.47	41.78
Movement LOS	F	C	C	E	C	C	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	51.18			40.89			49.48			48.57		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	48.37											
Intersection LOS	D											
Intersection V/C	0.768											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.019			2.983			2.922			2.830		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			550			717			583		
d_b, Bicycle Delay [s]	31.54			31.54			24.70			30.10		
I_b,int, Bicycle LOS Score for Intersection	2.376			1.987			2.621			2.482		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	18.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.206

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	44	304	39	26	252	26	57	4	48	69	4	35
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	304	39	26	252	26	57	4	48	69	4	35
Peak Hour Factor	0.9560	0.9560	0.9560	0.9590	0.9590	0.9590	0.6990	0.6990	0.6990	0.8710	0.8710	0.8710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	79	10	7	66	7	20	1	17	20	1	10
Total Analysis Volume [veh/h]	46	318	41	27	263	27	82	6	69	79	5	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	27	52	0	13	38	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	66	66	3	65	65	14	14	14	14
g / C, Green / Cycle	0.04	0.70	0.70	0.03	0.68	0.68	0.14	0.14	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.10	0.02	0.08	0.08	0.06	0.05	0.06	0.03
s, saturation flow rate [veh/h]	1687	1772	1702	1687	1772	1715	1361	1524	1324	1531
c, Capacity [veh/h]	75	1233	1185	55	1211	1173	205	221	177	222
d1, Uniform Delay [s]	44.57	4.89	4.90	45.19	5.18	5.18	41.41	36.51	43.09	35.76
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.74	0.25	0.27	6.70	0.20	0.21	1.26	0.90	1.76	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.61	0.15	0.15	0.49	0.12	0.12	0.40	0.34	0.45	0.20
d, Delay for Lane Group [s/veh]	52.31	5.14	5.17	51.89	5.38	5.40	42.67	37.41	44.85	36.21
Lane Group LOS	D	A	A	D	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	1.22	1.13	1.10	0.72	0.94	0.92	1.90	1.61	1.89	0.94
50th-Percentile Queue Length [ft/ln]	30.45	28.15	27.54	18.09	23.44	23.11	47.62	40.19	47.31	23.50
95th-Percentile Queue Length [veh/ln]	2.19	2.03	1.98	1.30	1.69	1.66	3.43	2.89	3.41	1.69
95th-Percentile Queue Length [ft/ln]	54.81	50.66	49.57	32.56	42.20	41.61	85.71	72.34	85.16	42.29

Movement, Approach, & Intersection Results

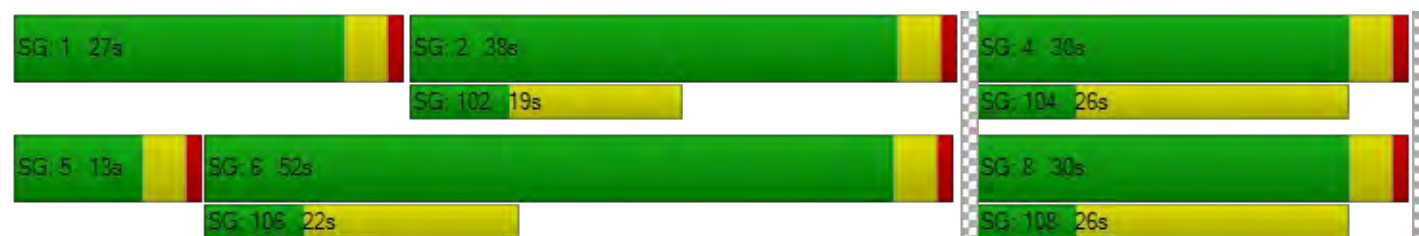
d_M, Delay for Movement [s/veh]	52.31	5.15	5.17	51.89	5.39	5.40	42.67	37.41	37.41	44.85	36.21	36.21
Movement LOS	D	A	A	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	10.51			9.35			40.15			41.71		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	18.64											
Intersection LOS	B											
Intersection V/C	0.206											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.574			2.566			2.019			2.007		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1011			716			547			547		
d_b, Bicycle Delay [s]	11.63			19.58			25.06			25.06		
I_b,int, Bicycle LOS Score for Intersection	1.894			1.821			1.819			1.764		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	20.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.486

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	299	398	53	329	18	16	3	11	306	3	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	299	398	53	329	18	16	3	11	306	3	54
Peak Hour Factor	0.9560	0.9560	0.9560	0.9310	0.9310	0.9310	0.9380	0.9380	0.9380	0.8620	0.8620	0.8620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	78	104	14	88	5	4	1	3	89	1	16
Total Analysis Volume [veh/h]	16	313	416	57	353	19	17	3	12	355	3	63
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	69	60	60	69	63	63	4	4	15	15
g / C, Green / Cycle	0.69	0.60	0.60	0.69	0.63	0.63	0.04	0.04	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.02	0.18	0.28	0.07	0.11	0.11	0.01	0.01	0.13	0.13
s, saturation flow rate [veh/h]	1051	1772	1506	821	1772	1740	1699	1506	1687	1629
c, Capacity [veh/h]	783	1069	909	558	1115	1095	61	54	257	248
d1, Uniform Delay [s]	4.92	9.56	10.87	6.30	7.68	7.68	47.06	46.88	41.17	41.17
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.70	1.66	0.37	0.33	0.33	3.07	2.03	6.89	7.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.29	0.46	0.10	0.17	0.17	0.33	0.22	0.83	0.83
d, Delay for Lane Group [s/veh]	4.93	10.25	12.53	6.66	8.00	8.02	50.12	48.91	48.06	48.31
Lane Group LOS	A	B	B	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.09	3.29	5.08	0.39	1.65	1.63	0.54	0.32	5.56	5.39
50th-Percentile Queue Length [ft/ln]	2.35	82.28	127.08	9.78	41.17	40.73	13.40	8.00	139.09	134.77
95th-Percentile Queue Length [veh/ln]	0.17	5.92	8.78	0.70	2.96	2.93	0.96	0.58	9.43	9.20
95th-Percentile Queue Length [ft/ln]	4.22	148.10	219.51	17.61	74.10	73.32	24.12	14.39	235.79	229.96

Movement, Approach, & Intersection Results

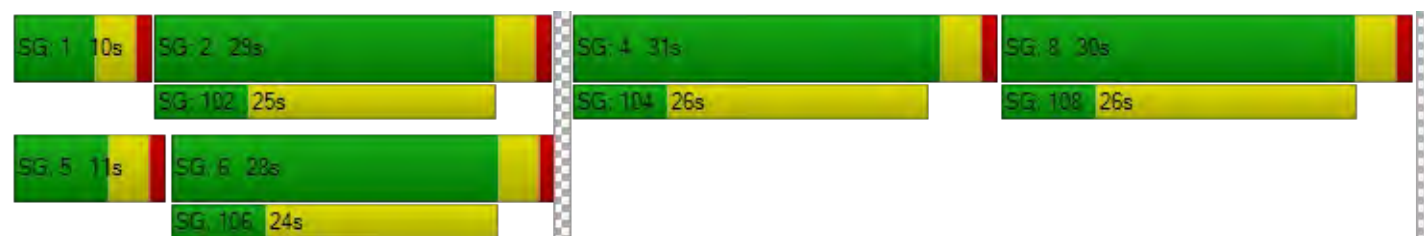
d_M, Delay for Movement [s/veh]	4.93	10.25	12.53	6.66	8.01	8.02	50.12	50.12	48.91	48.16	48.31	48.31
Movement LOS	A	B	B	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	11.41			7.83			49.67			48.18		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	20.73											
Intersection LOS	C											
Intersection V/C	0.486											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.590			2.465			1.983			2.287		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	480			500			520			540		
d_b, Bicycle Delay [s]	28.88			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.174			1.914			1.612			2.254		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.744

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	131	18	61	54	12	414	586	470	21	90	394	50
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	18	61	54	12	414	586	470	21	90	394	50
Peak Hour Factor	0.8330	0.8330	0.8330	0.9000	0.9000	0.9000	0.8700	0.8700	0.8700	0.9090	0.9090	0.9090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	5	18	15	3	115	168	135	6	25	108	14
Total Analysis Volume [veh/h]	157	22	73	60	13	460	674	540	24	99	433	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	13	13	38	31	0	39	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11	9	9	59	30	75	75	9	53	53
g / C, Green / Cycle	0.09	0.09	0.09	0.08	0.08	0.49	0.25	0.62	0.62	0.07	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.05	0.04	0.01	0.31	0.21	0.16	0.16	0.06	0.14	0.14
s, saturation flow rate [veh/h]	1417	1512	1506	1687	1612	1506	3277	1772	1745	1687	1772	1703
c, Capacity [veh/h]	171	196	141	128	122	738	833	1105	1088	125	785	754
d1, Uniform Delay [s]	51.75	53.16	51.81	53.18	51.71	22.46	42.04	10.14	10.14	54.71	21.65	21.67
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.40	2.70	2.91	2.67	0.38	3.94	1.94	0.56	0.57	10.84	1.06	1.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.38	0.58	0.52	0.47	0.11	0.62	0.81	0.26	0.26	0.80	0.32	0.32
d, Delay for Lane Group [s/veh]	53.15	55.86	54.71	55.86	52.09	26.39	43.97	10.70	10.71	65.55	22.71	22.78
Lane Group LOS	D	E	D	E	D	C	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.94	3.50	2.21	1.83	0.38	10.17	9.56	3.44	3.39	3.32	4.75	4.61
50th-Percentile Queue Length [ft/ln]	48.51	87.54	55.26	45.83	9.48	254.17	238.93	85.95	84.85	83.01	118.74	115.17
95th-Percentile Queue Length [veh/ln]	3.49	6.30	3.98	3.30	0.68	15.40	14.63	6.19	6.11	5.98	8.32	8.13
95th-Percentile Queue Length [ft/ln]	87.32	157.58	99.46	82.50	17.06	384.90	365.67	154.71	152.72	149.42	208.09	203.18

Movement, Approach, & Intersection Results

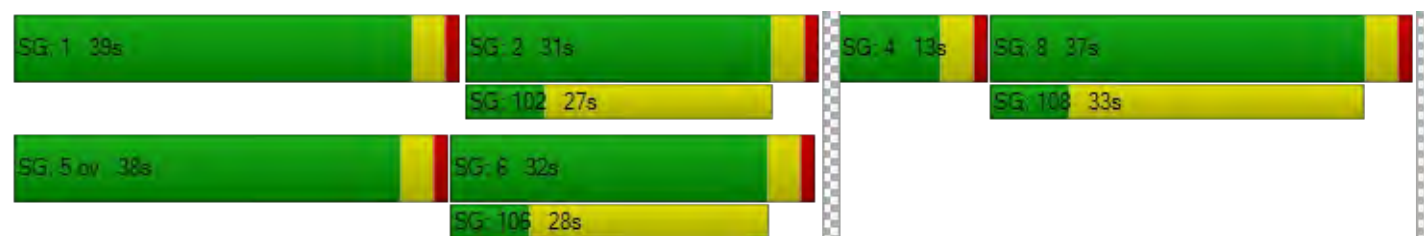
d_M, Delay for Movement [s/veh]	54.69	55.86	54.71	55.86	52.09	26.39	43.97	10.70	10.71	65.55	22.74	22.78
Movement LOS	D	E	D	E	D	C	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	54.83			30.34			28.82			29.96		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	31.90											
Intersection LOS	C											
Intersection V/C	0.744											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.389			2.564			0.000			2.559		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			150			450			467		
d_b, Bicycle Delay [s]	31.54			51.34			36.04			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.975			1.999			2.581			2.044		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	406	1039	201	195	811	291	255	1156	273	405	1439	213
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	406	1039	201	195	811	291	255	1156	273	405	1439	213
Peak Hour Factor	0.9550	0.9550	0.9550	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	106	272	53	52	214	77	67	305	72	107	381	56
Total Analysis Volume [veh/h]	425	1088	210	206	857	308	270	1222	289	429	1523	225
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	45	0	13	39	0	15	42	0	20	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	34	34	9	28	28	11	45	45	16	50	50
g / C, Green / Cycle	0.13	0.29	0.29	0.08	0.24	0.24	0.09	0.37	0.37	0.13	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.13	0.23	0.14	0.06	0.18	0.20	0.08	0.30	0.30	0.13	0.32	0.15
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1604	3277	4826	1506
c, Capacity [veh/h]	412	1379	430	250	1140	356	304	1250	594	439	1988	620
d1, Uniform Delay [s]	52.50	39.55	35.60	54.69	42.60	44.04	53.87	34.14	34.21	51.82	30.35	24.42
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.24	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	28.94	1.04	0.86	6.72	1.02	12.91	8.65	6.03	12.12	15.10	2.89	1.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.79	0.49	0.82	0.75	0.87	0.89	0.82	0.82	0.98	0.77	0.36
d, Delay for Lane Group [s/veh]	81.44	40.60	36.46	61.41	43.62	56.95	62.52	40.17	46.34	66.92	33.24	26.06
Lane Group LOS	F	D	D	E	D	E	E	D	D	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.86	9.93	5.21	3.30	7.95	10.02	4.40	14.32	14.71	7.34	12.92	4.70
50th-Percentile Queue Length [ft/ln]	196.40	248.24	130.21	82.62	198.80	250.48	109.88	357.89	367.66	183.51	323.04	117.54
95th-Percentile Queue Length [veh/ln]	12.61	15.10	8.95	5.95	12.58	15.21	7.83	20.52	21.00	11.78	18.82	8.26
95th-Percentile Queue Length [ft/ln]	315.31	377.44	223.78	148.71	314.42	380.26	195.83	513.02	524.89	294.59	470.42	206.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	81.44	40.60	36.46	61.41	43.62	56.95	62.52	41.18	46.34	66.92	33.24	26.06
Movement LOS	F	D	D	E	D	E	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	50.17			49.29			45.25			39.14		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.35											
Intersection LOS	D											
Intersection V/C	0.888											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.220			3.183			3.231			3.276		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			583			633			717		
d_b, Bicycle Delay [s]	26.00			30.10			28.02			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.507			2.314			2.539			2.757		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	33	45	83	164	99	194	119	1386	35	101	1581	245
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	45	83	164	99	194	119	1386	35	101	1581	245
Peak Hour Factor	0.7970	0.7970	0.7970	0.6700	0.6700	0.6700	0.9700	0.9700	0.9700	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	14	26	61	37	72	31	357	9	28	431	67
Total Analysis Volume [veh/h]	41	56	104	245	148	290	123	1429	36	110	1726	267
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	18	40	0	12	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	24	24	24	24	8	47	47	7	46	46
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.26	0.26	0.09	0.52	0.52	0.08	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.07	0.18	0.04	0.19	0.07	0.29	0.29	0.07	0.36	0.18
s, saturation flow rate [veh/h]	1239	1772	1506	1347	3373	1506	1687	3373	1749	1687	4826	1506
c, Capacity [veh/h]	331	465	395	366	885	395	154	1763	914	138	2475	772
d1, Uniform Delay [s]	29.62	25.29	26.30	34.15	25.61	30.33	40.11	14.37	14.37	40.62	16.63	12.98
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	0.11	0.35	2.12	0.09	2.65	9.12	1.23	2.35	10.06	1.65	1.23
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.12	0.26	0.67	0.17	0.73	0.80	0.55	0.55	0.80	0.70	0.35
d, Delay for Lane Group [s/veh]	29.79	25.40	26.66	36.27	25.70	32.98	49.23	15.60	16.73	50.68	18.28	14.21
Lane Group LOS	C	C	C	D	C	C	D	B	B	D	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.74	0.91	1.77	5.24	1.21	5.87	3.02	6.43	6.95	2.75	8.72	3.28
50th-Percentile Queue Length [ft/ln]	18.44	22.83	44.35	131.11	30.33	146.78	75.59	160.64	173.79	68.73	217.90	82.09
95th-Percentile Queue Length [veh/ln]	1.33	1.64	3.19	9.00	2.18	9.85	5.44	10.58	11.28	4.95	13.56	5.91
95th-Percentile Queue Length [ft/ln]	33.20	41.09	79.84	225.00	54.60	246.13	136.06	264.57	281.90	123.71	338.94	147.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	29.79	25.40	26.66	36.27	25.70	32.98	49.23	15.97	16.73	50.68	18.28	14.21
Movement LOS	C	C	C	D	C	C	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	26.95			32.58			18.56			19.46		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	21.43											
Intersection LOS	C											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.396			2.520			3.159			3.546		
Crosswalk LOS	B			B			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			800			667		
d_b, Bicycle Delay [s]	17.42			17.42			16.20			20.00		
I_b,int, Bicycle LOS Score for Intersection	1.891			2.123			2.433			2.716		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	41.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	480	764	258	195	599	167	178	1619	386	226	1631	131
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	480	764	258	195	599	167	178	1619	386	226	1631	131
Peak Hour Factor	0.9630	0.9630	0.9630	0.9380	0.9380	0.9380	0.9710	0.9710	0.9710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	125	198	67	52	160	45	46	417	99	58	422	34
Total Analysis Volume [veh/h]	498	793	268	208	639	178	183	1667	398	234	1687	135
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	49	0	14	39	0	11	44	0	13	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	36	36	10	26	26	7	49	49	9	51	51
g / C, Green / Cycle	0.17	0.30	0.30	0.08	0.21	0.21	0.06	0.41	0.41	0.08	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.15	0.16	0.18	0.06	0.19	0.12	0.06	0.35	0.26	0.07	0.35	0.09
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	546	1456	454	262	725	324	193	1976	617	248	2056	642
d1, Uniform Delay [s]	49.17	35.03	35.61	54.27	45.64	41.96	56.29	31.97	28.45	55.24	30.39	21.72
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.39	0.32	1.22	5.45	3.72	1.46	19.50	4.61	5.15	16.14	3.82	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.54	0.59	0.80	0.88	0.55	0.95	0.84	0.65	0.94	0.82	0.21
d, Delay for Lane Group [s/veh]	55.56	35.35	36.83	59.73	49.36	43.41	75.79	36.58	33.59	71.38	34.21	22.46
Lane Group LOS	E	D	D	E	D	D	E	D	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.80	6.50	6.80	3.29	9.56	4.83	3.29	15.09	9.96	4.08	14.76	2.54
50th-Percentile Queue Length [ft/ln]	194.97	162.38	170.11	82.15	238.92	120.83	82.15	377.27	249.03	101.92	368.95	63.49
95th-Percentile Queue Length [veh/ln]	12.38	10.67	11.08	5.91	14.63	8.44	5.91	21.46	15.14	7.34	21.06	4.57
95th-Percentile Queue Length [ft/ln]	309.47	266.87	277.07	147.86	365.66	210.97	147.87	536.54	378.43	183.46	526.45	114.28

Movement, Approach, & Intersection Results

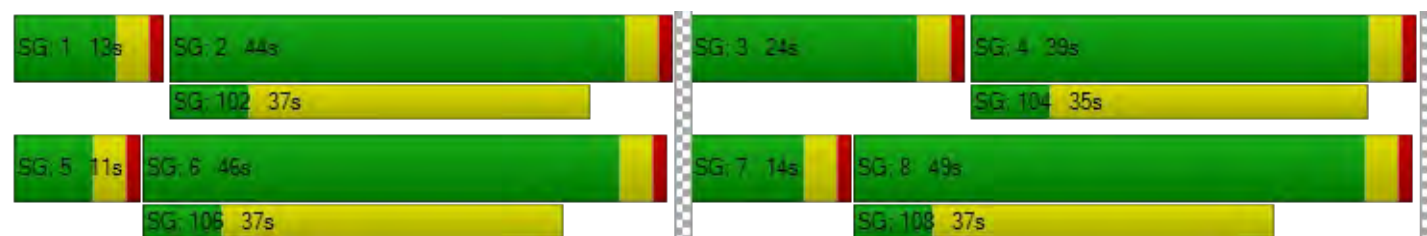
d_M, Delay for Movement [s/veh]	55.56	35.35	36.83	59.73	49.36	43.41	75.79	36.58	33.59	71.38	34.21	22.46
Movement LOS	E	D	D	E	D	D	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	42.06			50.43			39.24			37.67		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	41.08											
Intersection LOS	D											
Intersection V/C	0.875											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.084			3.000			3.363			3.318		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	750			583			667			700		
d_b, Bicycle Delay [s]	23.44			30.10			26.67			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.417			2.405			2.796			2.690		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	31.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	41	31	56	315	23	238	313	1517	26	53	1753	330
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	31	56	315	23	238	313	1517	26	53	1753	330
Peak Hour Factor	0.8890	0.8890	0.8890	0.8820	0.8820	0.8820	0.9540	0.9540	0.9540	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	9	16	89	7	67	82	398	7	14	464	87
Total Analysis Volume [veh/h]	46	35	63	357	26	270	328	1590	27	56	1855	349
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	43	0	17	46	0	11	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	24	24	13	57	57	5	50	50
g / C, Green / Cycle	0.07	0.07	0.07	0.22	0.22	0.12	0.52	0.52	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.05	0.11	0.19	0.10	0.32	0.32	0.03	0.38	0.23
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1526	3277	3373	1756	1687	4826	1506
c, Capacity [veh/h]	110	116	90	728	339	384	1759	916	77	2170	677
d1, Uniform Delay [s]	49.43	49.05	50.40	37.38	41.32	47.67	18.41	18.42	51.86	27.07	21.70
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.49	1.44	9.57	0.51	7.97	5.44	1.55	2.96	12.24	4.56	2.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.30	0.70	0.49	0.87	0.85	0.60	0.60	0.73	0.85	0.52
d, Delay for Lane Group [s/veh]	51.92	50.50	59.97	37.89	49.29	53.11	19.96	21.38	64.10	31.63	24.49
Lane Group LOS	D	D	E	D	D	D	B	C	E	C	C
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.29	0.96	1.94	4.24	8.43	4.68	9.47	10.23	1.79	14.89	6.84
50th-Percentile Queue Length [ft/ln]	32.29	24.10	48.38	105.98	210.66	117.11	236.72	255.83	44.64	372.16	171.08
95th-Percentile Queue Length [veh/ln]	2.32	1.74	3.48	7.62	13.19	8.23	14.52	15.48	3.21	21.21	11.13
95th-Percentile Queue Length [ft/ln]	58.12	43.38	87.09	190.39	329.68	205.85	362.88	386.98	80.34	530.35	278.34

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.92	50.50	59.97	37.89	49.29	49.29	53.11	20.43	21.38	64.10	31.63	24.49
Movement LOS	D	D	E	D	D	D	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	55.10			43.06			25.95			31.33		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	31.46											
Intersection LOS	C											
Intersection V/C	0.848											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.202			2.576			3.237			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			709			764			655		
d_b, Bicycle Delay [s]	49.16			22.91			21.02			24.89		
I_b,int, Bicycle LOS Score for Intersection	1.678			2.637			2.629			2.803		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	64.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.003

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	339	545	328	444	279	89	102	1688	90	418	1720	542
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	339	545	328	444	279	89	102	1688	90	418	1720	542
Peak Hour Factor	0.8990	0.8990	0.8990	0.8970	0.8970	0.8970	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	94	152	91	124	78	25	27	441	24	109	450	142
Total Analysis Volume [veh/h]	377	606	365	495	311	99	107	1764	94	438	1801	568
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	29	41	0	27	39	0	10	34	0	18	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	16	32	32	23	39	39	6	35	35	14	43	70
g / C, Green / Cycle	0.14	0.27	0.27	0.19	0.32	0.32	0.05	0.29	0.29	0.12	0.36	0.58
(v / s)_i Volume / Saturation Flow Rate	0.12	0.18	0.24	0.21	0.12	0.12	0.03	0.28	0.28	0.13	0.37	0.38
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1627	3277	4826	1713	3277	4826	1506
c, Capacity [veh/h]	447	898	401	454	570	523	164	1405	499	385	1730	879
d1, Uniform Delay [s]	50.61	39.42	42.69	48.54	31.43	31.43	56.02	42.17	42.17	53.00	38.53	16.71
k, delay calibration	0.11	0.11	0.30	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.39	0.89	18.85	49.03	0.41	0.45	4.30	18.97	34.83	69.06	33.15	3.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.67	0.91	1.09	0.38	0.38	0.65	0.98	0.98	1.14	1.04	0.65
d, Delay for Lane Group [s/veh]	55.00	40.31	61.53	97.56	31.84	31.88	60.32	61.14	77.00	122.06	71.68	20.37
Lane Group LOS	E	D	E	F	C	C	E	E	E	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.80	8.09	12.50	9.86	4.86	4.47	1.69	15.71	18.93	9.49	21.92	10.90
50th-Percentile Queue Length [ft/ln]	144.89	202.16	312.53	246.42	121.50	111.76	42.30	392.72	473.17	237.34	548.05	272.45
95th-Percentile Queue Length [veh/ln]	9.74	12.75	18.30	15.64	8.48	7.94	3.05	22.21	26.06	15.30	30.43	16.31
95th-Percentile Queue Length [ft/ln]	243.60	318.75	457.49	391.03	211.89	198.44	76.15	555.22	651.54	382.59	760.81	407.80

Movement, Approach, & Intersection Results

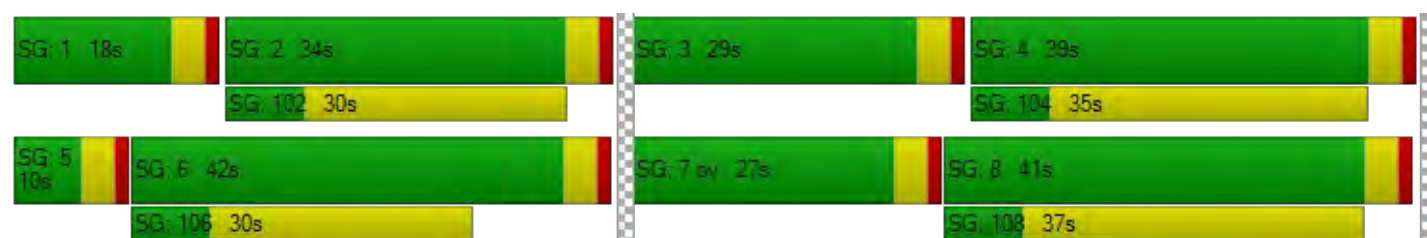
d_M, Delay for Movement [s/veh]	55.00	40.31	61.53	97.56	31.85	31.88	60.32	64.67	77.00	122.06	71.68	20.37
Movement LOS	E	D	E	F	C	C	E	E	E	F	F	C
d_A, Approach Delay [s/veh]	50.17			67.80			65.03			69.16		
Approach LOS	D			E			E			E		
d_I, Intersection Delay [s/veh]	64.18											
Intersection LOS	E											
Intersection V/C	1.003											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.913			2.822			3.323			3.510		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			500			633		
d_b, Bicycle Delay [s]	28.70			30.10			33.75			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.672			2.306			2.370			3.103		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	620	0	513	0	1596	881	0	2168	368
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	620	0	513	0	1596	881	0	2168	368
Peak Hour Factor	1.0000	1.0000	1.0000	0.9390	1.0000	0.9390	1.0000	0.9540	0.9540	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	165	0	137	0	418	231	0	557	95
Total Analysis Volume [veh/h]	0	0	0	660	0	546	0	1673	923	0	2228	378
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		28	28	28	54	54
g / C, Green / Cycle		0.31	0.31	0.31	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate		0.24	0.25	0.27	0.35	0.46
s, saturation flow rate [veh/h]		1687	1617	1506	4826	4826
c, Capacity [veh/h]		525	503	468	2895	2895
d1, Uniform Delay [s]		27.99	28.37	29.08	11.00	13.36
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.37	2.98	4.69	0.85	2.04
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.80	0.86	0.58	0.77
d, Delay for Lane Group [s/veh]		30.36	31.35	33.77	11.85	15.39
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		7.90	8.07	8.46	6.31	10.37
50th-Percentile Queue Length [ft/ln]		197.43	201.76	211.41	157.65	259.27
95th-Percentile Queue Length [veh/ln]		12.51	12.73	13.23	10.42	15.65
95th-Percentile Queue Length [ft/ln]		312.65	318.24	330.64	260.61	391.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	30.75	0.00	33.13	0.00	11.85	0.00	0.00	15.39	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			31.83			11.85			15.39		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	18.11											
Intersection LOS	B											
Intersection V/C	0.800											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.425			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.122			2.480			2.785		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	888	59	389	0	0	245	183	1683	352	0	2215	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	888	59	389	0	0	245	183	1683	352	0	2215	43
Peak Hour Factor	0.9490	0.9490	0.9490	1.0000	1.0000	0.8840	0.9510	0.9510	0.9510	1.0000	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	234	16	102	0	0	69	48	442	93	0	563	11
Total Analysis Volume [veh/h]	936	62	410	0	0	277	192	1770	370	0	2253	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	50	0	0	0	18	18	65	0	0	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	32	32	32	14	14	75	57	57
g / C, Green / Cycle	0.28	0.28	0.28	0.12	0.12	0.65	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.21	0.21	0.24	0.10	0.11	0.37	0.36	0.33
s, saturation flow rate [veh/h]	3277	1671	1506	2665	1687	4826	4826	1748
c, Capacity [veh/h]	911	465	419	326	206	3148	2390	866
d1, Uniform Delay [s]	37.99	38.09	39.26	49.41	49.96	10.98	22.78	21.82
k, delay calibration	0.11	0.12	0.16	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.34	2.93	7.24	6.19	16.53	0.73	1.92	4.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.77	0.85	0.85	0.93	0.56	0.72	0.66
d, Delay for Lane Group [s/veh]	39.33	41.02	46.50	55.60	66.49	11.71	24.70	25.81
Lane Group LOS	D	D	D	E	E	B	C	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.04	9.54	10.28	4.17	6.40	7.88	12.24	12.28
50th-Percentile Queue Length [ft/ln]	226.04	238.46	257.11	104.21	159.94	196.96	306.08	306.97
95th-Percentile Queue Length [veh/ln]	13.97	14.60	15.54	7.50	10.55	12.48	17.98	18.03
95th-Percentile Queue Length [ft/ln]	349.32	365.09	388.59	187.58	263.64	312.04	449.54	450.64

Movement, Approach, & Intersection Results

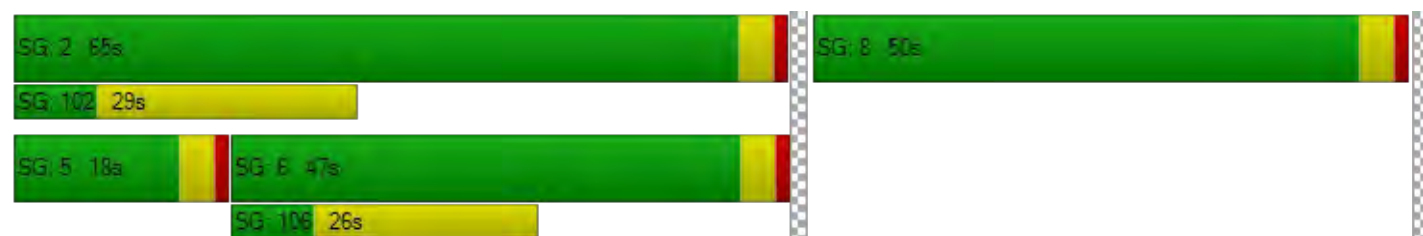
d_M, Delay for Movement [s/veh]	39.76	41.02	45.72	0.00	0.00	55.60	66.49	11.71	0.00	0.00	24.96	25.81
Movement LOS	D	D	D			E	E	B			C	C
d_A, Approach Delay [s/veh]	41.58			55.60			17.07			24.98		
Approach LOS	D			E			B			C		
d_I, Intersection Delay [s/veh]	27.73											
Intersection LOS	C											
Intersection V/C	0.790											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.586			2.139			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			0			1061			748		
d_b, Bicycle Delay [s]	20.70			57.50			12.68			22.54		
I_b,int, Bicycle LOS Score for Intersection	3.883			4.132			2.639			2.507		
Bicycle LOS	D			D			B			B		

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	207	240	78	270	323	213	237	1685	133	162	1609	158
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	207	240	78	270	323	213	237	1685	133	162	1609	158
Peak Hour Factor	0.9100	0.9100	0.9100	0.8290	0.8290	0.8290	0.9480	0.9480	0.9480	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	66	21	81	97	64	63	444	35	43	430	42
Total Analysis Volume [veh/h]	227	264	86	326	390	257	250	1777	140	173	1721	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	16	42	0	23	49	0	16	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	26	26	12	29	29	19	54	54	12	47	47
g / C, Green / Cycle	0.08	0.22	0.22	0.10	0.24	0.24	0.16	0.45	0.45	0.10	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.10	0.10	0.22	0.17	0.15	0.38	0.38	0.10	0.29	0.29
s, saturation flow rate [veh/h]	3277	1772	1625	3277	1772	1506	1687	3373	1706	1687	4826	1669
c, Capacity [veh/h]	250	384	352	331	428	364	268	1511	764	171	1883	651
d1, Uniform Delay [s]	55.06	41.05	41.11	53.90	44.31	41.66	49.88	29.35	29.51	53.99	31.51	31.51
k, delay calibration	0.11	0.11	0.11	0.11	0.24	0.12	0.15	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.94	0.90	1.01	19.58	15.01	2.83	17.81	5.79	11.24	35.71	2.74	7.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.47	0.48	0.98	0.91	0.71	0.93	0.84	0.85	1.01	0.75	0.75
d, Delay for Lane Group [s/veh]	67.00	41.95	42.12	73.48	59.31	44.49	67.69	35.15	40.75	89.70	34.25	39.13
Lane Group LOS	E	D	D	E	E	D	E	D	D	F	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.82	4.79	4.47	5.81	12.99	7.23	8.72	16.99	18.57	6.83	11.99	13.33
50th-Percentile Queue Length [ft/ln]	95.55	119.74	111.78	145.21	324.68	180.70	217.88	424.68	464.21	170.86	299.73	333.13
95th-Percentile Queue Length [veh/ln]	6.88	8.38	7.94	9.76	18.90	11.64	13.56	23.75	25.64	11.18	17.67	19.31
95th-Percentile Queue Length [ft/ln]	171.99	209.46	198.47	244.02	472.44	290.93	338.92	593.66	640.89	279.60	441.69	482.80

Movement, Approach, & Intersection Results

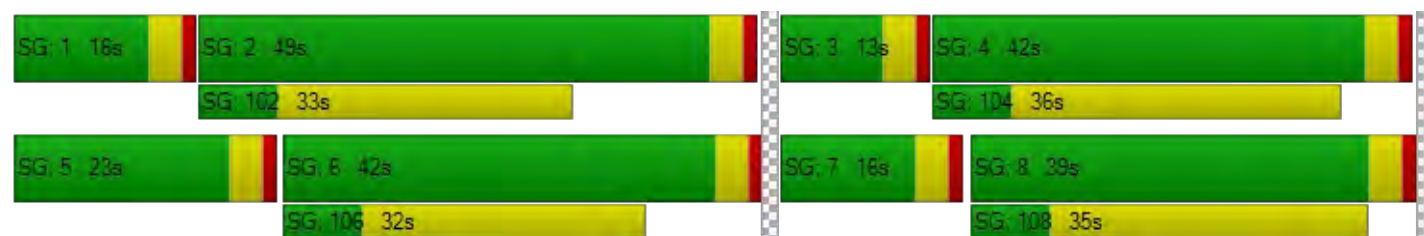
d_M, Delay for Movement [s/veh]	67.00	42.00	42.12	73.48	59.31	44.49	67.69	36.75	40.75	89.70	35.15	39.13
Movement LOS	E	D	D	E	E	D	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	51.86			60.14			40.57			40.05		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	44.81											
Intersection LOS	D											
Intersection V/C	0.890											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.563			2.736			3.272			3.257		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			633			750			633		
d_b, Bicycle Delay [s]	30.10			28.02			23.44			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.036			3.165			2.751			2.411		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	29.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	243	44	246	23	21	13	17	1685	271	213	1746	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	243	44	246	23	21	13	17	1685	271	213	1746	52
Peak Hour Factor	0.8580	0.8580	0.8580	0.6480	0.6480	0.6480	0.9520	0.9520	0.9520	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	13	72	9	8	5	4	442	71	56	461	14
Total Analysis Volume [veh/h]	283	51	287	35	32	20	18	1770	285	225	1846	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	45	0	0	10	0	10	32	0	28	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25	6	6	3	51	51	17	66	66
g / C, Green / Cycle	0.22	0.22	0.22	0.05	0.05	0.02	0.45	0.45	0.15	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.10	0.10	0.19	0.02	0.03	0.01	0.37	0.19	0.13	0.37	0.37
s, saturation flow rate [veh/h]	1687	1712	1506	1687	1659	1687	4826	1506	1687	3373	1745
c, Capacity [veh/h]	364	369	325	84	83	40	2145	669	255	1928	998
d1, Uniform Delay [s]	39.25	39.24	43.72	53.06	53.64	55.42	28.05	21.91	47.86	16.79	16.82
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.89	0.88	8.28	3.27	7.66	7.62	3.78	1.98	9.73	1.71	3.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.46	0.88	0.42	0.63	0.45	0.83	0.43	0.88	0.65	0.65
d, Delay for Lane Group [s/veh]	40.14	40.12	52.01	56.33	61.30	63.05	31.83	23.89	57.59	18.50	20.12
Lane Group LOS	D	D	D	E	E	E	C	C	E	B	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.17	4.23	8.61	1.06	1.65	0.60	14.58	5.59	6.99	11.17	12.06
50th-Percentile Queue Length [ft/ln]	104.27	105.63	215.32	26.47	41.29	15.01	364.58	139.66	174.64	279.34	301.47
95th-Percentile Queue Length [veh/ln]	7.51	7.60	13.43	1.91	2.97	1.08	20.85	9.46	11.32	16.66	17.75
95th-Percentile Queue Length [ft/ln]	187.68	189.91	335.65	47.65	74.33	27.02	521.15	236.57	283.00	416.39	443.85

Movement, Approach, & Intersection Results

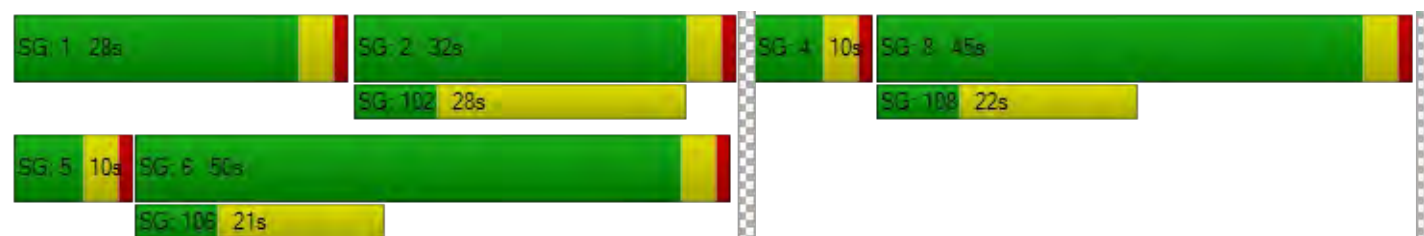
d_M, Delay for Movement [s/veh]	40.13	40.12	52.01	56.33	61.30	61.30	63.05	31.83	23.89	57.59	19.02	20.12
Movement LOS	D	D	D	E	E	E	E	C	C	E	B	C
d_A, Approach Delay [s/veh]	45.62			59.30			31.01			23.13		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	29.95											
Intersection LOS	C											
Intersection V/C	0.839											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			0.00			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.426			2.020			0.000			3.193		
Crosswalk LOS	B			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	713			104			487			800		
d_b, Bicycle Delay [s]	23.81			51.66			32.91			20.70		
I_b,int, Bicycle LOS Score for Intersection	2.584			1.703			2.700			2.729		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.864

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	331	569	95	246	436	105	198	1267	194	171	1410	297
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	331	569	95	246	436	105	198	1267	194	171	1410	297
Peak Hour Factor	0.9600	0.9600	0.9600	0.8590	0.8590	0.8590	0.9620	0.9620	0.9620	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	86	148	25	72	127	31	51	329	50	47	390	82
Total Analysis Volume [veh/h]	345	593	99	286	508	122	206	1317	202	189	1558	328
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	39	0	15	30	0	12	40	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	24	24	11	21	21	8	47	47	7	46	46
g / C, Green / Cycle	0.13	0.23	0.23	0.11	0.20	0.20	0.08	0.45	0.45	0.07	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.11	0.20	0.20	0.09	0.15	0.08	0.06	0.30	0.30	0.06	0.38	0.38
s, saturation flow rate [veh/h]	3277	1772	1684	3277	3373	1506	3277	3373	1654	3277	3373	1620
c, Capacity [veh/h]	420	403	383	345	689	308	252	1510	741	221	1478	710
d1, Uniform Delay [s]	44.64	39.24	39.24	46.09	39.18	36.21	47.79	22.96	22.98	48.51	26.57	26.82
k, delay calibration	0.11	0.16	0.16	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.03	9.25	9.68	5.11	1.56	0.83	6.41	2.43	4.90	9.12	6.64	13.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.88	0.88	0.83	0.74	0.40	0.82	0.67	0.68	0.86	0.86	0.87
d, Delay for Lane Group [s/veh]	48.67	48.49	48.93	51.21	40.74	37.04	54.20	25.39	27.89	57.63	33.21	40.63
Lane Group LOS	D	D	D	D	D	D	D	C	C	E	C	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.59	9.76	9.33	3.89	6.23	2.77	2.87	10.14	10.49	2.72	15.06	16.20
50th-Percentile Queue Length [ft/ln]	114.65	244.00	233.19	97.13	155.83	69.29	71.73	253.59	262.14	68.03	376.41	405.10
95th-Percentile Queue Length [veh/ln]	8.10	14.88	14.34	6.99	10.33	4.99	5.16	15.37	15.80	4.90	21.42	22.81
95th-Percentile Queue Length [ft/ln]	202.45	372.09	358.41	174.84	258.20	124.72	129.12	384.17	394.91	122.45	535.50	570.14

Movement, Approach, & Intersection Results

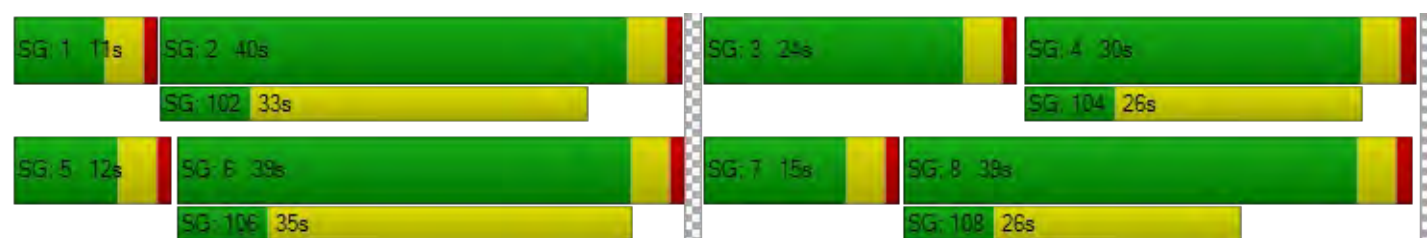
d_M, Delay for Movement [s/veh]	48.67	48.67	48.93	51.21	40.74	37.04	54.20	25.96	27.89	57.63	34.59	40.63
Movement LOS	D	D	D	D	D	D	D	C	C	E	C	D
d_A, Approach Delay [s/veh]	48.69			43.52			29.56			37.64		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	38.15											
Intersection LOS	D											
Intersection V/C	0.864											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.775			2.886			3.190			3.193		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			495			686			667		
d_b, Bicycle Delay [s]	23.33			29.72			22.67			23.33		
I_b,int, Bicycle LOS Score for Intersection	2.415			2.315			2.508			2.701		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.905

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	75	809	309	161	570	329	545	1226	66	305	1093	248
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	809	309	161	570	329	545	1226	66	305	1093	248
Peak Hour Factor	0.9210	0.9210	0.9210	0.9300	0.9300	0.9300	0.8600	0.8600	0.8600	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	220	84	43	153	88	158	356	19	79	281	64
Total Analysis Volume [veh/h]	81	878	336	173	613	354	634	1426	77	314	1126	255
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	44	44	11	45	45	27	48	0	17	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	52	7	36	63	23	49	49	13	39	39
g / C, Green / Cycle	0.05	0.29	0.43	0.06	0.30	0.52	0.19	0.41	0.41	0.11	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.05	0.26	0.22	0.05	0.18	0.24	0.19	0.30	0.05	0.10	0.28	0.28
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1609
c, Capacity [veh/h]	86	968	646	193	996	784	628	1987	620	357	1109	529
d1, Uniform Delay [s]	56.82	41.26	25.18	56.11	36.43	18.05	48.52	29.48	21.89	52.73	37.40	37.43
k, delay calibration	0.11	0.11	0.37	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.45	3.60	2.22	13.28	0.62	0.88	18.88	2.26	0.41	7.10	7.80	15.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.91	0.52	0.89	0.62	0.45	1.01	0.72	0.12	0.88	0.84	0.84
d, Delay for Lane Group [s/veh]	90.27	44.86	27.40	69.39	37.05	18.93	67.39	31.74	22.30	59.83	45.20	52.58
Lane Group LOS	F	D	C	E	D	B	F	C	C	E	D	D
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.24	12.87	7.38	2.96	7.80	6.25	11.00	11.71	1.43	5.01	13.80	14.29
50th-Percentile Queue Length [ft/ln]	81.10	321.66	184.40	73.99	194.92	156.14	275.09	292.64	35.72	125.30	345.05	357.29
95th-Percentile Queue Length [veh/ln]	5.84	18.75	11.83	5.33	12.38	10.34	16.52	17.32	2.57	8.68	19.89	20.49
95th-Percentile Queue Length [ft/ln]	145.99	468.72	295.75	133.18	309.41	258.60	412.99	432.91	64.29	217.08	497.37	512.28

Movement, Approach, & Intersection Results

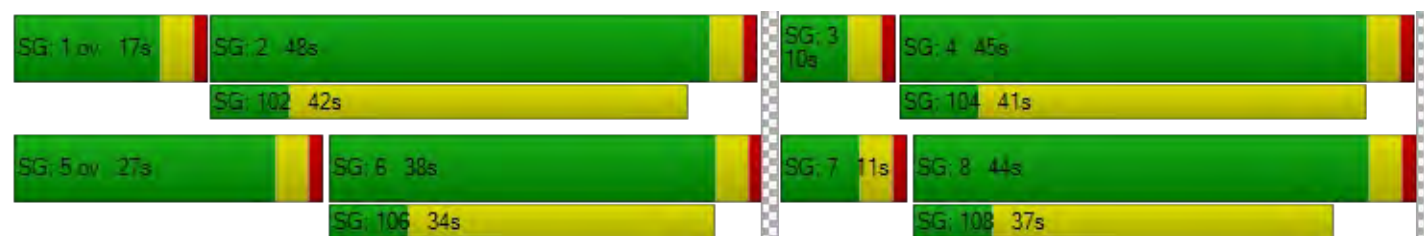
d_M, Delay for Movement [s/veh]	90.27	44.86	27.40	69.39	37.05	18.93	67.39	31.74	22.30	59.83	46.45	52.58
Movement LOS	F	D	C	E	D	B	F	C	C	E	D	D
d_A, Approach Delay [s/veh]	43.17			36.33			41.98			49.85		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.33											
Intersection LOS	D											
Intersection V/C	0.905											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.840			3.013			3.264			3.182		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			683			733			567		
d_b, Bicycle Delay [s]	26.67			26.00			24.07			30.82		
I_b,int, Bicycle LOS Score for Intersection	2.628			2.500			2.735			2.492		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	51.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	392	907	24	131	358	241	329	1043	287	19	981	294
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	392	907	24	131	358	241	329	1043	287	19	981	294
Peak Hour Factor	0.9360	0.9360	0.9360	0.9320	0.9320	0.9320	0.8080	0.8080	0.8080	0.9070	0.9070	0.9070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	105	242	6	35	96	65	102	323	89	5	270	81
Total Analysis Volume [veh/h]	419	969	26	141	384	259	407	1291	355	21	1082	324
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	51	0	10	44	44	16	42	42	17	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	38	6	31	47	12	57	74	3	48	48
g / C, Green / Cycle	0.11	0.31	0.05	0.26	0.39	0.10	0.48	0.62	0.03	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.13	0.29	0.04	0.08	0.17	0.12	0.38	0.24	0.01	0.28	0.28
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1571
c, Capacity [veh/h]	357	1057	166	1232	586	329	1607	932	86	1356	631
d1, Uniform Delay [s]	53.50	39.71	56.52	36.17	27.05	54.00	26.65	11.42	57.31	29.99	29.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	85.51	3.69	11.20	0.14	0.52	111.87	4.36	1.18	1.47	3.13	6.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.18	0.92	0.85	0.31	0.44	1.24	0.80	0.38	0.25	0.71	0.71
d, Delay for Lane Group [s/veh]	139.01	43.39	67.73	36.31	27.58	165.87	31.01	12.61	58.78	33.13	36.56
Lane Group LOS	F	D	E	D	C	F	C	B	E	C	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	9.60	14.13	2.38	3.07	5.55	10.08	16.20	4.87	0.33	12.02	11.79
50th-Percentile Queue Length [ft/ln]	240.10	353.32	59.47	76.67	138.83	252.08	404.94	121.78	8.26	300.42	294.82
95th-Percentile Queue Length [veh/ln]	15.61	20.30	4.28	5.52	9.42	16.49	22.80	8.49	0.59	17.70	17.42
95th-Percentile Queue Length [ft/ln]	390.19	507.45	107.05	138.00	235.45	412.23	569.95	212.28	14.87	442.54	435.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	139.01	43.39	0.00	67.73	36.31	27.58	165.87	31.01	12.61	58.78	33.52	36.56
Movement LOS	F	D		E	D	C	F	C	B	E	C	D
d_A, Approach Delay [s/veh]	72.26			39.08			54.56			34.58		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	51.71											
Intersection LOS	D											
Intersection V/C	0.853											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.001			3.042			3.204			3.006		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	783			667			633			650		
d_b, Bicycle Delay [s]	22.20			26.67			28.02			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.705			1.991			3.253			2.344		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.491

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	69	114	50	85	117	70	63	989	50	42	1058	61
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	114	50	85	117	70	63	989	50	42	1058	61
Peak Hour Factor	0.9400	0.9400	0.9400	0.8420	0.8420	0.8420	0.9760	0.9760	0.9760	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	30	13	25	35	21	16	253	13	12	304	18
Total Analysis Volume [veh/h]	73	121	53	101	139	83	65	1013	51	48	1217	70
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	32	0	17	32	0	10	31	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	7	7	7	9	9	5	56	56	4	55	55
g / C, Green / Cycle	0.06	0.08	0.08	0.08	0.10	0.10	0.05	0.62	0.62	0.05	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.05	0.06	0.06	0.07	0.04	0.21	0.21	0.03	0.25	0.25
s, saturation flow rate [veh/h]	1687	1772	1596	1687	1772	1558	1687	3373	1728	1687	3373	1723
c, Capacity [veh/h]	96	139	125	130	174	153	92	2090	1071	81	2066	1055
d1, Uniform Delay [s]	41.89	40.33	40.45	40.88	39.24	39.39	41.90	8.25	8.25	42.07	9.05	9.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.35	4.86	6.30	9.69	4.29	5.72	9.31	0.44	0.85	6.77	0.61	1.19
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.64	0.68	0.78	0.66	0.70	0.70	0.34	0.34	0.59	0.41	0.41
d, Delay for Lane Group [s/veh]	53.24	45.19	46.75	50.57	43.53	45.11	51.20	8.68	9.10	48.84	9.66	10.24
Lane Group LOS	D	D	D	D	D	D	D	A	A	D	A	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.89	2.08	2.03	2.52	2.63	2.51	1.64	3.06	3.26	1.19	4.03	4.29
50th-Percentile Queue Length [ft/ln]	47.14	52.04	50.76	63.06	65.78	62.63	41.10	76.41	81.52	29.69	100.80	107.25
95th-Percentile Queue Length [veh/ln]	3.39	3.75	3.65	4.54	4.74	4.51	2.96	5.50	5.87	2.14	7.26	7.69
95th-Percentile Queue Length [ft/ln]	84.85	93.67	91.36	113.52	118.41	112.73	73.99	137.55	146.74	53.44	181.44	192.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.24	45.60	46.75	50.57	43.80	45.11	51.20	8.81	9.10	48.84	9.84	10.24
Movement LOS	D	D	D	D	D	D	D	A	A	D	A	B
d_A, Approach Delay [s/veh]	48.10			46.25			11.27			11.26		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	17.99											
Intersection LOS	B											
Intersection V/C	0.491											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.394			2.412			2.942			2.942		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	622			622			600			600		
d_b, Bicycle Delay [s]	21.36			21.36			22.05			22.05		
I_b,int, Bicycle LOS Score for Intersection	1.763			1.826			2.181			2.294		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	252	348	148	134	677	136	61	914	249	204	861	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	252	348	148	134	677	136	61	914	249	204	861	43
Peak Hour Factor	0.9230	0.9230	0.9230	0.9210	0.9210	0.9210	0.9640	0.9640	0.9640	0.8850	0.8850	0.8850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	94	40	36	184	37	16	237	65	58	243	12
Total Analysis Volume [veh/h]	273	377	160	145	735	148	63	948	258	231	973	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	39	0	16	40	0	14	42	0	23	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	28	28	12	29	29	6	46	46	18	58	58
g / C, Green / Cycle	0.09	0.23	0.23	0.10	0.24	0.24	0.05	0.38	0.38	0.15	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.08	0.11	0.11	0.09	0.22	0.10	0.04	0.20	0.17	0.14	0.20	0.20
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1728
c, Capacity [veh/h]	304	788	352	171	816	364	82	1832	572	257	1630	835
d1, Uniform Delay [s]	53.92	39.70	39.46	53.10	44.12	38.27	56.46	28.77	27.90	50.00	20.06	20.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.34	0.45	0.92	11.12	3.96	0.73	13.71	1.05	2.56	11.73	0.78	1.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.48	0.45	0.85	0.90	0.41	0.77	0.52	0.45	0.90	0.41	0.41
d, Delay for Lane Group [s/veh]	63.26	40.15	40.37	64.22	48.08	39.00	70.17	29.82	30.46	61.73	20.84	21.58
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.47	4.86	4.15	4.83	10.97	3.75	2.20	7.17	5.95	7.64	6.23	6.55
50th-Percentile Queue Length [ft/ln]	111.82	121.46	103.66	120.70	274.17	93.69	55.06	179.32	148.63	190.88	155.63	163.87
95th-Percentile Queue Length [veh/ln]	7.94	8.47	7.46	8.43	16.40	6.75	3.96	11.57	9.94	12.17	10.32	10.75
95th-Percentile Queue Length [ft/ln]	198.54	211.84	186.59	210.79	409.95	168.65	99.10	289.13	248.60	304.18	257.92	268.84

Movement, Approach, & Intersection Results

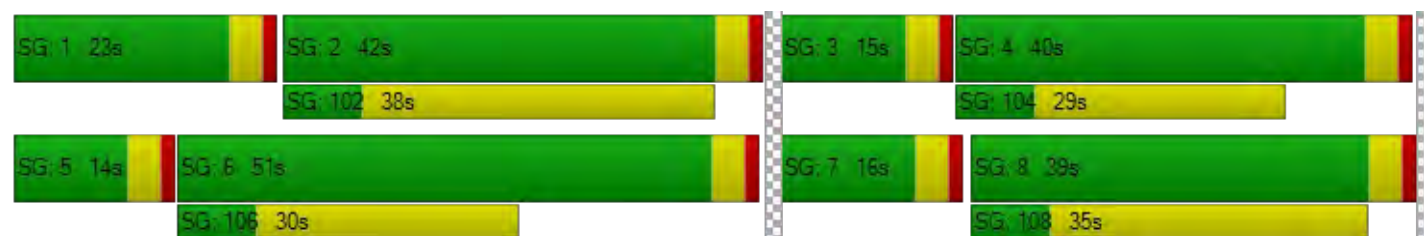
d_M, Delay for Movement [s/veh]	63.26	40.15	40.37	64.22	48.08	39.00	70.17	29.82	30.46	61.73	21.06	21.58
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	47.98			49.05			31.95			28.58		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	37.99											
Intersection LOS	D											
Intersection V/C	0.732											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.891			2.713			3.064			2.957		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			600			633			783		
d_b, Bicycle Delay [s]	30.10			29.40			28.02			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.228			2.408			2.258			2.249		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	38.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	122	241	316	472	338	5	17	924	247	627	1270	656
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	122	241	316	472	338	5	17	924	247	627	1270	656
Peak Hour Factor	0.9010	0.9010	0.9010	0.8760	0.8760	0.8760	0.8390	0.8390	0.8390	0.9650	0.9650	0.9650
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	67	88	135	96	1	5	275	74	162	329	170
Total Analysis Volume [veh/h]	135	267	351	539	386	6	20	1101	294	650	1316	680
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	28	0	26	44	0	10	39	0	27	56	56
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	18	18	18	22	34	34	3	41	41	23	61	87
g / C, Green / Cycle	0.05	0.15	0.15	0.15	0.18	0.28	0.28	0.02	0.34	0.34	0.19	0.51	0.72
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.13	0.13	0.16	0.11	0.11	0.01	0.22	0.22	0.20	0.27	0.45
s, saturation flow rate [veh/h]	3277	1772	1554	1506	3277	1772	1762	3277	4826	1537	3277	4826	1506
c, Capacity [veh/h]	166	267	234	227	601	502	500	83	1644	523	628	2448	1090
d1, Uniform Delay [s]	56.42	49.61	49.65	49.66	47.90	34.66	34.66	57.39	33.41	33.50	48.52	20.05	8.34
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.11	7.17	8.35	8.66	5.05	0.50	0.50	1.49	1.94	6.11	26.37	0.85	2.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.84	0.85	0.85	0.90	0.39	0.39	0.24	0.64	0.65	1.03	0.54	0.62
d, Delay for Lane Group [s/veh]	65.52	56.78	58.01	58.33	52.95	35.16	35.16	58.88	35.35	39.61	74.89	20.90	11.03
Lane Group LOS	E	E	E	E	D	D	D	E	D	D	F	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.24	7.11	6.35	6.18	8.27	4.71	4.69	0.32	8.89	9.21	11.66	8.35	8.63
50th-Percentile Queue Length [ft/ln]	55.91	177.6	158.8	154.6	206.85	117.78	117.15	7.88	222.34	230.18	291.45	208.78	215.67
95th-Percentile Queue Length [veh/ln]	4.03	11.48	10.49	10.26	12.99	8.27	8.24	0.57	13.78	14.18	17.56	13.09	13.44
95th-Percentile Queue Length [ft/ln]	100.6	286.9	262.2	256.5	324.78	206.77	205.91	14.19	344.61	354.58	439.01	327.27	336.10

Movement, Approach, & Intersection Results

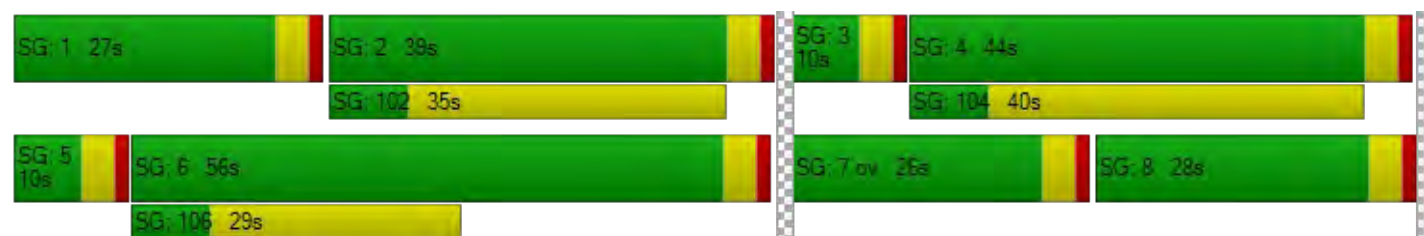
d_M, Delay for Movement [s/veh]	65.52	56.97	58.19	52.95	35.16	35.16	58.88	35.52	39.61	74.89	20.90	11.03
Movement LOS	E	E	E	D	D	D	E	D	D	F	C	B
d_A, Approach Delay [s/veh]	59.07			45.46			36.70			31.63		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	38.72											
Intersection LOS	D											
Intersection V/C	0.822											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.898			2.775			3.174			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	400			667			583			867		
d_b, Bicycle Delay [s]	38.40			26.67			30.10			19.27		
I_b,int, Bicycle LOS Score for Intersection	2.181			2.328			2.143			3.015		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↰		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	756	0	976	0	1203	495	157	1578	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	756	0	976	0	1203	495	157	1578	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9460	1.0000	0.9460	1.0000	0.9230	0.9230	0.9510	0.9510	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	200	0	258	0	326	134	41	415	0
Total Analysis Volume [veh/h]	0	0	0	799	0	1032	0	1303	536	165	1659	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	62	0	0	0	23	0	10	33	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		43	43	43	34	34	34	6	44
g / C, Green / Cycle		0.46	0.46	0.46	0.35	0.35	0.35	0.06	0.46
(v / s)_i Volume / Saturation Flow Rate		0.36	0.39	0.41	0.27	0.30	0.31	0.05	0.34
s, saturation flow rate [veh/h]		1687	1558	1506	3373	1535	1506	3277	4826
c, Capacity [veh/h]		770	711	687	1191	542	532	210	2216
d1, Uniform Delay [s]		21.99	23.08	23.60	27.34	28.39	28.62	43.82	21.17
k, delay calibration		0.17	0.20	0.22	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.86	5.70	7.87	4.89	15.20	16.93	6.35	2.37
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.79	0.86	0.89	0.77	0.85	0.86	0.79	0.75
d, Delay for Lane Group [s/veh]		24.85	28.78	31.46	32.22	43.59	45.56	50.17	23.54
Lane Group LOS		C	C	C	C	D	D	D	C
Critical Lane Group		No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		11.57	12.63	13.27	9.77	11.59	11.88	2.08	10.08
50th-Percentile Queue Length [ft/ln]		289.30	315.73	331.63	244.20	289.83	297.05	52.04	252.00
95th-Percentile Queue Length [veh/ln]		17.15	18.46	19.24	14.89	17.18	17.54	3.75	15.29
95th-Percentile Queue Length [ft/ln]		428.77	461.44	480.96	372.34	429.43	438.38	93.68	382.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	25.78	0.00	30.37	0.00	32.90	45.28	50.17	23.54	0.00
Movement LOS				C		C		C	D	D	C	
d_A, Approach Delay [s/veh]	0.00			28.36			38.40			25.95		
Approach LOS	A			C			D			C		
d_I, Intersection Delay [s/veh]	30.92											
Intersection LOS	C											
Intersection V/C	0.871											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.059	2.538	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	400	611
d_b, Bicycle Delay [s]	47.50	47.50	30.40	22.93
I_b,int, Bicycle LOS Score for Intersection	4.132	7.154	2.571	2.563
Bicycle LOS	D	F	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	982	0	401	0	0	0	521	1443	0	0	753	380
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	982	0	401	0	0	0	521	1443	0	0	753	380
Peak Hour Factor	0.9860	1.0000	0.9860	1.0000	1.0000	1.0000	0.9080	0.9080	1.0000	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	249	0	102	0	0	0	143	397	0	0	200	101
Total Analysis Volume [veh/h]	996	0	407	0	0	0	574	1589	0	0	801	404
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	46	0	0	0	0	0	28	49	0	0	21	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	95	95		95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33		19	54	31	31	31
g / C, Green / Cycle	0.35	0.35		0.20	0.57	0.32	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.30	0.27		0.18	0.33	0.18	0.20	0.20
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1506	1506
c, Capacity [veh/h]	1142	525		661	2737	1091	487	487
d1, Uniform Delay [s]	28.96	27.62		36.72	13.27	26.48	27.19	27.19
k, delay calibration	0.11	0.17		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.23	3.95		3.67	0.91	2.02	5.80	5.80
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.78		0.87	0.58	0.55	0.62	0.62
d, Delay for Lane Group [s/veh]	31.19	31.57		40.39	14.18	28.49	32.99	32.99
Lane Group LOS	C	C		D	B	C	C	C
Critical Lane Group	Yes	No		Yes	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.59	8.56		6.67	6.97	5.79	6.42	6.42
50th-Percentile Queue Length [ft/ln]	264.77	213.91		166.67	174.32	144.87	160.52	160.52
95th-Percentile Queue Length [veh/ln]	15.93	13.35		10.90	11.30	9.74	10.58	10.58
95th-Percentile Queue Length [ft/ln]	398.19	333.84		272.53	282.58	243.57	264.41	264.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.19	0.00	31.57	0.00	0.00	0.00	40.39	14.18	0.00	0.00	28.49	32.99
Movement LOS	C		C				D	B			C	C
d_A, Approach Delay [s/veh]	31.30			0.00			21.14			30.74		
Approach LOS	C			A			C			C		
d_I, Intersection Delay [s/veh]	26.55											
Intersection LOS	C											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	37.14
I_p,int, Pedestrian LOS Score for Intersection	2.398	2.194	0.000	3.042
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	947	358
d_b, Bicycle Delay [s]	47.50	47.50	13.16	32.02
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.749	2.222
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.567

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	208	140	81	1	137	171	145	705	588	87	534	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	208	140	81	1	137	171	145	705	588	87	534	7
Peak Hour Factor	0.8290	0.8290	0.8290	0.8490	0.8490	0.8490	0.8680	0.8680	0.8680	0.8840	0.8840	0.8840
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	42	24	0	40	50	42	203	169	25	151	2
Total Analysis Volume [veh/h]	251	169	98	1	161	201	167	812	677	98	604	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	46	46	10	42	0	17	39	39	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	26	36	0	17	17	12	56	70	6	50	50
g / C, Green / Cycle	0.10	0.25	0.35	0.00	0.16	0.16	0.12	0.54	0.67	0.06	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.08	0.10	0.07	0.00	0.09	0.13	0.10	0.24	0.25	0.03	0.12	0.12
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1760
c, Capacity [veh/h]	314	445	522	5	280	238	196	1808	1786	190	1611	841
d1, Uniform Delay [s]	46.53	32.60	23.97	52.30	41.00	43.02	45.54	14.90	7.67	48.08	16.28	16.28
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.68	0.54	0.17	21.49	1.87	8.03	9.82	0.81	0.61	2.16	0.37	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.38	0.19	0.21	0.58	0.85	0.85	0.45	0.38	0.52	0.25	0.25
d, Delay for Lane Group [s/veh]	51.21	33.13	24.15	73.79	42.87	51.05	55.36	15.70	8.28	50.25	16.65	17.00
Lane Group LOS	D	C	C	E	D	D	E	B	A	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.40	3.61	1.72	0.05	3.99	5.56	4.78	5.88	3.20	1.30	2.90	3.11
50th-Percentile Queue Length [ft/ln]	84.99	90.29	43.04	1.35	99.71	139.11	119.57	147.12	80.10	32.52	72.41	77.69
95th-Percentile Queue Length [veh/ln]	6.12	6.50	3.10	0.10	7.18	9.43	8.37	9.86	5.77	2.34	5.21	5.59
95th-Percentile Queue Length [ft/ln]	152.98	162.52	77.48	2.43	179.48	235.83	209.23	246.58	144.18	58.53	130.34	139.85

Movement, Approach, & Intersection Results

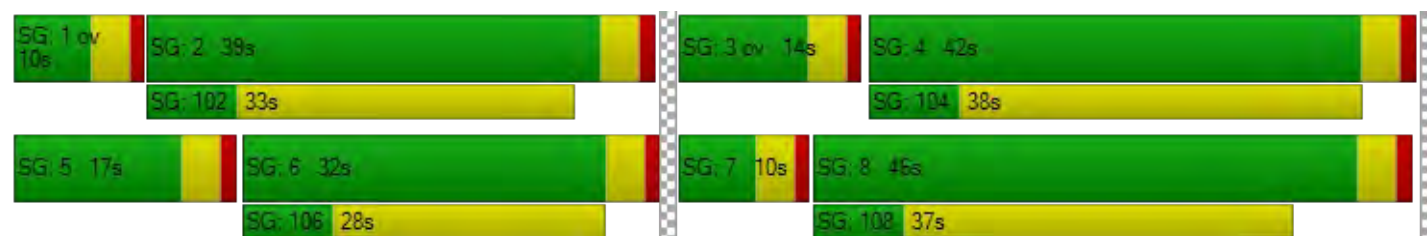
d_M, Delay for Movement [s/veh]	51.21	33.13	24.15	73.79	42.87	51.05	55.36	15.70	8.28	50.25	16.77	17.00
Movement LOS	D	C	C	E	D	D	E	B	A	D	B	B
d_A, Approach Delay [s/veh]	40.19			47.49			16.67			21.39		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	24.90											
Intersection LOS	C											
Intersection V/C	0.567											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.696			2.311			3.063			2.827		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			724			667			533		
d_b, Bicycle Delay [s]	18.90			21.38			23.33			28.23		
I_b,int, Bicycle LOS Score for Intersection	2.414			2.159			2.926			1.950		
Bicycle LOS	B			B			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.619

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	77	383	218	327	813	93	81	112	37	254	124	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	383	218	327	813	93	81	112	37	254	124	312
Peak Hour Factor	0.9110	0.9110	0.9110	0.9020	0.9020	0.9020	0.8540	0.8540	0.8540	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	105	60	91	225	26	24	33	11	71	35	87
Total Analysis Volume [veh/h]	85	420	239	363	901	103	95	131	43	283	138	348
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	16	28	0	18	30	0	16	39	0	15	38	38
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	47	47	14	55	55	7	12	11	16	34
g / C, Green / Cycle	0.06	0.47	0.47	0.14	0.55	0.55	0.07	0.12	0.11	0.16	0.34
(v / s)_i Volume / Saturation Flow Rate	0.05	0.12	0.16	0.11	0.20	0.20	0.06	0.10	0.09	0.08	0.23
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1680	1687	1698	3277	1772	1506
c, Capacity [veh/h]	109	1586	708	460	1841	917	121	210	347	280	510
d1, Uniform Delay [s]	46.13	16.06	16.71	41.60	12.89	12.89	45.73	42.84	43.80	38.50	28.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.16
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.27	0.41	1.29	3.06	0.56	1.12	10.62	8.10	4.67	1.34	2.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.26	0.34	0.79	0.36	0.36	0.79	0.83	0.82	0.49	0.68
d, Delay for Lane Group [s/veh]	57.40	16.47	18.00	44.67	13.45	14.01	56.35	50.94	48.48	39.84	30.92
Lane Group LOS	E	B	B	D	B	B	E	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.41	2.92	3.61	4.49	4.20	4.33	2.67	4.64	3.63	3.18	7.37
50th-Percentile Queue Length [ft/ln]	60.30	73.12	90.28	112.13	105.01	108.21	66.64	115.95	90.74	79.42	184.18
95th-Percentile Queue Length [veh/ln]	4.34	5.26	6.50	7.96	7.56	7.74	4.80	8.17	6.53	5.72	11.82
95th-Percentile Queue Length [ft/ln]	108.54	131.62	162.51	198.96	189.03	193.51	119.95	204.25	163.32	142.96	295.47

Movement, Approach, & Intersection Results

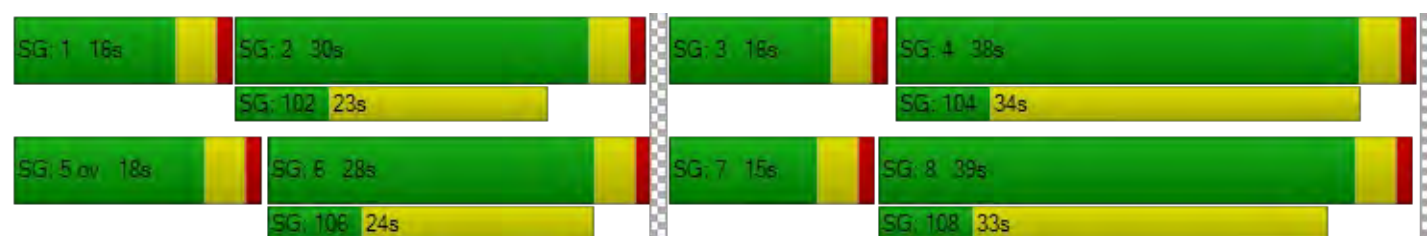
d_M, Delay for Movement [s/veh]	57.40	16.47	18.00	44.67	13.59	14.01	56.35	50.94	50.94	48.48	39.84	30.92
Movement LOS	E	B	B	D	B	B	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	21.64			21.87			52.85			38.98		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	28.64											
Intersection LOS	C											
Intersection V/C	0.619											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.873			3.002			2.138			2.702		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	480			520			700			680		
d_b, Bicycle Delay [s]	28.88			27.38			21.13			21.78		
I_b,int, Bicycle LOS Score for Intersection	1.969			2.311			2.003			2.828		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.482

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	108	71	161	51	36	73	82	537	126	140	676	24
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	108	71	161	51	36	73	82	537	126	140	676	24
Peak Hour Factor	0.8630	0.8630	0.8630	0.7790	0.7790	0.7790	0.9320	0.9320	0.9320	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	21	47	16	12	23	22	144	34	36	175	6
Total Analysis Volume [veh/h]	125	82	187	65	46	94	88	576	135	145	699	25
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	21	30	0	22	31	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	21	6	47	47	10	51	51
g / C, Green / Cycle	0.23	0.23	0.23	0.23	0.23	0.07	0.53	0.53	0.11	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.10	0.05	0.12	0.05	0.09	0.05	0.21	0.21	0.09	0.21	0.02
s, saturation flow rate [veh/h]	1248	1772	1506	1316	1584	1687	1772	1657	1687	3373	1506
c, Capacity [veh/h]	239	413	351	297	369	114	934	874	179	1910	853
d1, Uniform Delay [s]	38.10	27.75	30.22	33.01	29.04	41.32	12.68	12.69	39.36	10.69	8.62
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.77	0.23	1.25	0.37	0.64	10.66	1.24	1.33	8.44	0.54	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.52	0.20	0.53	0.22	0.38	0.77	0.39	0.39	0.81	0.37	0.03
d, Delay for Lane Group [s/veh]	39.88	27.99	31.48	33.37	29.68	51.98	13.92	14.02	47.80	11.23	8.68
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.74	1.43	3.60	1.26	2.56	2.24	4.47	4.21	3.51	3.66	0.22
50th-Percentile Queue Length [ft/ln]	68.62	35.63	89.88	31.47	64.09	55.88	111.64	105.21	87.74	91.54	5.45
95th-Percentile Queue Length [veh/ln]	4.94	2.57	6.47	2.27	4.61	4.02	7.93	7.57	6.32	6.59	0.39
95th-Percentile Queue Length [ft/ln]	123.52	64.13	161.78	56.64	115.36	100.58	198.28	189.32	157.93	164.76	9.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.88	27.99	31.48	33.37	29.68	29.68	51.98	13.96	14.02	47.80	11.23	8.68
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	33.42			30.85			18.16			17.26		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	21.61											
Intersection LOS	C											
Intersection V/C	0.482											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.306			2.070			2.812			2.821		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			600		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			22.05		
I_b,int, Bicycle LOS Score for Intersection	2.210			1.898			2.219			2.277		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.728

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	117	268	174	240	535	409	214	659	154	160	626	206
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	117	268	174	240	535	409	214	659	154	160	626	206
Peak Hour Factor	0.9440	0.9440	0.9440	0.9150	0.9150	0.9150	0.9030	0.9030	0.9030	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	31	71	46	66	146	112	59	182	43	43	169	56
Total Analysis Volume [veh/h]	124	284	184	262	585	447	237	730	171	173	676	222
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	25	54	0	14	39	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	34	12	39	39	10	46	46	8	43	43
g / C, Green / Cycle	0.05	0.30	0.30	0.10	0.34	0.34	0.09	0.40	0.40	0.07	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.08	0.12	0.08	0.31	0.32	0.07	0.22	0.11	0.05	0.20	0.15
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1522	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	173	996	444	330	607	522	287	1334	595	228	1274	569
d1, Uniform Delay [s]	53.64	31.22	32.57	50.58	36.07	36.32	51.64	26.84	23.73	52.57	27.88	26.15
k, delay calibration	0.11	0.11	0.11	0.11	0.26	0.27	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	0.16	0.62	4.34	11.69	15.10	5.98	1.62	1.21	5.08	1.59	2.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.29	0.41	0.79	0.91	0.92	0.83	0.55	0.29	0.76	0.53	0.39
d, Delay for Lane Group [s/veh]	59.03	31.37	33.18	54.93	47.75	51.42	57.62	28.46	24.94	57.65	29.47	28.16
Lane Group LOS	E	C	C	D	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.89	3.07	4.19	3.88	16.46	14.92	3.60	7.95	3.37	2.61	7.46	4.74
50th-Percentile Queue Length [ft/ln]	47.37	76.65	104.79	97.04	411.43	372.91	89.89	198.75	84.22	65.34	186.62	118.58
95th-Percentile Queue Length [veh/ln]	3.41	5.52	7.55	6.99	23.11	21.25	6.47	12.57	6.06	4.70	11.95	8.31
95th-Percentile Queue Length [ft/ln]	85.27	137.97	188.63	174.67	577.75	531.26	161.80	314.35	151.59	117.61	298.63	207.87

Movement, Approach, & Intersection Results

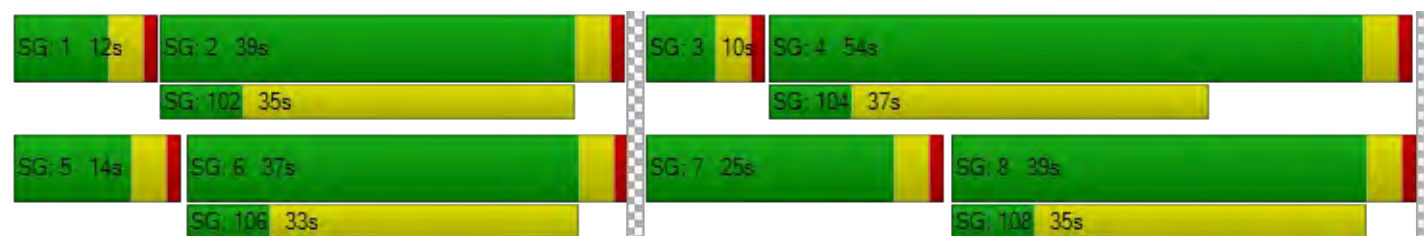
d_M, Delay for Movement [s/veh]	59.03	31.37	33.18	54.93	47.97	51.42	57.62	28.46	24.94	57.65	29.47	28.16
Movement LOS	E	C	C	D	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	37.73			50.57			34.00			33.75		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	39.71											
Intersection LOS	D											
Intersection V/C	0.728											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.817			2.796			2.938			2.919		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	609			870			609			574		
d_b, Bicycle Delay [s]	27.83			18.37			27.83			29.23		
I_b,int, Bicycle LOS Score for Intersection	2.048			2.627			2.498			2.443		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	21.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.572

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	303	18	159	11	20	12	8	678	318	145	661	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	303	18	159	11	20	12	8	678	318	145	661	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.7170	0.7170	0.7170	0.9350	0.9350	0.9350	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	5	41	4	7	4	2	181	85	39	178	3
Total Analysis Volume [veh/h]	316	19	166	15	28	17	9	725	340	157	714	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	61	61	0	37	0	10	38	0	11	39	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	22	33	5	5	1	69	69	7	75	75
g / C, Green / Cycle	0.12	0.20	0.30	0.05	0.05	0.01	0.63	0.63	0.06	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.10	0.01	0.11	0.01	0.03	0.01	0.32	0.32	0.05	0.21	0.21
s, saturation flow rate [veh/h]	3277	1772	1506	1393	1661	1687	1772	1583	3277	1772	1760
c, Capacity [veh/h]	386	355	453	95	77	23	1110	991	210	1199	1191
d1, Uniform Delay [s]	47.39	35.55	30.23	53.28	51.44	53.82	11.25	11.25	50.63	7.24	7.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.31	0.06	0.50	0.76	6.88	10.42	1.65	1.85	5.27	0.65	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.05	0.37	0.16	0.59	0.39	0.51	0.51	0.75	0.30	0.30
d, Delay for Lane Group [s/veh]	51.70	35.62	30.72	54.04	58.32	64.24	12.90	13.11	55.91	7.89	7.90
Lane Group LOS	D	D	C	D	E	E	B	B	E	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.44	0.42	3.51	0.43	1.36	0.31	7.53	6.79	2.27	3.42	3.40
50th-Percentile Queue Length [ft/ln]	111.05	10.50	87.83	10.75	34.05	7.84	188.15	169.73	56.87	85.56	85.06
95th-Percentile Queue Length [veh/ln]	7.90	0.76	6.32	0.77	2.45	0.56	12.02	11.06	4.09	6.16	6.12
95th-Percentile Queue Length [ft/ln]	197.47	18.91	158.09	19.35	61.28	14.11	300.62	276.56	102.37	154.00	153.10

Movement, Approach, & Intersection Results

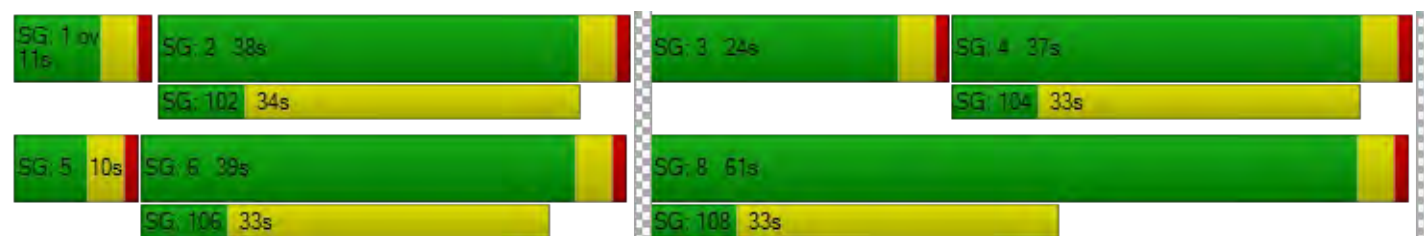
d_M, Delay for Movement [s/veh]	51.70	35.62	30.72	54.04	58.32	58.32	64.24	12.95	13.11	55.91	7.89	7.90
Movement LOS	D	D	C	D	E	E	E	B	B	E	A	A
d_A, Approach Delay [s/veh]	44.14			57.25			13.43			16.42		
Approach LOS	D			E			B			B		
d_I, Intersection Delay [s/veh]	21.63											
Intersection LOS	C											
Intersection V/C	0.572											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.629			1.983			2.723			2.775		
Crosswalk LOS	B			A			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1036			600			618			636		
d_b, Bicycle Delay [s]	12.77			26.95			26.25			25.57		
I_b,int, Bicycle LOS Score for Intersection	2.386			1.659			2.446			2.289		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.490

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	90	4	191	156	725	5	11	580	70
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	90	4	191	156	725	5	11	580	70
Peak Hour Factor	0.7140	0.7140	0.7140	0.9130	0.9130	0.9130	0.9210	0.9210	0.9210	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	3	25	1	52	42	197	1	3	161	19
Total Analysis Volume [veh/h]	14	3	11	99	4	209	169	787	5	12	642	78
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	34	37	0	29	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	14	14	40	14	75	75	2	62	62
g / C, Green / Cycle	0.03	0.03	0.03	0.13	0.13	0.36	0.13	0.68	0.68	0.02	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.03	0.03	0.14	0.10	0.22	0.22	0.01	0.19	0.05
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1693	1506	1687	1772	1768	1687	3373	1506
c, Capacity [veh/h]	91	58	49	215	216	544	217	1199	1196	30	1910	853
d1, Uniform Delay [s]	53.62	51.61	51.90	43.23	43.23	26.09	46.46	7.41	7.41	53.49	12.80	10.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.78	0.37	2.27	0.57	0.57	0.45	5.97	0.74	0.74	8.34	0.48	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.15	0.05	0.22	0.24	0.24	0.38	0.78	0.33	0.33	0.40	0.34	0.09
d, Delay for Lane Group [s/veh]	54.40	51.98	54.17	43.80	43.80	26.53	52.44	8.15	8.15	61.83	13.27	11.14
Lane Group LOS	D	D	D	D	D	C	D	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.40	0.09	0.33	1.30	1.30	4.11	4.82	3.80	3.80	0.40	4.24	0.90
50th-Percentile Queue Length [ft/ln]	10.09	2.15	8.17	32.38	32.48	102.74	120.54	95.11	94.92	9.95	105.92	22.58
95th-Percentile Queue Length [veh/ln]	0.73	0.16	0.59	2.33	2.34	7.40	8.42	6.85	6.83	0.72	7.61	1.63
95th-Percentile Queue Length [ft/ln]	18.16	3.88	14.71	58.29	58.47	184.93	210.57	171.20	170.85	17.90	190.31	40.64

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.40	51.98	54.17	43.80	43.80	26.53	52.44	8.15	8.15	61.83	13.27	11.14
Movement LOS	D	D	D	D	D	C	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	54.05			32.23			15.93			13.84		
Approach LOS	D			C			B			B		
d_I, Intersection Delay [s/veh]	18.21											
Intersection LOS	B											
Intersection V/C	0.490											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.153			2.278			2.685			0.000		
Crosswalk LOS	B			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			545			600			509		
d_b, Bicycle Delay [s]	49.16			29.09			26.95			30.56		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.074			2.352			2.164		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	33.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.568

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	220	297	58	153	588	103	112	408	285	53	347	85
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	220	297	58	153	588	103	112	408	285	53	347	85
Peak Hour Factor	0.8820	0.8820	0.8820	0.8520	0.8520	0.8520	0.9210	0.9210	0.9210	0.8340	0.8340	0.8340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	62	84	16	45	173	30	30	111	77	16	104	25
Total Analysis Volume [veh/h]	249	337	66	180	690	121	122	443	309	64	416	102
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	37	0	14	37	0	15	44	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	52	52	8	49	49	9	25	25	5	20	20
g / C, Green / Cycle	0.09	0.49	0.49	0.07	0.47	0.47	0.09	0.23	0.23	0.05	0.19	0.19
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.08	0.05	0.16	0.16	0.07	0.13	0.21	0.04	0.12	0.07
s, saturation flow rate [veh/h]	3277	3373	1629	3277	3373	1640	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	309	1651	798	244	1583	770	150	791	353	83	658	294
d1, Uniform Delay [s]	46.65	14.89	14.92	47.65	17.65	17.67	47.05	35.44	38.74	49.38	38.83	36.52
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.90	0.21	0.45	4.35	0.59	1.23	10.17	0.62	7.07	13.76	1.01	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.16	0.17	0.74	0.34	0.35	0.81	0.56	0.87	0.77	0.63	0.35
d, Delay for Lane Group [s/veh]	51.55	15.10	15.37	52.00	18.24	18.91	57.22	36.07	45.81	63.14	39.84	37.22
Lane Group LOS	D	B	B	D	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.38	1.80	1.84	2.45	4.21	4.27	3.54	5.03	8.26	1.97	4.98	2.31
50th-Percentile Queue Length [ft/ln]	84.61	45.09	46.06	61.16	105.24	106.68	88.57	125.77	206.49	49.32	124.57	57.82
95th-Percentile Queue Length [veh/ln]	6.09	3.25	3.32	4.40	7.57	7.65	6.38	8.71	12.97	3.55	8.64	4.16
95th-Percentile Queue Length [ft/ln]	152.29	81.17	82.91	110.08	189.36	191.37	159.43	217.72	324.33	88.78	216.09	104.07

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.55	15.16	15.37	52.00	18.38	18.91	57.22	36.07	45.81	63.14	39.84	37.22
Movement LOS	D	B	B	D	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	29.07			24.55			42.46			41.95		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	33.82											
Intersection LOS	C											
Intersection V/C	0.568											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.942			2.922			2.730			2.667		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	629			629			762			667		
d_b, Bicycle Delay [s]	24.69			24.69			20.12			23.33		
I_b,int, Bicycle LOS Score for Intersection	1.918			2.105			2.281			2.040		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.269

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	20	279	106	66	259	19	32	10	55	76	4	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	20	279	106	66	259	19	32	10	55	76	4	54
Peak Hour Factor	0.9200	0.9200	0.9200	0.9030	0.9030	0.9030	0.6380	0.6380	0.6380	0.9310	0.9310	0.9310
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	76	29	18	72	5	13	4	22	20	1	15
Total Analysis Volume [veh/h]	22	303	115	73	287	21	50	16	86	82	4	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	30	26	0	39	35	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	62	62	5	65	65	16	16	16	16
g / C, Green / Cycle	0.03	0.65	0.65	0.06	0.68	0.68	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.13	0.04	0.09	0.09	0.04	0.07	0.06	0.04
s, saturation flow rate [veh/h]	1687	1772	1610	1687	1772	1730	1340	1542	1292	1521
c, Capacity [veh/h]	48	1156	1050	95	1205	1177	215	254	179	251
d1, Uniform Delay [s]	45.44	6.53	6.56	44.24	5.32	5.33	39.63	35.47	42.94	34.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.71	0.36	0.41	12.36	0.22	0.23	0.55	1.02	1.82	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.19	0.19	0.77	0.13	0.13	0.23	0.40	0.46	0.25
d, Delay for Lane Group [s/veh]	52.15	6.89	6.96	56.60	5.54	5.56	40.18	36.49	44.76	35.04
Lane Group LOS	D	A	A	E	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.60	1.67	1.57	2.01	1.02	1.01	1.11	2.16	1.96	1.27
50th-Percentile Queue Length [ft/ln]	14.92	41.67	39.36	50.15	25.54	25.22	27.75	54.02	49.05	31.79
95th-Percentile Queue Length [veh/ln]	1.07	3.00	2.83	3.61	1.84	1.82	2.00	3.89	3.53	2.29
95th-Percentile Queue Length [ft/ln]	26.85	75.00	70.85	90.27	45.96	45.39	49.95	97.24	88.28	57.22

Movement, Approach, & Intersection Results

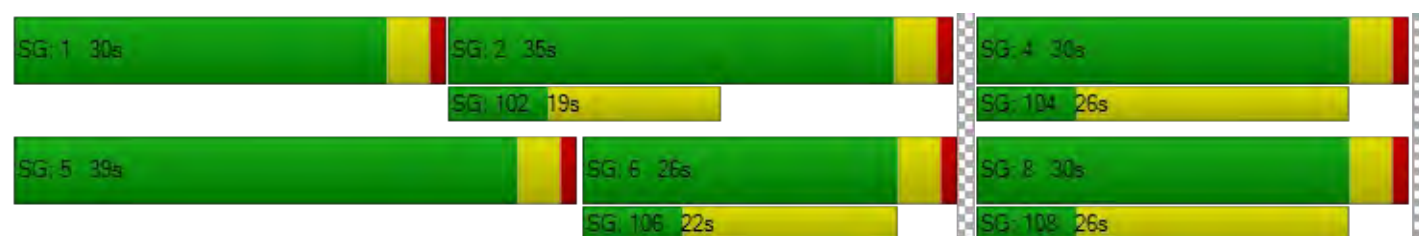
d_M, Delay for Movement [s/veh]	52.15	6.91	6.96	56.60	5.55	5.56	40.18	36.49	36.49	44.76	35.04	35.04
Movement LOS	D	A	A	E	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.19			15.33			37.70			40.58		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	19.21											
Intersection LOS	B											
Intersection V/C	0.269											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.593			2.528			2.007			2.056		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	463			653			547			547		
d_b, Bicycle Delay [s]	28.05			21.56			25.06			25.06		
I_b,int, Bicycle LOS Score for Intersection	1.923			1.874			1.810			1.797		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	28.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.624

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	21	309	461	51	278	20	23	13	25	459	6	90
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	309	461	51	278	20	23	13	25	459	6	90
Peak Hour Factor	0.9560	0.9560	0.9560	0.8510	0.8510	0.8510	0.8970	0.8970	0.8970	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	81	121	15	82	6	6	4	7	132	2	26
Total Analysis Volume [veh/h]	22	323	482	60	327	24	26	14	28	528	7	104
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	56	56	65	58	58	5	5	23	23
g / C, Green / Cycle	0.62	0.53	0.53	0.62	0.55	0.55	0.05	0.05	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.02	0.18	0.32	0.08	0.10	0.10	0.02	0.02	0.19	0.19
s, saturation flow rate [veh/h]	1080	1772	1506	786	1772	1729	1716	1506	1687	1624
c, Capacity [veh/h]	710	941	800	431	976	953	85	75	370	356
d1, Uniform Delay [s]	7.97	14.13	16.99	11.00	11.76	11.77	48.56	48.33	39.67	39.70
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.18	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	1.00	3.35	0.67	0.41	0.42	3.95	3.06	10.78	11.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.34	0.60	0.14	0.18	0.18	0.47	0.37	0.88	0.88
d, Delay for Lane Group [s/veh]	7.99	15.13	20.35	11.67	12.17	12.19	52.51	51.39	50.45	51.17
Lane Group LOS	A	B	C	B	B	B	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	4.52	8.39	0.60	2.11	2.08	1.11	0.77	9.12	8.88
50th-Percentile Queue Length [ft/ln]	4.70	112.97	209.66	14.90	52.84	52.11	27.78	19.31	227.99	222.01
95th-Percentile Queue Length [veh/ln]	0.34	8.00	13.14	1.07	3.80	3.75	2.00	1.39	14.07	13.77
95th-Percentile Queue Length [ft/ln]	8.46	200.12	328.39	26.82	95.12	93.81	50.00	34.77	351.81	344.18

Movement, Approach, & Intersection Results

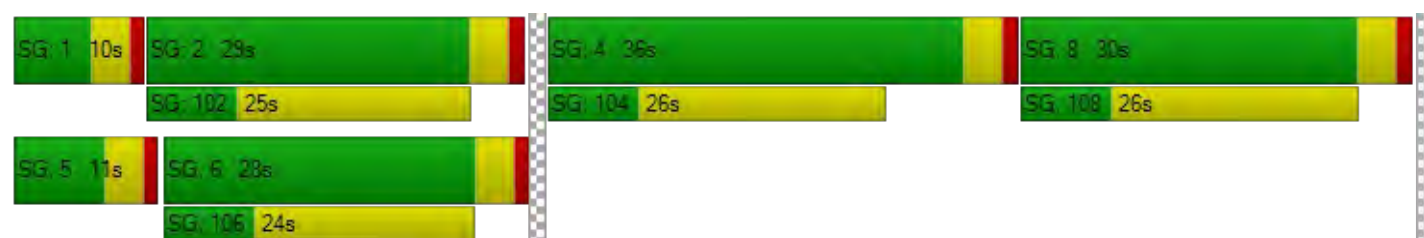
d_M, Delay for Movement [s/veh]	7.99	15.13	20.35	11.67	12.18	12.19	52.51	52.51	51.39	50.73	51.17	51.17
Movement LOS	A	B	C	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	17.98			12.10			52.05			50.81		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	28.71											
Intersection LOS	C											
Intersection V/C	0.624											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.641			2.476			2.005			2.383		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	457			476			495			610		
d_b, Bicycle Delay [s]	31.24			30.48			29.72			25.38		
I_b,int, Bicycle LOS Score for Intersection	2.242			1.899			1.672			2.614		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.900

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	160	23	86	82	18	613	698	333	28	82	555	48
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	160	23	86	82	18	613	698	333	28	82	555	48
Peak Hour Factor	0.8300	0.8300	0.8300	0.8970	0.8970	0.8970	0.9440	0.9440	0.9440	0.8860	0.8860	0.8860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	48	7	26	23	5	171	185	88	7	23	157	14
Total Analysis Volume [veh/h]	193	28	104	91	20	683	739	353	30	93	626	54
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	15	15	36	31	0	37	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	13	13	11	11	64	32	71	71	8	48	48
g / C, Green / Cycle	0.11	0.11	0.11	0.09	0.09	0.54	0.27	0.59	0.59	0.07	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.07	0.05	0.01	0.45	0.23	0.11	0.11	0.06	0.19	0.19
s, saturation flow rate [veh/h]	1417	1509	1506	1687	1612	1506	3277	1772	1723	1687	1772	1723
c, Capacity [veh/h]	194	220	166	156	149	807	873	1053	1024	118	705	685
d1, Uniform Delay [s]	50.58	52.12	51.04	52.29	50.09	23.69	41.71	11.09	11.09	54.98	27.04	27.04
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.51	2.85	3.83	3.46	0.41	10.68	2.37	0.39	0.40	11.14	2.42	2.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.62	0.63	0.58	0.13	0.85	0.85	0.18	0.18	0.79	0.49	0.49
d, Delay for Lane Group [s/veh]	52.10	54.97	54.87	55.74	50.50	34.36	44.08	11.48	11.49	66.12	29.46	29.54
Lane Group LOS	D	D	D	E	D	C	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.48	4.20	3.17	2.78	0.57	18.14	10.58	2.43	2.37	3.13	7.83	7.64
50th-Percentile Queue Length [ft/ln]	61.90	105.08	79.19	69.60	14.29	453.41	264.48	60.73	59.20	78.35	195.78	190.98
95th-Percentile Queue Length [veh/ln]	4.46	7.57	5.70	5.01	1.03	25.12	15.91	4.37	4.26	5.64	12.42	12.17
95th-Percentile Queue Length [ft/ln]	111.43	189.14	142.54	125.29	25.72	628.01	397.83	109.32	106.55	141.03	310.51	304.30

Movement, Approach, & Intersection Results

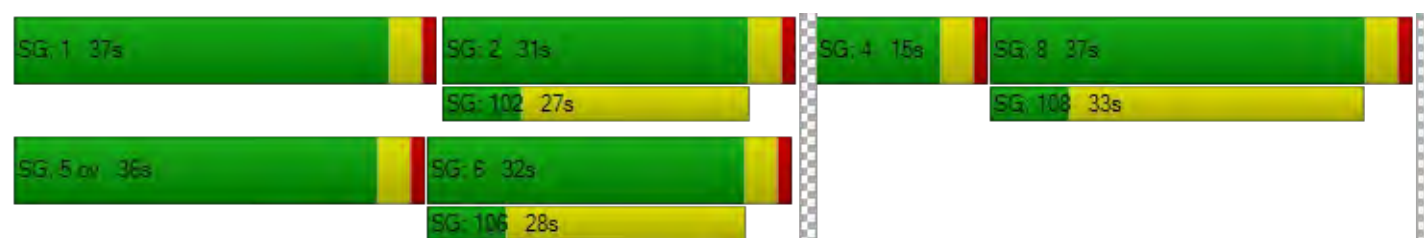
d_M, Delay for Movement [s/veh]	53.67	54.97	54.87	55.74	50.50	34.36	44.08	11.48	11.49	66.12	29.49	29.54
Movement LOS	D	D	D	E	D	C	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	54.19			37.22			32.95			33.90		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	36.61											
Intersection LOS	D											
Intersection V/C	0.900											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.405			2.629			0.000			2.571		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			183			450			467		
d_b, Bicycle Delay [s]	31.54			49.50			36.04			35.27		
I_b,int, Bicycle LOS Score for Intersection	2.096			2.215			2.485			2.197		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.770

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	327	710	189	205	738	257	300	1067	259	329	1173	175
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	327	710	189	205	738	257	300	1067	259	329	1173	175
Peak Hour Factor	0.9070	0.9070	0.9070	0.9640	0.9640	0.9640	0.9710	0.9710	0.9710	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	196	52	53	191	67	77	275	67	86	305	46
Total Analysis Volume [veh/h]	361	783	208	213	766	267	309	1099	267	343	1222	182
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	44	0	14	39	0	18	43	0	19	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	31	31	10	25	25	13	49	49	14	51	51
g / C, Green / Cycle	0.13	0.25	0.25	0.08	0.21	0.21	0.11	0.41	0.41	0.12	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.11	0.16	0.14	0.07	0.16	0.18	0.09	0.27	0.28	0.10	0.25	0.12
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1600	3277	4826	1506
c, Capacity [veh/h]	412	1226	382	268	1013	316	364	1382	656	397	2026	632
d1, Uniform Delay [s]	51.58	39.90	38.78	54.15	44.56	45.56	52.41	28.83	28.85	51.82	27.06	22.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.17	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.99	0.56	1.20	5.30	1.18	9.28	5.56	2.59	5.40	5.71	1.34	1.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.64	0.54	0.79	0.76	0.84	0.85	0.67	0.67	0.86	0.60	0.29
d, Delay for Lane Group [s/veh]	57.57	40.46	39.99	59.45	45.73	54.85	57.97	31.43	34.26	57.53	28.40	24.14
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.67	6.92	5.44	3.36	7.23	8.43	4.85	11.20	11.17	5.38	9.21	3.60
50th-Percentile Queue Length [ft/ln]	141.87	172.88	135.89	83.97	180.81	210.77	121.23	279.93	279.14	134.50	230.36	90.08
95th-Percentile Queue Length [veh/ln]	9.58	11.23	9.26	6.05	11.64	13.19	8.46	16.68	16.65	9.18	14.19	6.49
95th-Percentile Queue Length [ft/ln]	239.54	280.70	231.48	151.15	291.07	329.82	211.52	417.12	416.14	229.60	354.81	162.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.57	40.46	39.99	59.45	45.73	54.85	57.97	31.87	34.26	57.53	28.40	24.14
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	44.95			50.03			37.07			33.68		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	40.54											
Intersection LOS	D											
Intersection V/C	0.770											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.159			3.136			3.169			3.217		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			583			650			667		
d_b, Bicycle Delay [s]	26.67			30.10			27.34			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.303			2.245			2.481			2.520		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.512

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	25	29	93	120	40	109	66	1229	34	79	1278	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	29	93	120	40	109	66	1229	34	79	1278	150
Peak Hour Factor	0.8200	0.8200	0.8200	0.7710	0.7710	0.7710	0.9890	0.9890	0.9890	0.9120	0.9120	0.9120
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	9	28	39	13	35	17	311	9	22	350	41
Total Analysis Volume [veh/h]	30	35	113	156	52	141	67	1243	34	87	1401	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	10	28	0	24	42	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16	16	16	16	5	56	56	6	57	57
g / C, Green / Cycle	0.18	0.18	0.18	0.18	0.18	0.18	0.05	0.62	0.62	0.07	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.08	0.11	0.02	0.09	0.04	0.25	0.25	0.05	0.29	0.11
s, saturation flow rate [veh/h]	1352	1772	1506	1373	3373	1506	1687	3373	1748	1687	4826	1506
c, Capacity [veh/h]	274	323	274	272	615	274	92	2085	1080	112	3039	948
d1, Uniform Delay [s]	33.77	30.70	32.54	37.58	30.57	33.21	41.88	8.74	8.75	41.37	8.70	6.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.17	0.15	0.99	1.91	0.06	1.49	10.26	0.58	1.12	10.97	0.51	0.40
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.41	0.57	0.08	0.51	0.73	0.40	0.40	0.78	0.46	0.17
d, Delay for Lane Group [s/veh]	33.95	30.85	33.53	39.48	30.63	34.69	52.14	9.33	9.87	52.34	9.20	7.32
Lane Group LOS	C	C	C	D	C	C	D	A	A	D	A	A
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.58	0.64	2.22	3.42	0.47	2.84	1.71	3.91	4.21	2.22	4.34	1.28
50th-Percentile Queue Length [ft/ln]	14.53	15.99	55.47	85.47	11.71	71.06	42.79	97.74	105.33	55.45	108.62	32.00
95th-Percentile Queue Length [veh/ln]	1.05	1.15	3.99	6.15	0.84	5.12	3.08	7.04	7.58	3.99	7.76	2.30
95th-Percentile Queue Length [ft/ln]	26.16	28.78	99.84	153.84	21.07	127.92	77.02	175.93	189.49	99.82	194.08	57.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.95	30.85	33.53	39.48	30.63	34.69	52.14	9.50	9.87	52.34	9.20	7.32
Movement LOS	C	C	C	D	C	C	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	33.07			36.23			11.64			11.29		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	14.99											
Intersection LOS	B											
Intersection V/C	0.512											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.368			2.419			3.042			3.332		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			533			844		
d_b, Bicycle Delay [s]	17.42			17.42			24.20			15.02		
I_b,int, Bicycle LOS Score for Intersection	1.853			1.848			2.299			2.468		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.925

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	380	449	265	247	787	165	168	1342	243	343	1289	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	380	449	265	247	787	165	168	1342	243	343	1289	138
Peak Hour Factor	0.9240	0.9240	0.9240	0.9170	0.9170	0.9170	0.9130	0.9130	0.9130	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	103	121	72	67	215	45	46	367	67	96	362	39
Total Analysis Volume [veh/h]	411	486	287	269	858	180	184	1470	266	385	1448	155
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	41	0	18	39	0	12	42	0	19	49	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	37	37	12	33	33	8	40	40	15	47	47
g / C, Green / Cycle	0.13	0.31	0.31	0.10	0.27	0.27	0.07	0.33	0.33	0.13	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.10	0.19	0.08	0.25	0.12	0.06	0.30	0.18	0.12	0.30	0.10
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	438	1484	463	325	921	411	221	1614	504	411	1894	591
d1, Uniform Delay [s]	51.51	32.00	35.56	53.06	42.53	36.02	55.32	38.24	32.30	52.03	31.65	24.70
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.92	0.13	1.92	5.34	4.92	0.73	7.99	9.26	3.93	10.30	3.00	1.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.33	0.62	0.83	0.93	0.44	0.83	0.91	0.53	0.94	0.76	0.26
d, Delay for Lane Group [s/veh]	61.43	32.13	37.48	58.39	47.45	36.75	63.31	47.51	36.23	62.33	34.65	25.78
Lane Group LOS	E	C	D	E	D	D	E	D	D	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.71	3.65	7.40	4.22	12.90	4.44	3.00	14.99	6.79	6.32	12.51	3.18
50th-Percentile Queue Length [ft/ln]	167.85	91.32	185.07	105.51	322.57	111.11	74.90	374.85	169.74	158.03	312.67	79.48
95th-Percentile Queue Length [veh/ln]	10.96	6.58	11.87	7.59	18.79	7.90	5.39	21.34	11.06	10.44	18.31	5.72
95th-Percentile Queue Length [ft/ln]	274.09	164.38	296.63	189.74	469.84	197.55	134.82	533.62	276.57	261.11	457.67	143.06

Movement, Approach, & Intersection Results

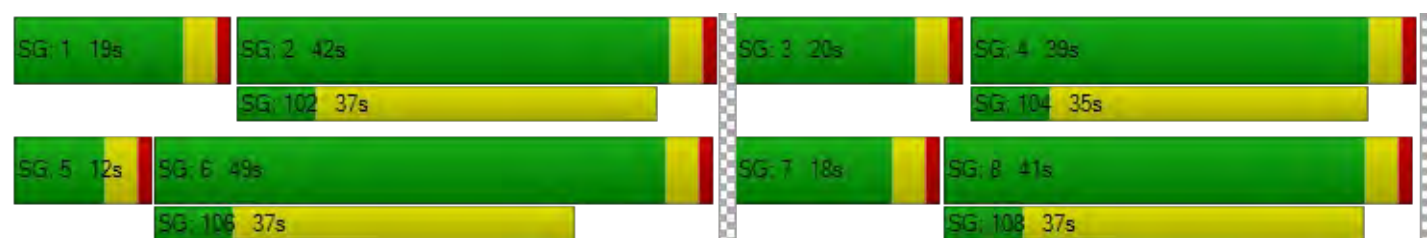
d_M, Delay for Movement [s/veh]	61.43	32.13	37.48	58.39	47.45	36.75	63.31	47.51	36.23	62.33	34.65	25.78
Movement LOS	E	C	D	E	D	D	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	43.60			48.23			47.46			39.32		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.37											
Intersection LOS	D											
Intersection V/C	0.925											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.067			2.999			3.292			3.298		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			633			750		
d_b, Bicycle Delay [s]	28.70			30.10			28.02			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.211			2.638			2.616			2.653		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	59.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.004

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	64	36	164	400	72	347	340	1354	30	104	1487	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	36	164	400	72	347	340	1354	30	104	1487	447
Peak Hour Factor	0.8250	0.8250	0.8250	0.9010	0.9010	0.9010	0.9400	0.9400	0.9400	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	11	50	111	20	96	90	360	8	26	379	114
Total Analysis Volume [veh/h]	78	44	199	444	80	385	362	1440	32	106	1514	455
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	40	0	17	47	0	12	42	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	36	36	13	43	43	8	38	38
g / C, Green / Cycle	0.14	0.14	0.14	0.30	0.30	0.11	0.36	0.36	0.07	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.15	0.14	0.30	0.11	0.29	0.29	0.06	0.31	0.30
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1546	3277	3373	1752	1687	4826	1506
c, Capacity [veh/h]	241	253	196	982	463	356	1205	626	113	1523	475
d1, Uniform Delay [s]	46.24	45.22	51.45	34.04	42.02	53.50	34.80	34.81	55.74	40.97	40.29
k, delay calibration	0.11	0.11	0.14	0.11	0.46	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.77	0.32	38.76	0.33	40.99	26.65	5.76	10.58	26.56	21.76	31.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.17	1.02	0.45	1.00	1.02	0.80	0.80	0.94	0.99	0.96
d, Delay for Lane Group [s/veh]	47.01	45.55	90.21	34.36	83.01	80.15	40.56	45.39	82.31	62.73	72.27
Lane Group LOS	D	D	F	C	F	F	D	D	F	E	E
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.15	1.18	7.98	5.30	18.81	6.67	13.55	14.93	4.03	17.71	17.21
50th-Percentile Queue Length [ft/ln]	53.85	29.57	199.38	132.44	470.37	166.82	338.80	373.22	100.67	442.85	430.18
95th-Percentile Queue Length [veh/ln]	3.88	2.13	12.70	9.07	25.99	10.98	19.59	21.27	7.25	24.62	24.01
95th-Percentile Queue Length [ft/ln]	96.94	53.23	317.54	226.80	649.67	274.59	489.73	531.64	181.20	615.42	600.26

Movement, Approach, & Intersection Results

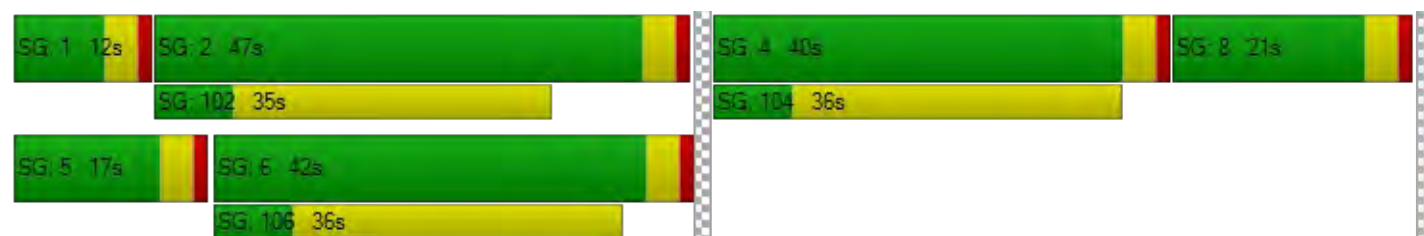
d_M, Delay for Movement [s/veh]	47.01	45.55	90.21	34.36	83.01	83.01	80.15	42.14	45.39	82.31	62.73	72.27
Movement LOS	D	D	F	C	F	F	F	D	D	F	E	E
d_A, Approach Delay [s/veh]	73.59			59.25			49.70			65.82		
Approach LOS	E			E			D			E		
d_I, Intersection Delay [s/veh]	59.39											
Intersection LOS	E											
Intersection V/C	1.004											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.276			2.659			3.204			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	283			600			717			633		
d_b, Bicycle Delay [s]	44.20			29.40			24.70			28.02		
I_b,int, Bicycle LOS Score for Intersection	1.824			3.059			2.568			2.701		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	149.3
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.329

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	256	496	535	630	391	169	126	1437	172	603	1694	935
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	256	496	535	630	391	169	126	1437	172	603	1694	935
Peak Hour Factor	0.9800	0.9800	0.9800	0.8330	0.8330	0.8330	0.9250	0.9250	0.9250	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	127	136	189	117	51	34	388	46	163	459	253
Total Analysis Volume [veh/h]	261	506	546	756	469	203	136	1554	186	653	1835	1013
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	29	41	0	27	39	0	10	34	0	18	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	37	37	23	48	48	6	30	30	14	38	65
g / C, Green / Cycle	0.10	0.31	0.31	0.19	0.40	0.40	0.05	0.25	0.25	0.12	0.32	0.54
(v / s)_i Volume / Saturation Flow Rate	0.08	0.15	0.36	0.32	0.20	0.20	0.04	0.27	0.27	0.20	0.38	0.67
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1594	3277	4826	1649	3277	4826	1506
c, Capacity [veh/h]	327	1035	462	454	706	636	165	1213	414	383	1534	817
d1, Uniform Delay [s]	52.84	33.93	41.60	48.51	27.04	27.19	56.46	44.94	44.94	53.00	40.94	27.44
k, delay calibration	0.11	0.11	0.50	0.19	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.47	0.36	102.10	303.46	0.54	0.63	9.81	46.59	63.98	319.64	95.11	118.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.49	1.18	1.67	0.50	0.51	0.82	1.07	1.07	1.70	1.20	1.24
d, Delay for Lane Group [s/veh]	57.31	34.29	143.70	351.97	27.58	27.82	66.28	91.53	108.91	372.64	136.06	145.51
Lane Group LOS	E	C	F	F	C	C	E	F	F	F	F	F
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.05	6.06	26.57	25.88	7.58	7.02	2.27	17.16	19.60	22.76	28.40	48.93
50th-Percentile Queue Length [ft/ln]	101.25	151.62	664.19	646.91	189.49	175.62	56.67	428.96	489.89	569.09	709.95	1223.37
95th-Percentile Queue Length [veh/ln]	7.29	10.10	38.73	41.68	12.09	11.37	4.08	24.90	27.94	36.31	41.41	70.68
95th-Percentile Queue Length [ft/ln]	182.25	252.58	968.21	1042.02	302.36	284.28	102.00	622.61	698.61	907.77	1035.21	1767.06

Movement, Approach, & Intersection Results

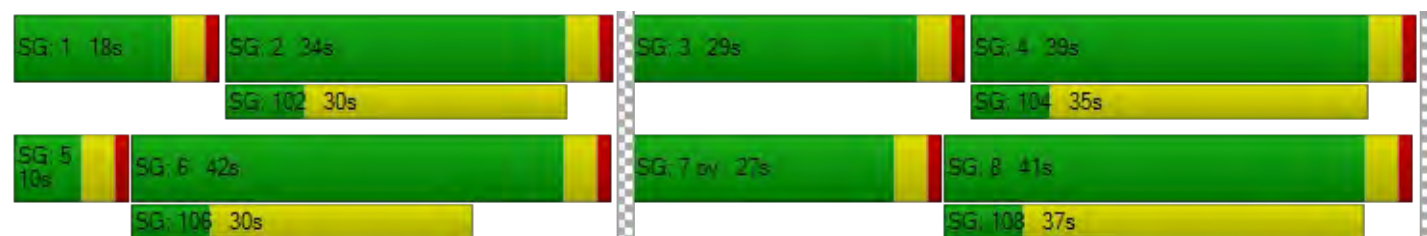
d_M, Delay for Movement [s/veh]	57.31	34.29	143.70	351.97	27.64	27.82	66.28	94.41	108.91	372.64	136.06	145.51
Movement LOS	E	C	F	F	C	C	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	84.36			199.37			93.81			182.92		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	149.28											
Intersection LOS	F											
Intersection V/C	1.329											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.973			2.968			3.315			3.600		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			500			633		
d_b, Bicycle Delay [s]	28.70			30.10			33.75			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.643			2.738			2.333			3.485		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	510	0	701	0	1875	1005	0	2400	336
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	510	0	701	0	1875	1005	0	2400	336
Peak Hour Factor	1.0000	1.0000	1.0000	0.9240	1.0000	0.9240	1.0000	0.9460	0.9460	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	138	0	190	0	496	266	0	617	86
Total Analysis Volume [veh/h]	0	0	0	552	0	759	0	1982	1062	0	2467	345
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	74	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		100	100	100	100	100
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		33	33	33	59	59
g / C, Green / Cycle		0.33	0.33	0.33	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate		0.26	0.28	0.29	0.41	0.51
s, saturation flow rate [veh/h]		1687	1550	1506	4826	4826
c, Capacity [veh/h]		561	516	501	2834	2834
d1, Uniform Delay [s]		30.01	30.97	31.33	14.44	17.41
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.38	3.97	4.89	1.46	4.00
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.78	0.85	0.87	0.70	0.87
d, Delay for Lane Group [s/veh]		32.39	34.94	36.21	15.90	21.41
Lane Group LOS		C	C	D	B	C
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		9.59	10.08	10.30	10.01	15.49
50th-Percentile Queue Length [ft/ln]		239.70	252.01	257.56	250.23	387.34
95th-Percentile Queue Length [veh/ln]		14.67	15.29	15.57	15.20	21.95
95th-Percentile Queue Length [ft/ln]		366.65	382.18	389.15	379.94	548.72

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	32.92	0.00	35.67	0.00	15.90	0.00	0.00	21.41	0.00
Movement LOS				C		D		B			C	
d_A, Approach Delay [s/veh]	0.00			34.51			15.90			21.41		
Approach LOS	A			C			B			C		
d_I, Intersection Delay [s/veh]	22.50											
Intersection LOS	C											
Intersection V/C	0.871											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			39.61			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.455			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			440			440		
d_b, Bicycle Delay [s]	50.00			50.00			30.42			30.42		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.296			2.650			2.916		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	36.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1228	149	526	0	0	226	248	1699	544	0	1721	30
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1228	149	526	0	0	226	248	1699	544	0	1721	30
Peak Hour Factor	0.9320	0.9320	0.9320	1.0000	1.0000	0.8040	0.9340	0.9340	0.9340	1.0000	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	329	40	141	0	0	70	66	455	146	0	452	8
Total Analysis Volume [veh/h]	1318	160	564	0	0	281	266	1819	582	0	1810	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	59	0	0	0	22	22	59	0	0	37	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47	47	18	18	65	43	43
g / C, Green / Cycle	0.39	0.39	0.39	0.15	0.15	0.54	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.31	0.31	0.34	0.11	0.16	0.38	0.29	0.26
s, saturation flow rate [veh/h]	3277	1694	1506	2665	1687	4826	4826	1750
c, Capacity [veh/h]	1272	658	585	401	254	2630	1743	632
d1, Uniform Delay [s]	32.37	32.32	34.20	48.38	50.94	19.93	34.29	33.22
k, delay calibration	0.11	0.22	0.28	0.11	0.18	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.14	4.28	11.13	2.23	46.98	1.52	3.80	7.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.79	0.89	0.70	1.05	0.69	0.79	0.73
d, Delay for Lane Group [s/veh]	33.51	36.59	45.33	50.61	97.92	21.45	38.09	40.44
Lane Group LOS	C	D	D	D	F	C	D	D
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.90	13.83	15.62	4.12	10.91	12.33	12.49	12.77
50th-Percentile Queue Length [ft/ln]	322.45	345.85	390.51	102.97	272.85	308.13	312.16	319.21
95th-Percentile Queue Length [veh/ln]	18.79	19.93	22.10	7.41	16.69	18.08	18.28	18.63
95th-Percentile Queue Length [ft/ln]	469.70	498.35	552.56	185.35	417.27	452.07	457.04	465.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	34.22	36.59	44.50	0.00	0.00	50.61	97.92	21.45	0.00	0.00	38.65	40.44
Movement LOS	C	D	D			D	F	C			D	D
d_A, Approach Delay [s/veh]	37.29			50.61			31.20			38.68		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	36.27											
Intersection LOS	D											
Intersection V/C	0.876											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.712			2.194			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	917			0			917			550		
d_b, Bicycle Delay [s]	17.60			60.00			17.60			31.54		
I_b,int, Bicycle LOS Score for Intersection	4.929			4.132			2.706			2.319		
Bicycle LOS	E			D			B			B		

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	36.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	231	172	104	309	222	174	206	1616	234	137	1408	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	231	172	104	309	222	174	206	1616	234	137	1408	195
Peak Hour Factor	0.9140	0.9140	0.9140	0.8970	0.8970	0.8970	0.9020	0.9020	0.9020	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	63	47	28	86	62	48	57	448	65	36	371	51
Total Analysis Volume [veh/h]	253	188	114	344	247	194	228	1792	259	144	1484	205
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	23	48	0	22	43	0	15	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	15	15	15	19	19	18	64	64	11	57	57
g / C, Green / Cycle	0.08	0.12	0.12	0.12	0.16	0.16	0.15	0.53	0.53	0.09	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.09	0.10	0.14	0.13	0.14	0.40	0.41	0.09	0.26	0.26
s, saturation flow rate [veh/h]	3277	1772	1553	3277	1772	1506	1687	3373	1661	1687	4826	1633
c, Capacity [veh/h]	275	216	189	405	287	244	253	1784	878	156	2274	769
d1, Uniform Delay [s]	54.59	50.85	50.97	51.50	49.01	48.42	50.16	22.39	22.70	54.08	22.74	22.74
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.14	4.84	5.97	5.01	7.55	5.87	11.70	3.20	6.83	19.57	0.98	2.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.74	0.75	0.85	0.86	0.80	0.90	0.77	0.78	0.93	0.56	0.56
d, Delay for Lane Group [s/veh]	66.74	55.68	56.93	56.51	56.56	54.29	61.86	25.59	29.53	73.65	23.72	25.62
Lane Group LOS	E	E	E	E	E	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.26	4.91	4.47	5.34	7.80	5.98	7.54	15.47	16.62	5.16	8.60	9.14
50th-Percentile Queue Length [ft/ln]	106.42	122.70	111.63	133.60	194.91	149.49	188.39	386.86	415.50	128.96	214.88	228.38
95th-Percentile Queue Length [veh/ln]	7.64	8.54	7.93	9.13	12.38	9.99	12.04	21.93	23.31	8.88	13.40	14.09
95th-Percentile Queue Length [ft/ln]	191.02	213.53	198.27	228.37	309.39	249.75	300.94	548.14	582.65	222.08	335.09	352.30

Movement, Approach, & Intersection Results

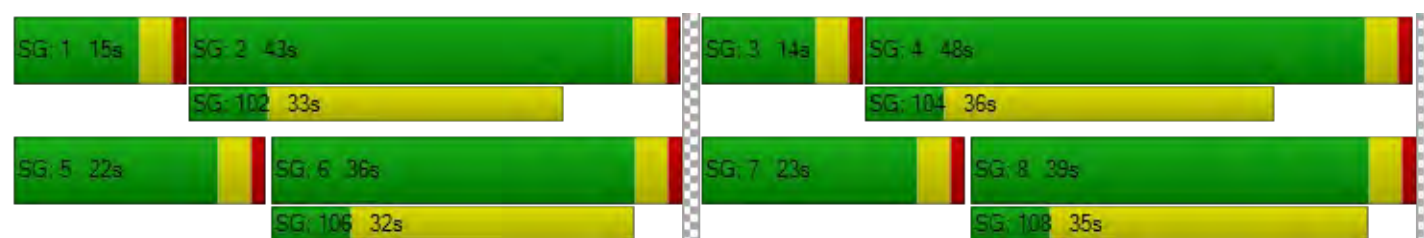
d_M, Delay for Movement [s/veh]	66.74	55.88	56.93	56.51	56.56	54.29	61.86	26.53	29.53	73.65	24.00	25.62
Movement LOS	E	E	E	E	E	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	61.04			55.98			30.41			28.08		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	36.43											
Intersection LOS	D											
Intersection V/C	0.825											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.549			2.695			3.252			3.237		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			733			650			533		
d_b, Bicycle Delay [s]	30.10			24.07			27.34			32.27		
I_b,int, Bicycle LOS Score for Intersection	2.017			2.855			2.813			2.316		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	25.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.827

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	159	16	220	24	10	11	23	1756	277	190	1661	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	16	220	24	10	11	23	1756	277	190	1661	43
Peak Hour Factor	0.9770	0.9770	0.9770	0.8650	0.8650	0.8650	0.9010	0.9010	0.9010	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	4	56	7	3	3	6	487	77	53	460	12
Total Analysis Volume [veh/h]	163	16	225	28	12	13	26	1949	307	210	1839	48
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	31	0	0	10	0	10	32	0	27	49	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	5	5	3	47	47	14	59	59
g / C, Green / Cycle	0.17	0.17	0.17	0.05	0.05	0.03	0.47	0.47	0.14	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.15	0.02	0.02	0.02	0.40	0.20	0.12	0.37	0.37
s, saturation flow rate [veh/h]	1687	1702	1506	1687	1623	1687	4826	1506	1687	3373	1749
c, Capacity [veh/h]	294	296	262	80	77	54	2285	713	245	1979	1026
d1, Uniform Delay [s]	36.06	36.06	40.15	46.21	46.15	47.64	23.28	17.43	41.79	13.54	13.56
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.58	0.57	7.98	2.60	2.42	6.47	4.29	1.89	8.43	1.52	2.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.30	0.30	0.86	0.35	0.33	0.48	0.85	0.43	0.86	0.63	0.63
d, Delay for Lane Group [s/veh]	36.63	36.63	48.13	48.81	48.57	54.11	27.56	19.32	50.21	15.05	16.48
Lane Group LOS	D	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.94	1.95	5.89	0.73	0.65	0.73	13.68	4.89	5.58	8.84	9.60
50th-Percentile Queue Length [ft/ln]	48.41	48.80	147.32	18.25	16.28	18.30	341.97	122.36	139.60	220.96	239.96
95th-Percentile Queue Length [veh/ln]	3.49	3.51	9.87	1.31	1.17	1.32	19.74	8.52	9.46	13.71	14.68
95th-Percentile Queue Length [ft/ln]	87.14	87.84	246.84	32.85	29.31	32.94	493.61	213.06	236.48	342.84	366.98

Movement, Approach, & Intersection Results

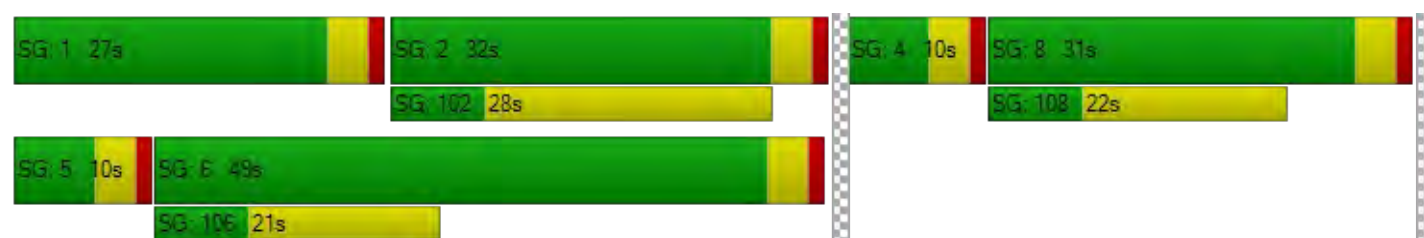
d_M, Delay for Movement [s/veh]	36.63	36.63	48.13	48.81	48.57	48.57	54.11	27.56	19.32	50.21	15.52	16.48
Movement LOS	D	D	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	43.04			48.70			26.76			19.01		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	25.00											
Intersection LOS	C											
Intersection V/C	0.827											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			0.00			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.363			1.992			0.000			3.198		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	540			120			560			900		
d_b, Bicycle Delay [s]	26.65			44.18			25.92			15.13		
I_b,int, Bicycle LOS Score for Intersection	2.226			1.647			2.815			2.713		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	279	277	69	260	603	122	158	1070	276	112	1125	99
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	279	277	69	260	603	122	158	1070	276	112	1125	99
Peak Hour Factor	0.8830	0.8830	0.8830	0.8790	0.8790	0.8790	0.9500	0.9500	0.9500	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	78	20	74	172	35	42	282	73	30	305	27
Total Analysis Volume [veh/h]	316	314	78	296	686	139	166	1126	291	121	1219	107
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	30	0	21	35	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	24	24	11	23	23	6	43	43	6	43	43
g / C, Green / Cycle	0.12	0.24	0.24	0.11	0.23	0.23	0.06	0.43	0.43	0.06	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.10	0.11	0.11	0.09	0.20	0.09	0.05	0.29	0.29	0.04	0.26	0.26
s, saturation flow rate [veh/h]	3277	1772	1652	3277	3373	1506	3277	3373	1592	3277	3373	1699
c, Capacity [veh/h]	380	418	389	372	787	351	199	1457	688	193	1451	731
d1, Uniform Delay [s]	43.31	33.01	33.03	43.25	36.94	32.42	46.52	22.60	22.61	46.05	22.02	22.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.76	0.87	0.94	3.90	3.17	0.72	8.70	2.37	4.94	3.33	1.90	3.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.48	0.49	0.80	0.87	0.40	0.83	0.66	0.66	0.63	0.61	0.61
d, Delay for Lane Group [s/veh]	48.07	33.88	33.98	47.16	40.11	33.14	55.21	24.97	27.55	49.38	23.93	25.76
Lane Group LOS	D	C	C	D	D	C	E	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.05	4.30	4.04	3.74	8.28	2.89	2.27	9.15	9.14	1.55	8.10	8.54
50th-Percentile Queue Length [ft/ln]	101.16	107.42	100.90	93.59	207.07	72.32	56.80	228.74	228.39	38.81	202.59	213.45
95th-Percentile Queue Length [veh/ln]	7.28	7.70	7.27	6.74	13.00	5.21	4.09	14.11	14.09	2.79	12.77	13.33
95th-Percentile Queue Length [ft/ln]	182.08	192.41	181.63	168.46	325.06	130.18	102.24	352.76	352.32	69.85	319.30	333.25

Movement, Approach, & Intersection Results

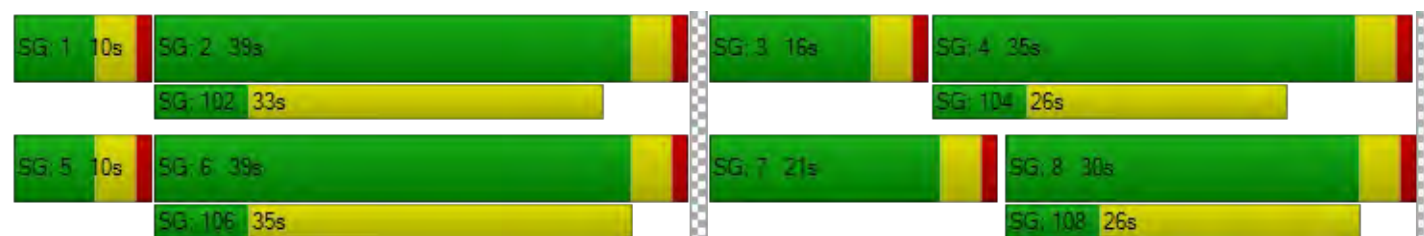
d_M, Delay for Movement [s/veh]	48.07	33.92	33.98	47.16	40.11	33.14	55.21	25.34	27.55	49.38	24.43	25.76
Movement LOS	D	C	C	D	D	C	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	40.24			41.11			28.88			26.62		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.68											
Intersection LOS	C											
Intersection V/C	0.741											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.751			2.837			3.127			3.089		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			620			700			700		
d_b, Bicycle Delay [s]	27.38			23.81			21.13			21.13		
I_b,int, Bicycle LOS Score for Intersection	2.144			2.484			2.430			2.355		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.688

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	75	488	324	195	683	365	378	816	74	296	777	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	75	488	324	195	683	365	378	816	74	296	777	164
Peak Hour Factor	0.9000	0.9000	0.9000	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550	0.9150	0.9150	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	136	90	51	178	95	99	214	19	81	212	45
Total Analysis Volume [veh/h]	83	542	360	204	714	381	396	854	77	323	849	179
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	43	43	13	45	45	24	46	0	18	40	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	27	45	9	29	53	20	54	54	14	48	48
g / C, Green / Cycle	0.06	0.23	0.38	0.08	0.24	0.44	0.17	0.45	0.45	0.12	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.05	0.16	0.24	0.06	0.21	0.25	0.12	0.18	0.05	0.10	0.21	0.21
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1618
c, Capacity [veh/h]	100	764	568	248	820	668	547	2159	674	384	1341	643
d1, Uniform Delay [s]	55.90	42.78	30.62	54.70	43.62	24.90	47.39	22.27	19.32	51.91	27.43	27.44
k, delay calibration	0.11	0.11	0.42	0.11	0.11	0.27	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.05	1.23	4.48	6.73	3.03	1.93	1.84	0.54	0.34	5.03	1.43	2.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.71	0.63	0.82	0.87	0.57	0.72	0.40	0.11	0.84	0.52	0.52
d, Delay for Lane Group [s/veh]	71.95	44.01	35.10	61.43	46.65	26.83	49.23	22.82	19.67	56.94	28.87	30.40
Lane Group LOS	E	D	D	E	D	C	D	C	B	E	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.93	7.53	9.17	3.27	10.47	8.36	5.75	5.48	1.32	5.03	7.78	7.75
50th-Percentile Queue Length [ft/ln]	73.30	188.15	229.36	81.79	261.67	208.88	143.67	136.94	33.10	125.67	194.58	193.67
95th-Percentile Queue Length [veh/ln]	5.28	12.03	14.14	5.89	15.77	13.10	9.68	9.32	2.38	8.70	12.36	12.31
95th-Percentile Queue Length [ft/ln]	131.95	300.63	353.54	147.22	394.32	327.39	241.96	232.89	59.58	217.59	308.96	307.78

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.95	44.01	35.10	61.43	46.65	26.83	49.23	22.82	19.67	56.94	29.15	30.40
Movement LOS	E	D	D	E	D	C	D	C	B	E	C	C
d_A, Approach Delay [s/veh]	43.11			43.16			30.52			35.96		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	37.81											
Intersection LOS	D											
Intersection V/C	0.688											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.808			2.944			3.149			3.077		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			683			700			600		
d_b, Bicycle Delay [s]	27.34			26.00			25.35			29.40		
I_b,int, Bicycle LOS Score for Intersection	2.372			2.631			2.289			2.303		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	37.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.695

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	283	747	449	144	447	282	281	763	216	38	741	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	283	747	449	144	447	282	281	763	216	38	741	167
Peak Hour Factor	0.8670	0.8670	0.8670	0.8450	0.8450	0.8450	0.9130	0.9130	0.9130	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	215	129	43	132	83	77	209	59	10	204	46
Total Analysis Volume [veh/h]	326	862	518	170	529	334	308	836	237	42	814	184
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	49	0	12	44	44	16	48	48	11	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	34	8	29	45	12	58	75	5	50	50
g / C, Green / Cycle	0.11	0.28	0.07	0.24	0.37	0.10	0.48	0.62	0.04	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.10	0.26	0.05	0.11	0.22	0.09	0.25	0.16	0.01	0.20	0.20
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1610
c, Capacity [veh/h]	357	949	221	1157	563	329	1618	936	126	1408	672
d1, Uniform Delay [s]	52.94	41.65	55.08	38.96	30.26	53.61	21.62	10.20	56.21	25.45	25.50
k, delay calibration	0.11	0.11	0.11	0.11	0.21	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.36	3.73	5.61	0.28	1.98	12.04	1.18	0.65	1.53	1.17	2.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.91	0.77	0.46	0.59	0.94	0.52	0.25	0.33	0.48	0.48
d, Delay for Lane Group [s/veh]	62.30	45.38	60.69	39.24	32.25	65.64	22.80	10.85	57.74	26.62	27.96
Lane Group LOS	E	D	E	D	C	E	C	B	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.32	12.69	2.70	4.48	8.04	5.16	8.29	2.90	0.65	7.18	7.16
50th-Percentile Queue Length [ft/ln]	133.03	317.35	67.56	111.97	200.99	128.99	207.35	72.54	16.19	179.58	179.10
95th-Percentile Queue Length [veh/ln]	9.10	18.54	4.86	7.95	12.69	8.88	13.02	5.22	1.17	11.58	11.55
95th-Percentile Queue Length [ft/ln]	227.61	463.43	121.60	198.74	317.24	222.12	325.43	130.57	29.15	289.47	288.84

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	62.30	45.38	0.00	60.69	39.24	32.25	65.64	22.80	10.85	57.74	26.85	27.96
Movement LOS	E	D		E	D	C	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	50.02			40.51			30.31			28.29		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	37.17											
Intersection LOS	D											
Intersection V/C	0.695											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.982			3.030			3.087			2.893		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	750			667			733			650		
d_b, Bicycle Delay [s]	23.44			26.67			24.07			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.540			2.128			2.699			2.132		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-III

EXISTING PLUS PROJECT WITH MITIGATION
TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.570

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	50	161	13	64	102	1444	9	23	1396	150
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	50	161	13	64	102	1444	9	23	1396	150
Peak Hour Factor	0.7700	0.7700	0.7700	0.8070	0.8070	0.8070	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	16	50	4	20	28	403	3	7	410	44
Total Analysis Volume [veh/h]	18	17	65	200	16	79	114	1613	10	27	1640	176
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	31	0	19	40	0	10	40	0	10	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	29
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	6	6	8	12	6	67	67	3	64	64
g / C, Green / Cycle	0.02	0.06	0.06	0.08	0.12	0.06	0.67	0.67	0.03	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.04	0.06	0.06	0.03	0.32	0.32	0.02	0.34	0.12
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1545	3277	3373	1766	1687	4826	1506
c, Capacity [veh/h]	42	104	88	273	181	191	2245	1175	55	3088	964
d1, Uniform Delay [s]	48.13	44.79	46.36	44.82	41.59	45.99	8.19	8.19	47.59	9.84	7.35
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.81	0.73	11.16	3.81	2.35	2.95	0.72	1.38	6.47	0.66	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.16	0.74	0.73	0.53	0.60	0.47	0.47	0.49	0.53	0.18
d, Delay for Lane Group [s/veh]	54.94	45.52	57.52	48.63	43.94	48.94	8.91	9.57	54.07	10.49	7.77
Lane Group LOS	D	D	E	D	D	D	A	A	D	B	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.52	0.42	1.86	2.55	2.31	1.45	5.19	5.65	0.76	6.06	1.52
50th-Percentile Queue Length [ft/ln]	13.01	10.52	46.41	63.81	57.79	36.36	129.71	141.17	18.97	151.47	38.11
95th-Percentile Queue Length [veh/ln]	0.94	0.76	3.34	4.59	4.16	2.62	8.92	9.54	1.37	10.10	2.74
95th-Percentile Queue Length [ft/ln]	23.41	18.94	83.55	114.86	104.02	65.45	223.10	238.60	34.14	252.39	68.60

Movement, Approach, & Intersection Results

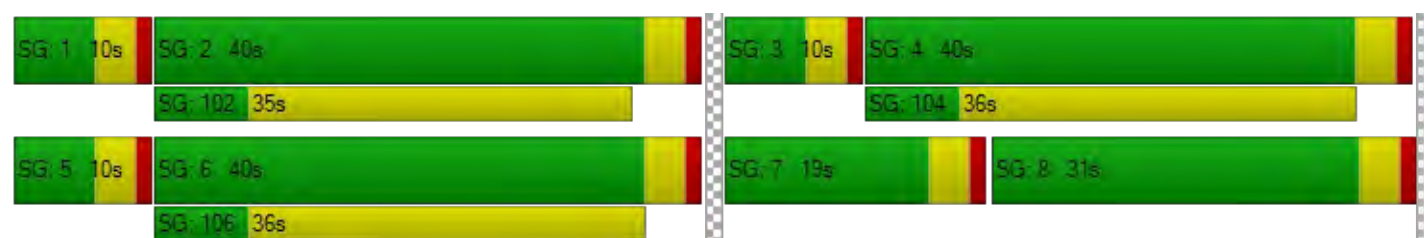
d_M, Delay for Movement [s/veh]	54.94	45.52	57.52	48.63	43.94	43.94	48.94	9.14	9.57	54.07	10.49	7.77
Movement LOS	D	D	E	D	D	D	D	A	A	D	B	A
d_A, Approach Delay [s/veh]	55.02			47.12			11.75			10.87		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	15.06											
Intersection LOS	B											
Intersection V/C	0.570											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.173			2.422			3.154			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	540			720			720			720		
d_b, Bicycle Delay [s]	26.65			20.48			20.48			20.48		
I_b,int, Bicycle LOS Score for Intersection	1.642			2.046			2.515			2.573		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	29.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	41	31	56	315	23	238	313	1517	26	53	1753	330
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	41	31	56	315	23	238	313	1517	26	53	1753	330
Peak Hour Factor	0.8890	0.8890	0.8890	0.8820	0.8820	0.8820	0.9540	0.9540	0.9540	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	9	16	89	7	67	82	398	7	14	464	87
Total Analysis Volume [veh/h]	46	35	63	357	26	270	328	1590	27	56	1855	349
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	10	0	43	43	0	17	47	0	10	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	29
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	13	13	15	24	13	61	61	5	53	53
g / C, Green / Cycle	0.04	0.12	0.12	0.13	0.21	0.12	0.55	0.55	0.05	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.04	0.11	0.19	0.10	0.32	0.32	0.03	0.38	0.23
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1526	3277	3373	1756	1687	4826	1506
c, Capacity [veh/h]	71	217	185	439	327	384	1863	970	77	2320	724
d1, Uniform Delay [s]	51.92	43.23	44.22	46.33	42.14	47.67	16.11	16.12	51.86	24.12	19.33
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.45	0.34	1.09	3.69	9.54	5.44	1.28	2.44	12.24	3.00	2.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.16	0.34	0.81	0.90	0.85	0.57	0.57	0.73	0.80	0.48
d, Delay for Lane Group [s/veh]	61.37	43.57	45.31	50.02	51.68	53.11	17.38	18.56	64.10	27.12	21.62
Lane Group LOS	E	D	D	D	D	D	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.44	0.88	1.63	4.95	8.63	4.68	8.69	9.37	1.79	13.66	6.35
50th-Percentile Queue Length [ft/ln]	35.89	21.90	40.76	123.80	215.72	117.11	217.13	234.28	44.64	341.58	158.73
95th-Percentile Queue Length [veh/ln]	2.58	1.58	2.93	8.60	13.45	8.23	13.52	14.39	3.21	19.73	10.48
95th-Percentile Queue Length [ft/ln]	64.61	39.41	73.37	215.04	336.16	205.85	337.96	359.79	80.34	493.13	262.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.37	43.57	45.31	50.02	51.68	51.68	53.11	17.77	18.56	64.10	27.12	21.62
Movement LOS	E	D	D	D	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	50.02			50.77			23.74			27.18		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.58											
Intersection LOS	C											
Intersection V/C	0.826											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.202			2.576			3.237			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			709			782			655		
d_b, Bicycle Delay [s]	49.16			22.91			20.40			24.89		
I_b,int, Bicycle LOS Score for Intersection	1.678			2.637			2.629			2.803		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	42.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.903

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	64	36	164	400	72	347	340	1354	30	104	1487	447
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	64	36	164	400	72	347	340	1354	30	104	1487	447
Peak Hour Factor	0.8250	0.8250	0.8250	0.9010	0.9010	0.9010	0.9400	0.9400	0.9400	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	11	50	111	20	96	90	360	8	26	379	114
Total Analysis Volume [veh/h]	78	44	199	444	80	385	362	1440	32	106	1514	455
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	33	0	20	43	0	17	45	0	12	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	29
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	25	25	16	35	13	45	45	8	40	40
g / C, Green / Cycle	0.05	0.23	0.23	0.15	0.32	0.12	0.41	0.41	0.07	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.05	0.02	0.13	0.14	0.30	0.11	0.29	0.29	0.06	0.31	0.30
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1546	3277	3373	1752	1687	4826	1506
c, Capacity [veh/h]	93	401	341	477	490	388	1381	717	123	1758	548
d1, Uniform Delay [s]	51.53	33.77	37.95	46.46	36.71	48.08	26.91	26.92	50.45	32.41	31.87
k, delay calibration	0.11	0.11	0.11	0.11	0.35	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.81	0.12	1.59	8.56	23.60	10.37	2.99	5.66	15.51	5.82	13.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.11	0.58	0.93	0.95	0.93	0.70	0.70	0.86	0.86	0.83
d, Delay for Lane Group [s/veh]	69.34	33.89	39.54	55.02	60.31	58.45	29.90	32.58	65.95	38.23	45.45
Lane Group LOS	E	C	D	E	E	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.59	0.95	4.91	6.53	15.17	5.46	10.88	11.84	3.41	13.12	12.86
50th-Percentile Queue Length [ft/ln]	64.63	23.74	122.69	163.32	379.13	136.38	271.95	296.08	85.24	328.05	321.57
95th-Percentile Queue Length [veh/ln]	4.65	1.71	8.54	10.72	21.55	9.29	16.29	17.49	6.14	19.06	18.74
95th-Percentile Queue Length [ft/ln]	116.34	42.73	213.52	268.12	538.80	232.14	407.18	437.17	153.44	476.57	468.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	69.34	33.89	39.54	55.02	60.31	60.31	58.45	30.78	32.58	65.95	38.23	45.45
Movement LOS	E	C	D	E	E	E	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	46.00			57.73			36.27			41.23		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	42.68											
Intersection LOS	D											
Intersection V/C	0.903											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.272			2.655			3.199			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	527			709			745			655		
d_b, Bicycle Delay [s]	29.82			22.91			21.64			24.89		
I_b,int, Bicycle LOS Score for Intersection	1.824			3.059			2.568			2.701		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-IV

YEAR 2022 CUMULATIVE TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	26.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	52	148	98	155	323	75	83	1278	127	114	1321	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	52	148	98	155	323	75	83	1278	127	114	1321	63
Peak Hour Factor	0.8300	0.8300	0.8300	0.8190	0.8190	0.8190	0.8940	0.8940	0.8940	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	45	30	47	99	23	23	357	36	31	363	17
Total Analysis Volume [veh/h]	63	178	118	189	394	92	93	1430	142	125	1452	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	32	0	19	38	0	11	31	0	13	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	11	11	12	19	19	7	47	47	9	49	49
g / C, Green / Cycle	0.05	0.12	0.12	0.13	0.20	0.20	0.07	0.49	0.49	0.09	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.09	0.11	0.14	0.14	0.06	0.31	0.31	0.07	0.30	0.30
s, saturation flow rate [veh/h]	1687	1772	1545	1687	1772	1657	1687	3373	1691	1687	3373	1731
c, Capacity [veh/h]	88	209	182	223	350	328	118	1654	829	154	1726	886
d1, Uniform Delay [s]	44.39	40.54	40.75	40.37	35.67	35.70	43.54	17.92	17.93	42.41	16.16	16.16
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.16	5.02	6.96	8.69	2.73	2.97	10.87	1.86	3.67	9.62	1.44	2.79
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.74	0.78	0.85	0.71	0.72	0.79	0.63	0.63	0.81	0.58	0.58
d, Delay for Lane Group [s/veh]	54.54	45.56	47.71	49.06	38.40	38.68	54.41	19.78	21.60	52.03	17.60	18.96
Lane Group LOS	D	D	D	D	D	D	D	B	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.70	3.74	3.54	4.81	5.61	5.30	2.49	8.43	8.88	3.26	7.49	8.02
50th-Percentile Queue Length [ft/ln]	42.48	93.55	88.49	120.15	140.14	132.55	62.30	210.64	221.90	81.61	187.14	200.46
95th-Percentile Queue Length [veh/ln]	3.06	6.74	6.37	8.40	9.49	9.08	4.49	13.19	13.76	5.88	11.97	12.66
95th-Percentile Queue Length [ft/ln]	76.47	168.40	159.27	210.04	237.22	226.96	112.14	329.65	344.05	146.90	299.32	316.56

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.54	45.84	47.71	49.06	38.50	38.68	54.41	20.27	21.60	52.03	18.02	18.96
Movement LOS	D	D	D	D	D	D	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	47.98			41.48			22.29			20.64		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	26.77											
Intersection LOS	C											
Intersection V/C	0.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.501			2.500			3.052			3.067		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	589			716			568			611		
d_b, Bicycle Delay [s]	23.63			19.58			24.34			22.93		
I_b,int, Bicycle LOS Score for Intersection	1.856			2.116			2.475			2.465		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	42.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.878

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	224	339	150	122	866	253	87	1257	288	209	1361	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	224	339	150	122	866	253	87	1257	288	209	1361	137
Peak Hour Factor	0.8680	0.8680	0.8680	0.9380	0.9380	0.9380	0.9390	0.9390	0.9390	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	98	43	33	231	67	23	335	77	55	359	36
Total Analysis Volume [veh/h]	258	391	173	130	923	270	93	1339	307	221	1437	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	42	0	15	42	0	12	42	0	21	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	35	35	11	35	35	8	41	41	17	50	50
g / C, Green / Cycle	0.09	0.30	0.30	0.09	0.30	0.30	0.07	0.34	0.34	0.14	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.08	0.12	0.11	0.08	0.27	0.18	0.06	0.28	0.20	0.13	0.31	0.31
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1690
c, Capacity [veh/h]	301	996	445	155	995	444	113	1631	509	239	1393	698
d1, Uniform Delay [s]	53.72	33.72	33.68	53.66	41.08	36.36	55.29	36.40	33.03	50.86	30.08	30.11
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.14	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.95	0.25	0.56	11.50	4.44	1.73	13.63	4.77	5.22	13.95	3.87	7.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.39	0.39	0.84	0.93	0.61	0.82	0.82	0.60	0.92	0.76	0.76
d, Delay for Lane Group [s/veh]	60.66	33.97	34.24	65.16	45.52	38.09	68.92	41.17	38.25	64.81	33.95	37.67
Lane Group LOS	E	C	C	E	D	D	E	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.13	4.59	4.09	4.35	13.70	6.99	3.21	12.58	8.14	7.47	13.53	14.32
50th-Percentile Queue Length [ft/ln]	103.16	114.72	102.34	108.84	342.61	174.80	80.15	314.45	203.50	186.76	338.29	358.01
95th-Percentile Queue Length [veh/ln]	7.43	8.10	7.37	7.78	19.78	11.33	5.77	18.39	12.82	11.95	19.56	20.53
95th-Percentile Queue Length [ft/ln]	185.69	202.55	184.22	194.38	494.39	283.21	144.27	459.86	320.48	298.83	489.11	513.16

Movement, Approach, & Intersection Results

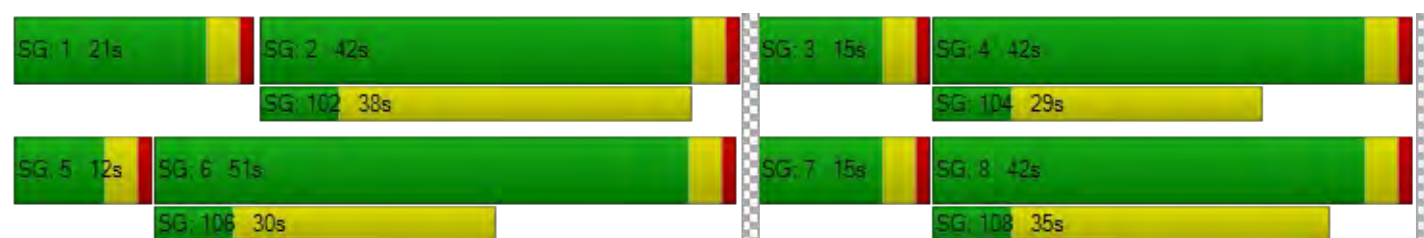
d_M, Delay for Movement [s/veh]	60.66	33.97	34.24	65.16	45.52	38.09	68.92	41.17	38.25	64.81	34.94	37.67
Movement LOS	E	C	C	E	D	D	E	D	D	E	C	D
d_A, Approach Delay [s/veh]	42.40			45.93			42.14			38.82		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.01											
Intersection LOS	D											
Intersection V/C	0.878											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.924			2.784			3.191			3.088		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			633			633			783		
d_b, Bicycle Delay [s]	28.02			28.02			28.02			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.238			2.651			2.516			2.551		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	179	188	209	849	571	8	13	1279	206	455	1653	524
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	188	209	849	571	8	13	1279	206	455	1653	524
Peak Hour Factor	0.9130	0.9130	0.9130	0.9700	0.9700	0.9700	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	51	57	219	147	2	3	335	54	119	433	137
Total Analysis Volume [veh/h]	196	206	229	875	589	8	14	1341	216	477	1733	549
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	12	14	0	42	44	0	10	40	0	24	54	54
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	13	13	13	35	40	40	2	37	37	19	54	93
g / C, Green / Cycle	0.07	0.11	0.11	0.11	0.29	0.33	0.33	0.02	0.31	0.31	0.16	0.45	0.78
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.09	0.09	0.27	0.17	0.17	0.00	0.24	0.24	0.15	0.36	0.36
s, saturation flow rate [veh/h]	3277	1772	1588	1506	3277	1772	1763	3277	4826	1614	3277	4826	1506
c, Capacity [veh/h]	221	187	167	159	964	589	586	64	1475	493	529	2159	1167
d1, Uniform Delay [s]	55.54	52.70	52.77	52.80	40.79	32.19	32.20	57.95	38.16	38.20	49.42	28.60	4.78
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.41	9.60	11.29	12.18	3.64	0.68	0.68	1.68	4.39	12.34	5.98	3.27	1.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.84	0.85	0.86	0.91	0.51	0.51	0.22	0.79	0.79	0.90	0.80	0.47
d, Delay for Lane Group [s/veh]	66.95	62.30	64.06	64.98	44.43	32.87	32.88	59.63	42.55	50.54	55.40	31.87	6.15
Lane Group LOS	E	E	E	E	D	C	C	E	D	D	E	C	A
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.29	5.13	4.74	4.56	12.81	7.08	7.06	0.22	10.98	12.15	7.44	14.64	4.42
50th-Percentile Queue Length [ft/ln]	82.29	128.3	118.4	113.9	320.32	176.97	176.41	5.62	274.47	303.80	186.03	366.11	110.45
95th-Percentile Queue Length [veh/ln]	5.93	8.85	8.31	8.06	18.68	11.44	11.41	0.40	16.41	17.87	11.92	20.92	7.87
95th-Percentile Queue Length [ft/ln]	148.1	221.2	207.7	201.5	467.08	286.05	285.32	10.11	410.33	446.72	297.88	523.01	196.63

Movement, Approach, & Intersection Results

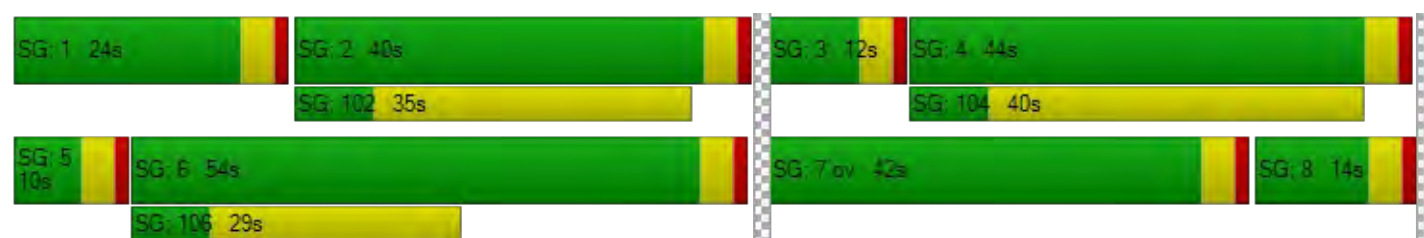
d_M, Delay for Movement [s/veh]	66.95	62.72	64.63	44.43	32.88	32.88	59.63	43.60	50.54	55.40	31.87	6.15
Movement LOS	E	E	E	D	C	C	E	D	D	E	C	A
d_A, Approach Delay [s/veh]	64.72			39.74			44.69			30.82		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	39.58											
Intersection LOS	D											
Intersection V/C	0.860											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.874			2.831			3.243			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	167			667			600			833		
d_b, Bicycle Delay [s]	50.42			26.67			29.40			20.42		
I_b,int, Bicycle LOS Score for Intersection	2.080			2.774			2.208			3.077		
Bicycle LOS	B			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	50.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.005

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				T T T			U U T			T T U U		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1006	0	657	0	1764	577	213	2031	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1006	0	657	0	1764	577	213	2031	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8640	1.0000	0.8640	1.0000	0.9400	0.9400	0.9190	0.9190	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	291	0	190	0	469	153	58	553	0
Total Analysis Volume [veh/h]	0	0	0	1164	0	760	0	1877	614	232	2210	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	55	0	0	0	52	0	13	65	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		51	51	51	48	48	48	9	61
g / C, Green / Cycle		0.42	0.42	0.42	0.40	0.40	0.40	0.08	0.51
(v / s)_i Volume / Saturation Flow Rate		0.38	0.39	0.43	0.37	0.40	0.41	0.07	0.46
s, saturation flow rate [veh/h]		1687	1650	1506	3373	1567	1506	3277	4826
c, Capacity [veh/h]		715	699	638	1351	628	603	248	2460
d1, Uniform Delay [s]		32.14	32.58	34.56	34.25	35.86	35.94	55.13	26.59
k, delay calibration		0.39	0.41	0.47	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		13.34	16.15	35.95	12.20	35.10	41.19	14.93	5.75
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.90	0.92	1.01	0.93	1.00	1.02	0.94	0.90
d, Delay for Lane Group [s/veh]		45.48	48.74	70.51	46.45	70.96	77.13	70.06	32.35
Lane Group LOS		D	D	F	D	E	F	E	C
Critical Lane Group		No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		19.51	20.24	24.41	19.30	23.93	24.11	4.00	19.63
50th-Percentile Queue Length [ft/ln]		487.81	505.88	610.19	482.46	598.27	602.81	100.03	490.67
95th-Percentile Queue Length [veh/ln]		26.76	27.61	32.64	26.50	31.95	32.59	7.20	26.89
95th-Percentile Queue Length [ft/ln]		668.91	690.31	816.11	662.57	798.84	814.67	180.05	672.31

Movement, Approach, & Intersection Results

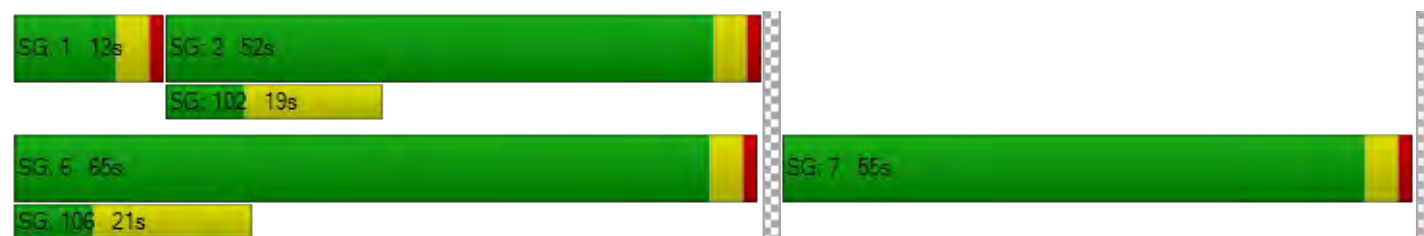
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	46.94	0.00	67.11	0.00	49.27	77.13	70.06	32.35	0.00
Movement LOS				D		E		D	E	E	C	
d_A, Approach Delay [s/veh]	0.00			54.91			60.17			35.93		
Approach LOS	A			D			E			D		
d_I, Intersection Delay [s/veh]	50.06											
Intersection LOS	D											
Intersection V/C	1.005											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.141	2.579	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	800	1017
d_b, Bicycle Delay [s]	60.00	60.00	21.60	14.50
I_b,int, Bicycle LOS Score for Intersection	4.132	7.307	2.930	2.903
Bicycle LOS	D	F	C	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	37.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.960

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	999	0	473	0	0	0	379	2382	0	0	1256	466
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	999	0	473	0	0	0	379	2382	0	0	1256	466
Peak Hour Factor	0.8940	1.0000	0.8940	1.0000	1.0000	1.0000	0.9710	0.9710	1.0000	1.0000	0.8830	0.8830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	279	0	132	0	0	0	98	613	0	0	356	132
Total Analysis Volume [veh/h]	1117	0	529	0	0	0	390	2453	0	0	1422	528
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	51	0	0	0	0	0	19	64	0	0	45	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	115	115		115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44		15	63	44	44	44
g / C, Green / Cycle	0.38	0.38		0.13	0.55	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.34	0.35		0.12	0.51	0.29	0.31	0.32
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1549	1506
c, Capacity [veh/h]	1248	573		429	2652	1295	595	578
d1, Uniform Delay [s]	33.44	33.97		49.28	23.71	30.68	31.83	32.25
k, delay calibration	0.11	0.36		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.53	17.90		7.67	6.93	4.08	11.97	13.97
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.92		0.91	0.92	0.75	0.82	0.84
d, Delay for Lane Group [s/veh]	35.97	51.87		56.95	30.64	34.76	43.79	46.23
Lane Group LOS	D	D		E	C	C	D	D
Critical Lane Group	No	Yes		No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	14.75	16.62		5.96	20.83	12.25	13.92	14.35
50th-Percentile Queue Length [ft/ln]	368.71	415.57		149.09	520.81	306.15	347.97	358.65
95th-Percentile Queue Length [veh/ln]	21.05	23.31		9.97	28.32	17.98	20.04	20.56
95th-Percentile Queue Length [ft/ln]	526.17	582.73		249.22	707.94	449.62	500.93	513.94

Movement, Approach, & Intersection Results

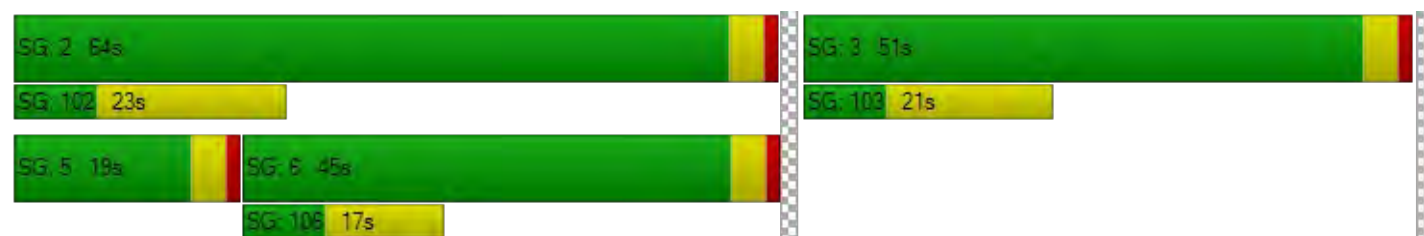
d_M, Delay for Movement [s/veh]	35.97	0.00	51.87	0.00	0.00	0.00	56.95	30.64	0.00	0.00	35.54	46.04
Movement LOS	D		D				E	C			D	D
d_A, Approach Delay [s/veh]	41.08			0.00			34.25			39.89		
Approach LOS	D			A			C			D		
d_I, Intersection Delay [s/veh]	37.70											
Intersection LOS	D											
Intersection V/C	0.960											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	0.00	47.03
I_p,int, Pedestrian LOS Score for Intersection	2.487	2.174	0.000	3.293
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	1043	713
d_b, Bicycle Delay [s]	57.50	57.50	13.15	23.81
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	3.123	2.632
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.905

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	280	108	34	19	206	311	93	648	1018	259	740	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	280	108	34	19	206	311	93	648	1018	259	740	12
Peak Hour Factor	0.7870	0.7870	0.7870	0.8900	0.8900	0.8900	0.9170	0.9170	0.9170	0.9370	0.9370	0.9370
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	34	11	5	58	87	25	177	278	69	197	3
Total Analysis Volume [veh/h]	356	137	43	21	231	349	101	707	1110	276	790	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	52	52	10	43	0	21	38	38	15	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	41	56	3	29	29	9	44	63	11	46	46
g / C, Green / Cycle	0.13	0.36	0.49	0.03	0.25	0.25	0.07	0.38	0.55	0.10	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.11	0.08	0.03	0.01	0.13	0.23	0.06	0.21	0.42	0.08	0.16	0.16
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1757
c, Capacity [veh/h]	429	635	737	45	450	382	126	1282	1454	315	1354	705
d1, Uniform Delay [s]	48.77	25.68	15.45	55.22	36.83	41.69	52.38	27.99	20.36	51.32	24.45	24.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.21	0.17	0.03	7.48	0.91	15.93	10.95	1.71	3.85	7.63	0.85	1.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.22	0.06	0.47	0.51	0.91	0.80	0.55	0.76	0.88	0.39	0.39
d, Delay for Lane Group [s/veh]	52.97	25.85	15.48	62.70	37.74	57.62	63.33	29.70	24.22	58.95	25.30	26.08
Lane Group LOS	D	C	B	E	D	E	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.22	2.65	0.60	0.69	5.68	11.22	3.25	7.87	11.83	4.25	5.24	5.61
50th-Percentile Queue Length [ft/ln]	130.56	66.14	15.04	17.33	142.05	280.38	81.29	196.70	295.86	106.32	130.92	140.27
95th-Percentile Queue Length [veh/ln]	8.97	4.76	1.08	1.25	9.59	16.71	5.85	12.47	17.48	7.63	8.99	9.50
95th-Percentile Queue Length [ft/ln]	224.26	119.06	27.07	31.20	239.78	417.69	146.32	311.71	436.90	190.87	224.74	237.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.97	25.85	15.48	62.70	37.74	57.62	63.33	29.70	24.22	58.95	25.56	26.08
Movement LOS	D	C	B	E	D	E	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	43.03			50.16			28.30			34.10		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	34.90											
Intersection LOS	C											
Intersection V/C	0.905											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.814			2.350			3.153			2.863		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	835			678			591			487		
d_b, Bicycle Delay [s]	19.52			25.11			28.53			32.91		
I_b,int, Bicycle LOS Score for Intersection	2.444			2.551			3.142			2.153		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.556

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	35	457	214	342	1008	59	47	67	11	317	68	225
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	457	214	342	1008	59	47	67	11	317	68	225
Peak Hour Factor	0.8300	0.8300	0.8300	0.9210	0.9210	0.9210	0.8710	0.8710	0.8710	0.7670	0.7670	0.7670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	138	64	93	274	16	13	19	3	103	22	73
Total Analysis Volume [veh/h]	42	551	258	371	1094	64	54	77	13	413	89	293
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	28	0	20	35	0	16	37	0	35	56	56
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	62	62	16	74	74	5	8	18	21	41
g / C, Green / Cycle	0.04	0.52	0.52	0.13	0.61	0.61	0.04	0.07	0.15	0.17	0.34
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.17	0.11	0.23	0.23	0.03	0.05	0.13	0.05	0.19
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1722	1687	1728	3277	1772	1506
c, Capacity [veh/h]	65	1746	780	438	2067	1055	72	115	487	306	512
d1, Uniform Delay [s]	56.91	16.69	16.85	50.80	11.65	11.65	56.85	55.17	49.78	43.25	32.49
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.25	0.47	1.14	4.60	0.51	1.00	14.50	10.86	4.19	0.52	1.01
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.32	0.33	0.85	0.37	0.37	0.75	0.78	0.85	0.29	0.57
d, Delay for Lane Group [s/veh]	67.16	17.17	17.99	55.41	12.16	12.65	71.35	66.03	53.97	43.77	33.50
Lane Group LOS	E	B	B	E	B	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.44	4.45	4.35	5.72	5.11	5.36	1.91	3.03	6.31	2.36	7.11
50th-Percentile Queue Length [ft/ln]	36.06	111.35	108.72	143.00	127.63	133.91	47.75	75.73	157.75	58.97	177.64
95th-Percentile Queue Length [veh/ln]	2.60	7.92	7.77	9.64	8.81	9.15	3.44	5.45	10.43	4.25	11.48
95th-Percentile Queue Length [ft/ln]	64.90	197.88	194.22	241.06	220.27	228.80	85.95	136.32	260.74	106.14	286.93

Movement, Approach, & Intersection Results

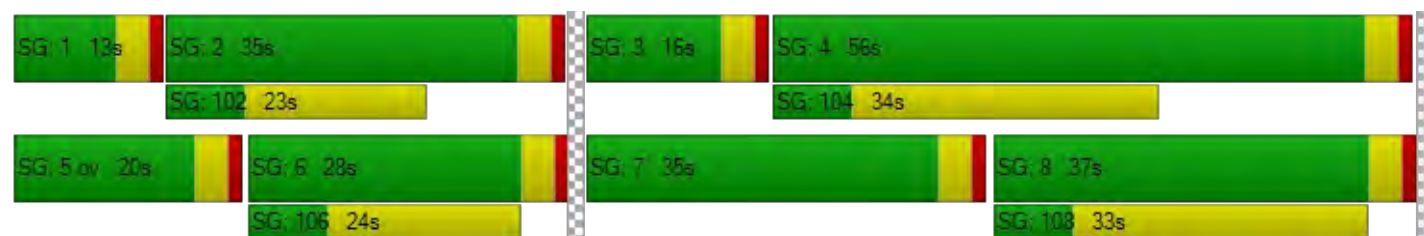
d_M, Delay for Movement [s/veh]	67.16	17.17	17.99	55.41	12.30	12.65	71.35	66.03	66.03	53.97	43.77	33.50
Movement LOS	E	B	B	E	B	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	19.88			22.78			68.03			45.28		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	29.39											
Intersection LOS	C											
Intersection V/C	0.556											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.938			3.035			2.064			2.711		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	400			517			550			867		
d_b, Bicycle Delay [s]	38.40			33.00			31.54			19.27		
I_b,int, Bicycle LOS Score for Intersection	2.028			2.401			1.797			2.871		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.394

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	23	39	83	36	34	25	38	575	88	69	525	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	39	83	36	34	25	38	575	88	69	525	42
Peak Hour Factor	0.8140	0.8140	0.8140	0.7190	0.7190	0.7190	0.8220	0.8220	0.8220	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	12	25	13	12	9	12	175	27	19	147	12
Total Analysis Volume [veh/h]	28	48	102	50	47	35	46	700	107	77	587	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	12	30	0	32	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11	11	11	4	71	71	6	72	72
g / C, Green / Cycle	0.11	0.11	0.11	0.11	0.11	0.04	0.71	0.71	0.06	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.02	0.03	0.07	0.04	0.05	0.03	0.23	0.23	0.05	0.17	0.03
s, saturation flow rate [veh/h]	1316	1772	1506	1357	1647	1687	1772	1691	1687	3373	1506
c, Capacity [veh/h]	130	200	170	161	186	73	1256	1198	99	2442	1090
d1, Uniform Delay [s]	46.71	40.47	42.23	45.32	41.43	47.04	5.53	5.53	46.43	4.61	3.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.82	0.62	3.39	1.08	1.65	8.53	0.70	0.73	12.36	0.23	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.24	0.60	0.31	0.44	0.63	0.33	0.33	0.78	0.24	0.04
d, Delay for Lane Group [s/veh]	47.53	41.08	45.63	46.40	43.08	55.57	6.23	6.26	58.79	4.85	4.01
Lane Group LOS	D	D	D	D	D	E	A	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.71	1.11	2.54	1.25	1.96	1.29	3.05	2.92	2.22	1.78	0.25
50th-Percentile Queue Length [ft/ln]	17.67	27.70	63.53	31.15	49.07	32.35	76.16	73.02	55.41	44.48	6.37
95th-Percentile Queue Length [veh/ln]	1.27	1.99	4.57	2.24	3.53	2.33	5.48	5.26	3.99	3.20	0.46
95th-Percentile Queue Length [ft/ln]	31.81	49.85	114.35	56.07	88.33	58.22	137.08	131.44	99.74	80.06	11.46

Movement, Approach, & Intersection Results

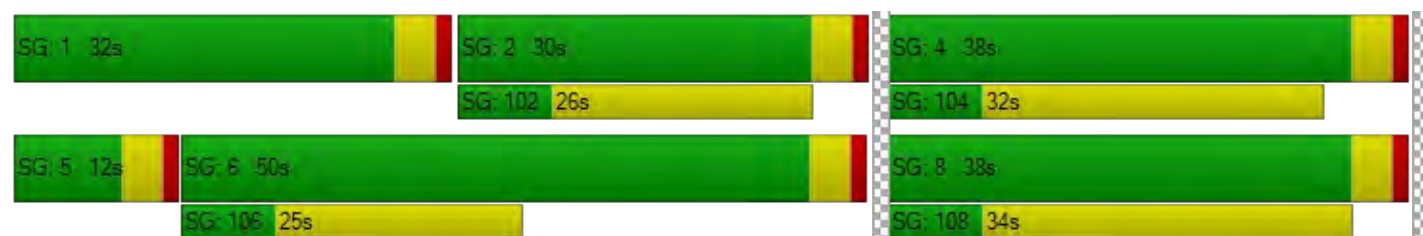
d_M, Delay for Movement [s/veh]	47.53	41.08	45.63	46.40	43.08	43.08	55.57	6.24	6.26	58.79	4.85	4.01
Movement LOS	D	D	D	D	D	D	E	A	A	E	A	A
d_A, Approach Delay [s/veh]	44.70			44.34			8.91			10.63		
Approach LOS	D			D			A			B		
d_I, Intersection Delay [s/veh]	15.46											
Intersection LOS	B											
Intersection V/C	0.394											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.236			2.034			2.638			2.783		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			520			920		
d_b, Bicycle Delay [s]	21.78			21.78			27.38			14.58		
I_b,int, Bicycle LOS Score for Intersection	1.853			1.777			2.263			2.146		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	74	169	94	632	888	204	99	497	46	76	549	275
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	169	94	632	888	204	99	497	46	76	549	275
Peak Hour Factor	0.8430	0.8430	0.8430	0.8910	0.8910	0.8910	0.8600	0.8600	0.8600	0.7640	0.7640	0.7640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	50	28	177	249	57	29	144	13	25	180	90
Total Analysis Volume [veh/h]	88	200	112	709	997	229	115	578	53	99	719	360
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	32	58	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	25	25	28	47	47	6	45	45	6	45	45
g / C, Green / Cycle	0.05	0.21	0.21	0.23	0.39	0.39	0.05	0.38	0.38	0.05	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.07	0.22	0.35	0.37	0.04	0.17	0.04	0.03	0.21	0.24
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1662	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	156	714	319	756	699	656	165	1267	566	159	1261	563
d1, Uniform Delay [s]	55.92	39.63	40.28	45.34	33.64	34.82	56.09	28.23	24.24	56.02	29.90	30.92
k, delay calibration	0.11	0.11	0.11	0.11	0.27	0.30	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.15	0.21	0.66	6.36	8.49	15.40	5.22	1.19	0.33	3.94	1.87	5.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.28	0.35	0.94	0.88	0.93	0.70	0.46	0.09	0.62	0.57	0.64
d, Delay for Lane Group [s/veh]	59.07	39.84	40.94	51.70	42.13	50.22	61.31	29.41	24.57	59.96	31.78	36.40
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.37	2.51	2.89	10.97	17.87	19.58	1.83	6.46	1.04	1.56	8.55	9.37
50th-Percentile Queue Length [ft/ln]	34.34	62.68	72.21	274.19	446.79	489.38	45.87	161.50	25.91	38.98	213.64	234.17
95th-Percentile Queue Length [veh/ln]	2.47	4.51	5.20	16.40	24.80	26.83	3.30	10.63	1.87	2.81	13.34	14.39
95th-Percentile Queue Length [ft/ln]	61.81	112.82	129.97	409.97	620.11	670.78	82.56	265.71	46.63	70.16	333.50	359.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.07	39.84	40.94	51.70	45.24	50.22	61.31	29.41	24.57	59.96	31.78	36.40
Movement LOS	E	D	D	D	D	D	E	C	C	E	C	D
d_A, Approach Delay [s/veh]	44.38			48.20			33.99			35.56		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	41.85											
Intersection LOS	D											
Intersection V/C	0.773											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.823			2.891			2.856			2.967		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			900			583			583		
d_b, Bicycle Delay [s]	30.10			18.15			30.10			30.10		
I_b,int, Bicycle LOS Score for Intersection	1.890			3.156			2.175			2.531		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	230	6	309	54	28	8	2	913	297	342	743	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	6	309	54	28	8	2	913	297	342	743	10
Peak Hour Factor	0.8160	0.8160	0.8160	0.7410	0.7410	0.7410	0.8560	0.8560	0.8560	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	2	95	18	9	3	1	267	87	94	203	3
Total Analysis Volume [veh/h]	282	7	379	73	38	11	2	1067	347	374	813	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	61	61	0	37	0	10	38	0	21	49	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	27	48	11	11	0	64	64	17	80	80
g / C, Green / Cycle	0.11	0.23	0.40	0.09	0.09	0.00	0.53	0.53	0.14	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.09	0.00	0.25	0.05	0.03	0.00	0.41	0.42	0.11	0.23	0.23
s, saturation flow rate [veh/h]	3277	1772	1506	1408	1704	1687	1772	1626	3277	1772	1763
c, Capacity [veh/h]	346	403	606	157	151	7	940	863	465	1185	1179
d1, Uniform Delay [s]	52.55	35.99	28.64	54.86	51.37	59.60	22.50	22.78	49.89	8.60	8.60
k, delay calibration	0.11	0.11	0.46	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.70	0.02	4.41	2.12	1.24	20.33	6.30	7.33	3.30	0.81	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.02	0.63	0.46	0.33	0.28	0.78	0.79	0.80	0.35	0.35
d, Delay for Lane Group [s/veh]	57.24	36.01	33.04	56.98	52.61	79.93	28.80	30.11	53.19	9.41	9.41
Lane Group LOS	E	D	C	E	D	E	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.38	0.16	9.37	2.26	1.44	0.10	17.53	16.77	5.64	4.65	4.63
50th-Percentile Queue Length [ft/ln]	109.57	4.07	234.35	56.49	35.99	2.52	438.15	419.17	141.12	116.34	115.86
95th-Percentile Queue Length [veh/ln]	7.82	0.29	14.40	4.07	2.59	0.18	24.39	23.48	9.54	8.19	8.17
95th-Percentile Queue Length [ft/ln]	195.40	7.32	359.88	101.69	64.78	4.53	609.79	587.06	238.53	204.78	204.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.24	36.01	33.04	56.98	52.61	52.61	79.93	29.21	30.11	53.19	9.41	9.41
Movement LOS	E	D	C	E	D	D	E	C	C	D	A	A
d_A, Approach Delay [s/veh]	43.29			55.23			29.50			23.08		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.87											
Intersection LOS	C											
Intersection V/C	0.861											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.699			2.000			2.805			3.012		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	950			550			567			750		
d_b, Bicycle Delay [s]	16.54			31.54			30.82			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.662			1.761			2.728			2.548		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.818

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	5	153	2	441	312	847	16	8	723	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	5	153	2	441	312	847	16	8	723	79
Peak Hour Factor	0.5500	0.5500	0.5500	0.8490	0.8490	0.8490	0.8890	0.8890	0.8890	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	2	45	1	130	88	238	4	2	205	22
Total Analysis Volume [veh/h]	5	5	9	180	2	519	351	953	18	9	822	90
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	44	36	0	40	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	3	3	29	29	70	30	71	71	2	42	42
g / C, Green / Cycle	0.02	0.02	0.02	0.24	0.24	0.58	0.25	0.59	0.59	0.01	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.01	0.05	0.05	0.34	0.21	0.27	0.28	0.01	0.24	0.06
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1689	1506	1687	1772	1760	1687	3373	1506
c, Capacity [veh/h]	75	43	37	404	404	879	427	1044	1037	23	1180	527
d1, Uniform Delay [s]	58.93	57.29	57.47	36.72	36.72	15.88	42.27	13.98	13.99	58.68	33.57	27.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.18	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.16	3.37	0.28	0.28	2.91	6.53	1.50	1.51	9.94	3.42	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.12	0.24	0.23	0.23	0.59	0.82	0.47	0.47	0.38	0.70	0.17
d, Delay for Lane Group [s/veh]	59.30	58.45	60.83	37.00	37.00	18.78	48.80	15.48	15.50	68.62	36.99	27.70
Lane Group LOS	E	E	E	D	D	B	D	B	B	E	D	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.16	0.16	0.30	2.19	2.19	9.42	10.53	7.68	7.64	0.34	10.77	1.90
50th-Percentile Queue Length [ft/ln]	3.97	4.07	7.58	54.80	54.85	235.55	263.23	192.02	191.07	8.41	269.36	47.55
95th-Percentile Queue Length [veh/ln]	0.29	0.29	0.55	3.95	3.95	14.46	15.85	12.23	12.18	0.61	16.16	3.42
95th-Percentile Queue Length [ft/ln]	7.14	7.32	13.64	98.64	98.73	361.40	396.27	305.65	304.41	15.14	403.95	85.59

Movement, Approach, & Intersection Results

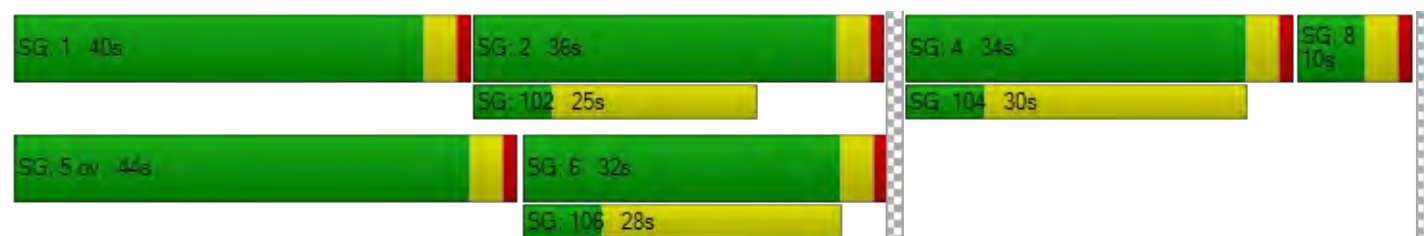
d_M, Delay for Movement [s/veh]	59.30	58.45	60.83	37.00	37.00	18.78	48.80	15.49	15.50	68.62	36.99	27.70
Movement LOS	E	E	E	D	D	B	D	B	B	E	D	C
d_A, Approach Delay [s/veh]	59.80			23.51			24.33			36.39		
Approach LOS	E			C			C			D		
d_I, Intersection Delay [s/veh]	28.12											
Intersection LOS	C											
Intersection V/C	0.818											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.157			2.424			2.841			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			500			533			467		
d_b, Bicycle Delay [s]	54.15			33.75			32.27			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.591			2.716			2.650			2.319		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	131	211	90	432	967	177	40	564	338	61	429	211
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	211	90	432	967	177	40	564	338	61	429	211
Peak Hour Factor	0.8520	0.8520	0.8520	0.8550	0.8550	0.8550	0.9040	0.9040	0.9040	0.7250	0.7250	0.7250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	62	26	126	283	52	11	156	93	21	148	73
Total Analysis Volume [veh/h]	154	248	106	505	1131	207	44	624	374	84	592	291
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	37	0	26	52	0	10	46	0	11	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	43	43	21	57	57	5	33	33	7	35	35
g / C, Green / Cycle	0.06	0.36	0.36	0.17	0.47	0.47	0.04	0.28	0.28	0.06	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.08	0.15	0.27	0.27	0.03	0.18	0.25	0.05	0.18	0.19
s, saturation flow rate [veh/h]	3277	3373	1523	3277	3373	1635	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	193	1220	551	561	1598	775	66	927	414	100	993	444
d1, Uniform Delay [s]	55.77	26.32	26.45	48.76	22.67	22.71	56.89	38.74	42.00	55.94	36.24	37.03
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.26	0.36	0.86	5.60	1.44	2.98	10.77	0.86	15.11	16.92	0.58	1.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.20	0.21	0.90	0.56	0.57	0.66	0.67	0.90	0.84	0.60	0.66
d, Delay for Lane Group [s/veh]	63.04	26.68	27.30	54.36	24.11	25.69	67.65	39.59	57.11	72.86	36.81	38.72
Lane Group LOS	E	C	C	D	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.50	2.43	2.41	7.83	9.30	9.41	1.52	8.26	12.33	2.99	7.49	7.65
50th-Percentile Queue Length [ft/ln]	62.45	60.68	60.37	195.67	232.53	235.36	37.90	206.51	308.25	74.70	187.13	191.21
95th-Percentile Queue Length [veh/ln]	4.50	4.37	4.35	12.41	14.30	14.45	2.73	12.97	18.09	5.38	11.97	12.18
95th-Percentile Queue Length [ft/ln]	112.41	109.22	108.67	310.37	357.57	361.15	68.22	324.34	452.21	134.45	299.31	304.60

Movement, Approach, & Intersection Results

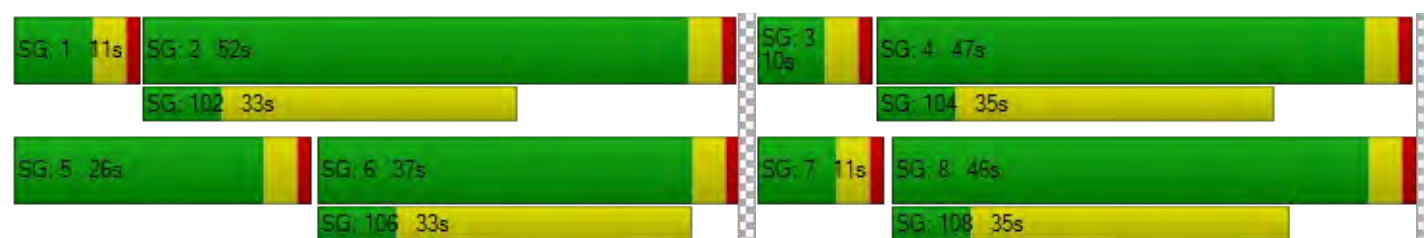
d_M, Delay for Movement [s/veh]	63.04	26.70	27.30	54.36	24.43	25.69	67.65	39.59	57.11	72.86	36.81	38.72
Movement LOS	E	C	C	D	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	37.84			32.77			47.07			40.52		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	38.50											
Intersection LOS	D											
Intersection V/C	0.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.995			3.035			2.791			2.824		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			800			700			717		
d_b, Bicycle Delay [s]	31.54			21.60			25.35			24.70		
I_b,int, Bicycle LOS Score for Intersection	1.839			2.573			2.419			2.357		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	18.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.159

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	25	128	8	6	116	13	31	2	56	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	128	8	6	116	13	31	2	56	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.6500	0.6500	0.6500	0.5970	0.5970	0.5970	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	36	2	2	45	5	13	1	23	0	0	0
Total Analysis Volume [veh/h]	28	142	9	9	178	20	52	3	94	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	26	0	10	26	0	0	54	0	0	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	69	69	1	67	67	8	8	8	8
g / C, Green / Cycle	0.03	0.77	0.77	0.01	0.75	0.75	0.09	0.09	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.02	0.04	0.04	0.01	0.06	0.06	0.04	0.06	0.00	0.00
s, saturation flow rate [veh/h]	1687	1772	1735	1687	1772	1710	1417	1513	1298	1772
c, Capacity [veh/h]	59	1355	1327	25	1319	1273	176	132	88	155
d1, Uniform Delay [s]	42.65	2.61	2.61	43.94	3.11	3.12	40.60	40.06	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.89	0.08	0.08	8.64	0.11	0.12	0.92	7.61	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.06	0.06	0.36	0.08	0.08	0.30	0.73	0.00	0.00
d, Delay for Lane Group [s/veh]	48.54	2.69	2.69	52.59	3.23	3.24	41.52	47.67	0.00	0.00
Lane Group LOS	D	A	A	D	A	A	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.70	0.27	0.26	0.26	0.41	0.41	1.15	2.35	0.00	0.00
50th-Percentile Queue Length [ft/ln]	17.54	6.63	6.61	6.41	10.21	10.13	28.70	58.67	0.00	0.00
95th-Percentile Queue Length [veh/ln]	1.26	0.48	0.48	0.46	0.74	0.73	2.07	4.22	0.00	0.00
95th-Percentile Queue Length [ft/ln]	31.57	11.94	11.89	11.55	18.38	18.23	51.66	105.60	0.00	0.00

Movement, Approach, & Intersection Results

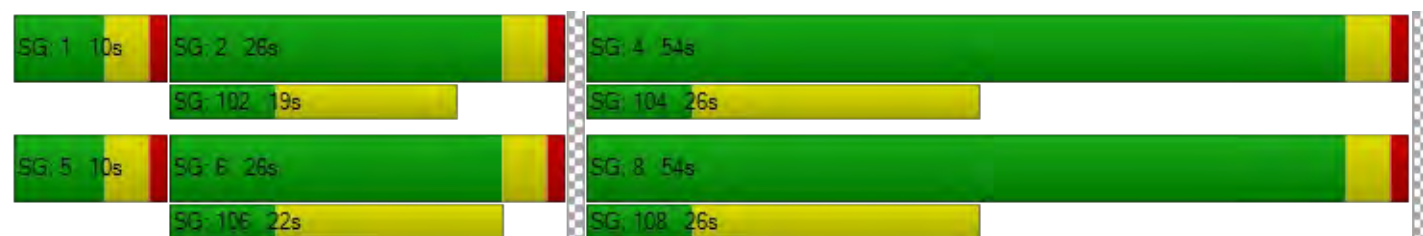
d_M, Delay for Movement [s/veh]	48.54	2.69	2.69	52.59	3.23	3.24	41.52	47.67	47.67	0.00	0.00	0.00
Movement LOS	D	A	A	D	A	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	9.86			5.38			45.53			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	18.06											
Intersection LOS	B											
Intersection V/C	0.159											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.387			2.452			2.004			1.947		
Crosswalk LOS	B			B			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	489			489			1111			1111		
d_b, Bicycle Delay [s]	25.69			25.69			8.89			8.89		
I_b,int, Bicycle LOS Score for Intersection	1.707			1.730			1.805			1.560		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	8.4
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.117

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	12	160	65	14	138	6	1	0	1	26	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	160	65	14	138	6	1	0	1	26	0	5
Peak Hour Factor	0.8280	0.8280	0.8280	0.9050	0.9050	0.9050	0.2500	0.2500	0.2500	0.6000	0.6000	0.6000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	48	20	4	38	2	1	0	1	11	0	2
Total Analysis Volume [veh/h]	14	193	79	15	152	7	4	0	4	43	0	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	30	0	10	30	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	82	76	76	82	76	76	1	1	5	5
g / C, Green / Cycle	0.82	0.76	0.76	0.82	0.76	0.76	0.01	0.01	0.05	0.05
(v / s)_i Volume / Saturation Flow Rate	0.01	0.08	0.08	0.01	0.04	0.05	0.00	0.00	0.02	0.02
s, saturation flow rate [veh/h]	1249	1772	1603	1136	1772	1744	1687	1506	1687	1626
c, Capacity [veh/h]	1112	1347	1219	1009	1349	1328	21	19	78	75
d1, Uniform Delay [s]	1.62	3.12	3.13	1.65	2.98	2.98	48.90	48.92	46.24	46.26
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.15	0.18	0.03	0.08	0.09	4.21	5.42	2.44	2.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.10	0.11	0.01	0.06	0.06	0.19	0.21	0.33	0.34
d, Delay for Lane Group [s/veh]	1.63	3.27	3.31	1.67	3.06	3.07	53.12	54.34	48.68	48.91
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	0.63	0.60	0.04	0.34	0.34	0.12	0.13	0.67	0.66
50th-Percentile Queue Length [ft/ln]	0.76	15.64	15.06	0.97	8.54	8.52	3.08	3.18	16.67	16.62
95th-Percentile Queue Length [veh/ln]	0.05	1.13	1.08	0.07	0.62	0.61	0.22	0.23	1.20	1.20
95th-Percentile Queue Length [ft/ln]	1.37	28.14	27.11	1.74	15.38	15.33	5.55	5.72	30.01	29.92

Movement, Approach, & Intersection Results

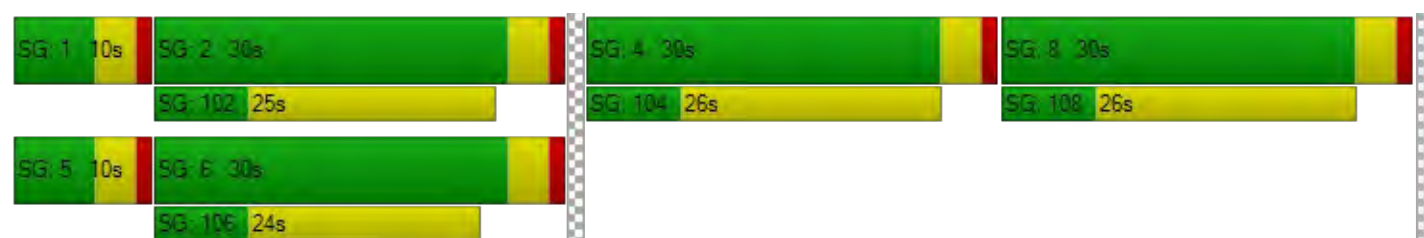
d_M, Delay for Movement [s/veh]	1.63	3.28	3.31	1.67	3.06	3.07	53.12	53.12	54.34	48.77	48.91	48.91
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	3.21			2.94			53.73			48.79		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	8.38											
Intersection LOS	A											
Intersection V/C	0.117											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.399			2.379			1.970			2.009		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			520			520			520		
d_b, Bicycle Delay [s]	27.38			27.38			27.38			27.38		
I_b,int, Bicycle LOS Score for Intersection	1.796			1.703			1.573			1.644		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	14.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.269

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	31	5	14	3	2	27	75	286	14	27	437	11
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	5	14	3	2	27	75	286	14	27	437	11
Peak Hour Factor	0.5830	0.5830	0.5830	0.5500	0.5500	0.5500	0.8240	0.8240	0.8240	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	2	6	1	1	12	23	87	4	7	116	3
Total Analysis Volume [veh/h]	53	9	24	5	4	49	91	347	17	29	464	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	10	33	0	10	33	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	5	5	5	23	5	61	61	3	59	59
g / C, Green / Cycle	0.06	0.06	0.06	0.05	0.05	0.26	0.06	0.68	0.68	0.04	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.02	0.00	0.00	0.03	0.03	0.10	0.10	0.02	0.13	0.14
s, saturation flow rate [veh/h]	1417	1554	1506	1687	1612	1506	3277	1772	1743	1687	1772	1756
c, Capacity [veh/h]	138	165	90	88	84	395	200	1195	1175	60	1150	1140
d1, Uniform Delay [s]	40.35	40.91	40.48	40.61	40.60	25.38	40.90	5.33	5.33	42.65	6.41	6.41
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.40	0.87	1.55	0.26	0.23	0.14	1.62	0.27	0.28	5.81	0.41	0.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.27	0.27	0.06	0.05	0.12	0.46	0.15	0.15	0.48	0.21	0.21
d, Delay for Lane Group [s/veh]	40.75	41.78	42.03	40.88	40.82	25.52	42.51	5.60	5.61	48.46	6.82	6.83
Lane Group LOS	D	D	D	D	D	C	D	A	A	D	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.38	0.99	0.54	0.11	0.09	0.81	1.01	1.16	1.15	0.72	1.75	1.74
50th-Percentile Queue Length [ft/ln]	9.39	24.75	13.56	2.78	2.22	20.17	25.26	28.91	28.63	18.12	43.67	43.42
95th-Percentile Queue Length [veh/ln]	0.68	1.78	0.98	0.20	0.16	1.45	1.82	2.08	2.06	1.30	3.14	3.13
95th-Percentile Queue Length [ft/ln]	16.91	44.55	24.41	5.00	4.00	36.30	45.47	52.05	51.53	32.61	78.61	78.15

Movement, Approach, & Intersection Results

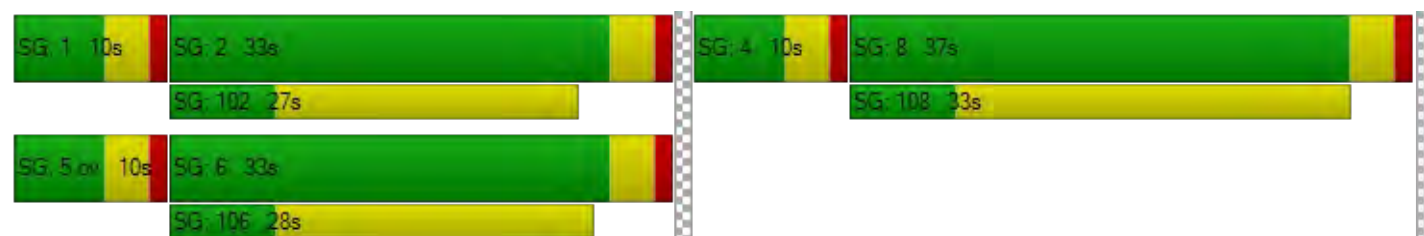
d_M, Delay for Movement [s/veh]	41.42	41.78	42.03	40.88	40.82	25.52	42.51	5.61	5.61	48.46	6.83	6.83
Movement LOS	D	D	D	D	D	C	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	41.64			27.90			12.99			9.22		
Approach LOS	D			C			B			A		
d_I, Intersection Delay [s/veh]	14.28											
Intersection LOS	B											
Intersection V/C	0.269											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.326	2.333	0.000	2.471
Crosswalk LOS	B	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	133	644	644
d_b, Bicycle Delay [s]	18.05	39.20	20.67	20.67
I_b,int, Bicycle LOS Score for Intersection	1.702	1.607	1.935	1.976
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	50.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.989

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	297	687	254	154	1238	299	293	1300	354	277	1171	162
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	297	687	254	154	1238	299	293	1300	354	277	1171	162
Peak Hour Factor	0.8230	0.8230	0.8230	0.9630	0.9630	0.9630	0.8630	0.8630	0.8630	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	209	77	40	321	78	85	377	103	71	299	41
Total Analysis Volume [veh/h]	361	835	309	160	1286	310	340	1506	410	283	1195	165
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	44	0	12	39	0	19	50	0	14	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	40	40	8	34	34	14	47	47	10	42	42
g / C, Green / Cycle	0.11	0.33	0.33	0.06	0.29	0.29	0.12	0.39	0.39	0.08	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.11	0.17	0.21	0.05	0.27	0.21	0.10	0.38	0.39	0.09	0.25	0.11
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1588	3277	4826	1506
c, Capacity [veh/h]	356	1585	495	212	1374	429	392	1315	619	274	1707	533
d1, Uniform Delay [s]	53.50	32.72	34.05	55.19	41.86	38.67	51.90	36.18	36.62	55.00	33.31	28.14
k, delay calibration	0.11	0.11	0.17	0.11	0.11	0.24	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.89	0.27	2.08	5.35	3.67	5.07	5.91	20.64	39.19	34.07	2.42	1.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.53	0.62	0.75	0.94	0.72	0.87	0.98	1.01	1.03	0.70	0.31
d, Delay for Lane Group [s/veh]	79.39	33.00	36.13	60.54	45.54	43.74	57.81	56.82	75.82	89.07	35.72	29.65
Lane Group LOS	F	C	D	E	D	D	E	E	F	F	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.63	6.59	7.86	2.54	12.70	8.78	5.34	22.01	24.47	5.43	10.27	3.68
50th-Percentile Queue Length [ft/ln]	165.87	164.85	196.41	63.45	317.54	219.39	133.56	550.32	611.75	135.85	256.78	92.11
95th-Percentile Queue Length [veh/ln]	10.92	10.81	12.45	4.57	18.55	13.63	9.13	29.71	32.87	9.36	15.53	6.63
95th-Percentile Queue Length [ft/ln]	273.04	270.14	311.33	114.21	463.66	340.85	228.33	742.68	821.75	233.99	388.18	165.80

Movement, Approach, & Intersection Results

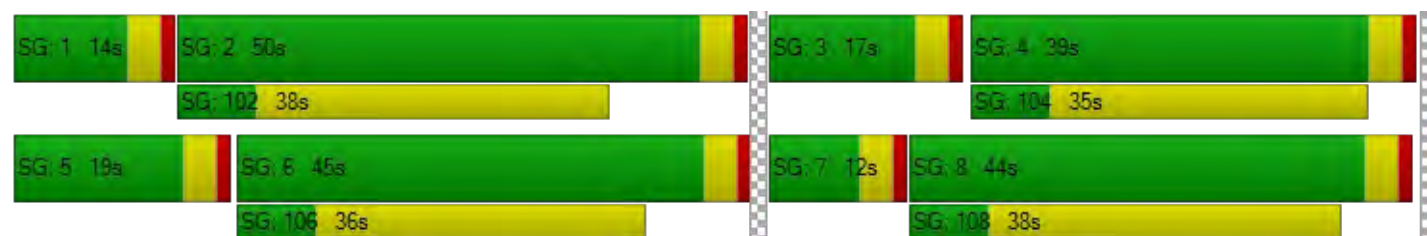
d_M, Delay for Movement [s/veh]	79.39	33.00	36.13	60.54	45.54	43.74	57.81	59.55	75.82	89.07	35.72	29.65
Movement LOS	F	C	D	E	D	D	E	E	E	F	D	C
d_A, Approach Delay [s/veh]	44.77			46.59			62.24			44.30		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	50.61											
Intersection LOS	D											
Intersection V/C	0.989											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.240			3.198			3.242			3.255		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			583			767			683		
d_b, Bicycle Delay [s]	26.67			30.10			22.82			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.387			2.525			2.800			2.463		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.641

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	58	111	155	117	82	131	214	1332	76	53	1418	153
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	111	155	117	82	131	214	1332	76	53	1418	153
Peak Hour Factor	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510	0.8710	0.8710	0.8710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	31	43	34	24	38	61	382	22	14	367	40
Total Analysis Volume [veh/h]	65	124	173	137	96	154	246	1529	87	55	1466	158
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	28	36	0	26	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	21	21	21	21	21	17	62	62	5	50	50
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.21	0.21	0.17	0.62	0.62	0.05	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.11	0.11	0.03	0.10	0.15	0.32	0.32	0.03	0.30	0.10
s, saturation flow rate [veh/h]	1299	1772	1506	1267	3373	1506	1687	3373	1723	1687	4826	1506
c, Capacity [veh/h]	294	376	320	242	716	320	280	2093	1069	79	2422	756
d1, Uniform Delay [s]	36.21	33.35	35.04	42.00	31.93	34.55	40.74	10.53	10.54	46.94	17.82	13.86
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.38	0.51	1.42	2.06	0.08	1.12	8.76	0.89	1.75	10.32	1.13	0.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.33	0.54	0.57	0.13	0.48	0.88	0.51	0.51	0.69	0.61	0.21
d, Delay for Lane Group [s/veh]	36.58	33.86	36.47	44.06	32.01	35.68	49.50	11.43	12.29	57.26	18.95	14.49
Lane Group LOS	D	C	D	D	C	D	D	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.41	2.59	3.84	3.39	0.95	3.36	6.52	6.23	6.64	1.57	7.93	2.06
50th-Percentile Queue Length [ft/ln]	35.27	64.69	96.06	84.79	23.69	84.03	163.10	155.86	166.07	39.21	198.23	51.56
95th-Percentile Queue Length [veh/ln]	2.54	4.66	6.92	6.10	1.71	6.05	10.71	10.33	10.87	2.82	12.55	3.71
95th-Percentile Queue Length [ft/ln]	63.49	116.45	172.90	152.62	42.64	151.25	267.82	258.23	271.75	70.58	313.68	92.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.58	33.86	36.47	44.06	32.01	35.68	49.50	11.69	12.29	57.26	18.95	14.49
Movement LOS	D	C	D	D	C	D	D	B	B	E	B	B
d_A, Approach Delay [s/veh]	35.60			37.74			16.71			19.78		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	21.40											
Intersection LOS	C											
Intersection V/C	0.641											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.422			2.483			3.185			3.354		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			640			600		
d_b, Bicycle Delay [s]	21.78			21.78			23.12			24.50		
I_b,int, Bicycle LOS Score for Intersection	2.157			1.879			2.584			2.483		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	56.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.033

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	419	473	139	141	970	200	157	1481	342	153	1595	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	419	473	139	141	970	200	157	1481	342	153	1595	73
Peak Hour Factor	0.7960	0.7960	0.7960	0.9500	0.9500	0.9500	0.9210	0.9210	0.9210	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	149	44	37	255	53	43	402	93	44	459	21
Total Analysis Volume [veh/h]	526	594	175	148	1021	211	170	1608	371	176	1835	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	42	0	20	39	0	10	47	0	11	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	46	46	8	35	35	6	43	43	7	44	44
g / C, Green / Cycle	0.16	0.39	0.39	0.06	0.29	0.29	0.05	0.36	0.36	0.06	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.16	0.12	0.12	0.05	0.30	0.14	0.05	0.33	0.25	0.05	0.38	0.06
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	519	1864	582	205	980	437	164	1734	541	192	1774	554
d1, Uniform Delay [s]	50.50	25.77	25.57	55.23	42.58	35.13	57.00	36.94	32.69	56.21	37.95	25.42
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.76	0.10	0.29	4.74	26.06	0.83	41.63	10.13	6.92	15.88	30.81	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.32	0.30	0.72	1.04	0.48	1.03	0.93	0.69	0.92	1.03	0.15
d, Delay for Lane Group [s/veh]	72.26	25.87	25.86	59.97	68.63	35.96	98.62	47.07	39.61	72.09	68.76	26.00
Lane Group LOS	F	C	C	E	F	D	F	D	D	E	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.33	3.98	3.52	2.33	17.87	5.19	3.44	16.49	10.14	3.07	22.09	1.71
50th-Percentile Queue Length [ft/ln]	233.26	99.51	88.06	58.34	446.83	129.80	86.06	412.21	253.55	76.84	552.23	42.74
95th-Percentile Queue Length [veh/ln]	14.43	7.16	6.34	4.20	25.45	8.93	6.20	23.15	15.36	5.53	30.51	3.08
95th-Percentile Queue Length [ft/ln]	360.78	179.12	158.51	105.01	636.36	223.22	154.90	578.69	384.12	138.31	762.75	76.92

Movement, Approach, & Intersection Results

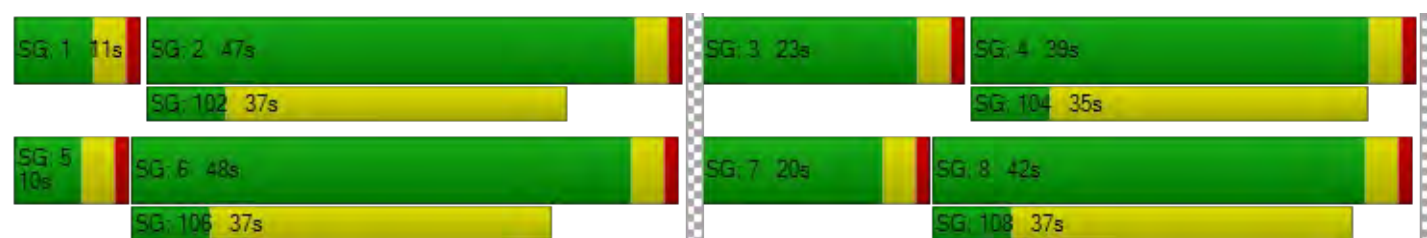
d_M, Delay for Movement [s/veh]	72.26	25.87	25.86	59.97	68.63	35.96	98.62	47.07	39.61	72.09	68.76	26.00
Movement LOS	F	C	C	E	F	D	F	D	D	E	F	C
d_A, Approach Delay [s/veh]	44.71			62.71			49.86			67.32		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	56.75											
Intersection LOS	E											
Intersection V/C	1.033											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.088			3.011			3.374			3.299		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			583			717			733		
d_b, Bicycle Delay [s]	28.02			30.10			24.70			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.272			2.698			2.742			2.712		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	14.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.622

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	52	123	13	29	57	1538	9	24	1671	140
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	52	123	13	29	57	1538	9	24	1671	140
Peak Hour Factor	0.7700	0.7700	0.7700	0.8070	0.8070	0.8070	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	17	38	4	9	16	430	3	7	491	41
Total Analysis Volume [veh/h]	18	17	68	152	16	36	64	1718	10	28	1964	165
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	40	0	10	40	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	7	7	5	67	67	3	65	65
g / C, Green / Cycle	0.07	0.07	0.07	0.07	0.07	0.05	0.67	0.67	0.03	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.05	0.05	0.03	0.02	0.34	0.34	0.02	0.41	0.11
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1579	3277	3373	1766	1687	4826	1506
c, Capacity [veh/h]	115	120	93	234	113	167	2251	1179	57	3137	979
d1, Uniform Delay [s]	43.97	43.92	45.77	45.29	44.66	46.00	8.35	8.35	47.55	10.34	6.89
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.53	10.42	3.04	2.93	1.44	0.81	1.54	6.49	0.96	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.14	0.73	0.65	0.46	0.38	0.50	0.50	0.49	0.63	0.17
d, Delay for Lane Group [s/veh]	44.60	44.45	56.19	48.33	47.59	47.44	9.16	9.89	54.03	11.30	7.26
Lane Group LOS	D	D	E	D	D	D	A	A	D	B	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	0.41	1.92	1.93	1.33	0.80	5.65	6.16	0.79	7.79	1.36
50th-Percentile Queue Length [ft/ln]	10.98	10.33	47.95	48.18	33.13	20.02	141.35	154.06	19.64	194.76	34.06
95th-Percentile Queue Length [veh/ln]	0.79	0.74	3.45	3.47	2.39	1.44	9.55	10.23	1.41	12.37	2.45
95th-Percentile Queue Length [ft/ln]	19.77	18.59	86.31	86.73	59.64	36.04	238.84	255.84	35.35	309.19	61.30

Movement, Approach, & Intersection Results

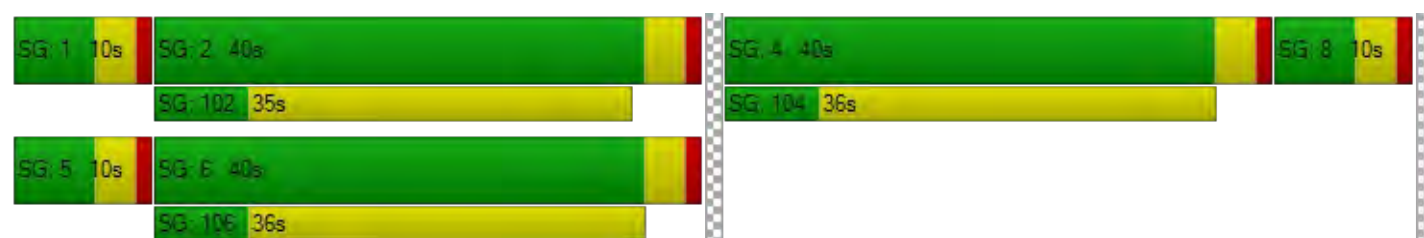
d_M, Delay for Movement [s/veh]	44.60	44.45	56.19	48.33	47.59	47.59	47.44	9.40	9.89	54.03	11.30	7.26
Movement LOS	D	D	E	D	D	D	D	A	A	D	B	A
d_A, Approach Delay [s/veh]	52.23			48.14			10.77			11.54		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	13.95											
Intersection LOS	B											
Intersection V/C	0.622											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.174			2.392			3.195			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	120			720			720			720		
d_b, Bicycle Delay [s]	44.18			20.48			20.48			20.48		
I_b,int, Bicycle LOS Score for Intersection	1.645			1.896			2.545			2.746		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	45.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.920

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	104	147	389	175	366	26	32	1533	177	422	1712	171
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	104	147	389	175	366	26	32	1533	177	422	1712	171
Peak Hour Factor	0.9050	0.9050	0.9050	0.9420	0.9420	0.9420	0.9090	0.9090	0.9090	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	29	41	107	46	97	7	9	422	49	117	476	48
Total Analysis Volume [veh/h]	115	162	430	186	389	28	35	1686	195	469	1902	190
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	45	0	14	39	0	10	38	0	23	51	51
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	36	36	10	40	40	4	39	39	19	54	68
g / C, Green / Cycle	0.05	0.30	0.30	0.08	0.33	0.33	0.03	0.32	0.32	0.16	0.45	0.56
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.29	0.08	0.12	0.12	0.01	0.29	0.29	0.14	0.39	0.13
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1730	3277	4826	1653	3277	4826	1506
c, Capacity [veh/h]	169	1020	455	198	592	578	114	1559	534	517	2153	848
d1, Uniform Delay [s]	55.93	30.67	40.86	54.71	30.18	30.19	56.52	38.75	38.75	49.69	30.39	13.12
k, delay calibration	0.11	0.11	0.34	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.73	0.07	23.53	18.57	0.36	0.37	1.52	8.62	20.61	6.42	5.72	0.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.16	0.94	0.94	0.36	0.36	0.31	0.90	0.90	0.91	0.88	0.22
d, Delay for Lane Group [s/veh]	60.66	30.74	64.40	73.28	30.54	30.56	58.04	47.37	59.36	56.11	36.12	13.73
Lane Group LOS	E	C	E	E	C	C	E	D	E	E	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.82	1.74	15.23	3.30	4.67	4.58	0.54	14.20	16.37	7.36	17.45	2.69
50th-Percentile Queue Length [ft/ln]	45.58	43.56	380.73	82.56	116.78	114.53	13.56	355.05	409.32	183.91	436.30	67.18
95th-Percentile Queue Length [veh/ln]	3.28	3.14	21.63	5.94	8.22	8.09	0.98	20.38	23.01	11.80	24.30	4.84
95th-Percentile Queue Length [ft/ln]	82.05	78.40	540.73	148.62	205.40	202.29	24.40	509.56	575.22	295.11	607.58	120.93

Movement, Approach, & Intersection Results

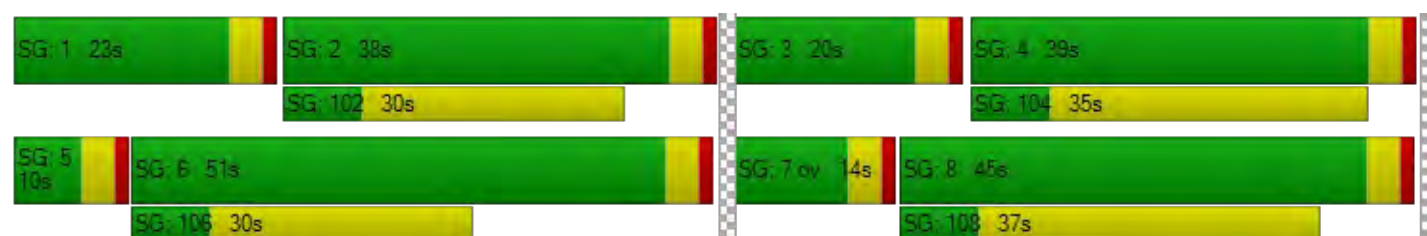
d_M, Delay for Movement [s/veh]	60.66	30.74	64.40	73.28	30.55	30.56	58.04	49.40	59.36	56.11	36.12	13.73
Movement LOS	E	C	E	E	C	C	E	D	E	E	D	B
d_A, Approach Delay [s/veh]	56.08			43.73			50.57			38.12		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	45.02											
Intersection LOS	D											
Intersection V/C	0.920											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.853			2.628			3.292			3.454		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			583			567			783		
d_b, Bicycle Delay [s]	26.00			30.10			30.82			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.143			2.057			2.350			2.968		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	17.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	577	0	484	0	1400	746	0	1844	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	577	0	484	0	1400	746	0	1844	195
Peak Hour Factor	1.0000	1.0000	1.0000	0.8810	1.0000	0.8810	1.0000	0.9270	0.9270	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	164	0	137	0	378	201	0	490	52
Total Analysis Volume [veh/h]	0	0	0	655	0	549	0	1510	805	0	1962	207
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		28	28	28	54	54
g / C, Green / Cycle		0.31	0.31	0.31	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate		0.24	0.25	0.27	0.31	0.41
s, saturation flow rate [veh/h]		1687	1616	1506	4826	4826
c, Capacity [veh/h]		524	502	468	2897	2897
d1, Uniform Delay [s]		28.01	28.40	29.11	10.44	12.09
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.38	3.00	4.69	0.67	1.29
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.80	0.86	0.52	0.68
d, Delay for Lane Group [s/veh]		30.39	31.40	33.79	11.11	13.38
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		7.89	8.06	8.44	5.39	8.18
50th-Percentile Queue Length [ft/ln]		197.16	201.61	211.11	134.73	204.56
95th-Percentile Queue Length [veh/ln]		12.49	12.72	13.21	9.20	12.87
95th-Percentile Queue Length [ft/ln]		312.30	318.04	330.25	229.91	321.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	30.78	0.00	33.15	0.00	11.11	0.00	0.00	13.38	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			31.86			11.11			13.38		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	17.41											
Intersection LOS	B											
Intersection V/C	0.739											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.424			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.119			2.390			2.639		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	33.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.813

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1003	189	768	0	0	135	178	1267	521	0	1407	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1003	189	768	0	0	135	178	1267	521	0	1407	20
Peak Hour Factor	0.9080	0.9080	0.9080	1.0000	1.0000	0.6820	0.8790	0.8790	0.8790	1.0000	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	276	52	211	0	0	49	51	360	148	0	393	6
Total Analysis Volume [veh/h]	1105	208	846	0	0	198	203	1441	593	0	1574	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	64	0	0	0	20	20	55	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	50	50	50	16	16	62	42	42
g / C, Green / Cycle	0.41	0.41	0.41	0.13	0.13	0.52	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.32	0.34	0.36	0.07	0.12	0.30	0.25	0.23
s, saturation flow rate [veh/h]	3277	1611	1506	2665	1687	4826	4826	1754
c, Capacity [veh/h]	1353	665	622	356	225	2511	1705	620
d1, Uniform Delay [s]	30.59	31.30	32.47	48.62	51.17	19.68	33.35	32.46
k, delay calibration	0.11	0.23	0.27	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.04	5.47	9.68	1.36	12.26	0.96	2.44	5.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.82	0.88	0.56	0.90	0.57	0.70	0.64
d, Delay for Lane Group [s/veh]	31.63	36.77	42.15	49.98	63.43	20.64	35.79	37.55
Lane Group LOS	C	D	D	D	E	C	D	D
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.32	14.84	16.02	2.85	6.77	9.20	10.29	10.52
50th-Percentile Queue Length [ft/ln]	333.06	371.10	400.53	71.17	169.14	230.00	257.26	262.89
95th-Percentile Queue Length [veh/ln]	19.31	21.16	22.59	5.12	11.03	14.17	15.55	15.83
95th-Percentile Queue Length [ft/ln]	482.71	529.07	564.64	128.11	275.78	354.35	388.78	395.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.76	36.77	40.20	0.00	0.00	49.98	63.43	20.64	0.00	0.00	36.21	37.55
Movement LOS	C	D	D			D	E	C			D	D
d_A, Approach Delay [s/veh]	35.60			49.98			25.92			36.23		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	33.45											
Intersection LOS	C											
Intersection V/C	0.813											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.735	2.159	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1000	0	850	517
d_b, Bicycle Delay [s]	15.00	60.00	19.84	33.00
I_b,int, Bicycle LOS Score for Intersection	5.122	4.132	2.464	2.218
Bicycle LOS	F	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	31.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	141	208	68	157	325	140	142	1770	95	88	1557	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	141	208	68	157	325	140	142	1770	95	88	1557	80
Peak Hour Factor	0.8870	0.8870	0.8870	0.9320	0.9320	0.9320	0.9120	0.9120	0.9120	0.9620	0.9620	0.9620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	40	59	19	42	87	38	39	485	26	23	405	21
Total Analysis Volume [veh/h]	159	234	77	168	349	150	156	1941	104	91	1619	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	19	48	0	16	41	0	11	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	23	23	8	24	24	12	57	57	7	52	52
g / C, Green / Cycle	0.05	0.20	0.20	0.07	0.22	0.22	0.11	0.52	0.52	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.09	0.05	0.20	0.10	0.09	0.40	0.40	0.05	0.26	0.26
s, saturation flow rate [veh/h]	3277	1772	1625	3277	1772	1506	1687	3373	1726	1687	4826	1715
c, Capacity [veh/h]	181	363	333	233	391	332	184	1735	888	109	2267	806
d1, Uniform Delay [s]	51.63	38.25	38.34	50.08	41.63	37.13	48.18	21.66	21.75	50.94	20.92	20.92
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.46	0.84	0.96	4.21	7.19	0.96	10.39	3.52	6.85	15.27	0.98	2.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.44	0.45	0.72	0.89	0.45	0.85	0.78	0.78	0.84	0.55	0.55
d, Delay for Lane Group [s/veh]	64.09	39.09	39.29	54.29	48.83	38.09	58.56	25.17	28.61	66.21	21.90	23.66
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.49	3.87	3.64	2.40	9.88	3.58	4.72	14.28	15.59	2.94	7.73	8.64
50th-Percentile Queue Length [ft/ln]	62.17	96.65	91.07	59.91	247.12	89.45	117.97	356.89	389.65	73.39	193.18	215.88
95th-Percentile Queue Length [veh/ln]	4.48	6.96	6.56	4.31	15.04	6.44	8.28	20.47	22.06	5.28	12.29	13.45
95th-Percentile Queue Length [ft/ln]	111.90	173.96	163.92	107.83	376.03	161.01	207.03	511.81	551.52	132.10	307.16	336.36

Movement, Approach, & Intersection Results

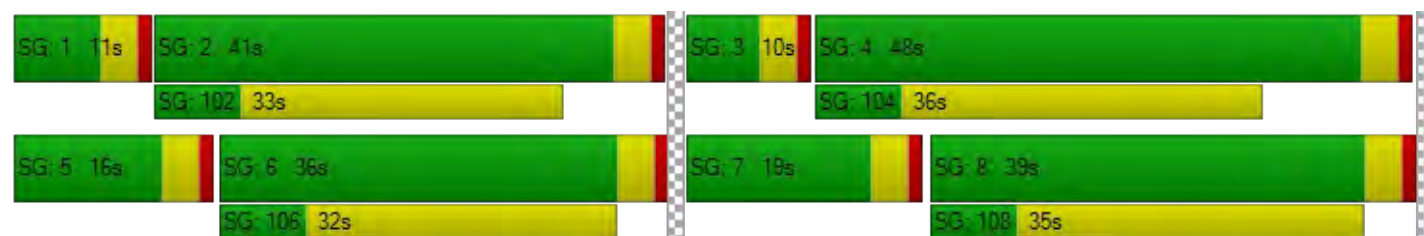
d_M, Delay for Movement [s/veh]	64.09	39.16	39.29	54.29	48.83	38.09	58.56	26.22	28.61	66.21	22.29	23.66
Movement LOS	E	D	D	D	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	47.61			47.79			28.62			24.58		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	31.44											
Intersection LOS	C											
Intersection V/C	0.822											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.507			2.648			3.238			3.220		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			800			673			582		
d_b, Bicycle Delay [s]	25.57			19.80			24.22			27.65		
I_b,int, Bicycle LOS Score for Intersection	1.947			2.660			2.770			2.299		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	20.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	168	11	138	24	27	13	12	1743	344	167	1423	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	168	11	138	24	27	13	12	1743	344	167	1423	31
Peak Hour Factor	0.8320	0.8320	0.8320	0.6740	0.6740	0.6740	0.9510	0.9510	0.9510	0.8930	0.8930	0.8930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	3	41	9	10	5	3	458	90	47	398	9
Total Analysis Volume [veh/h]	202	13	166	36	40	19	13	1833	362	187	1594	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	5	5	2	44	44	12	54	54
g / C, Green / Cycle	0.14	0.14	0.14	0.06	0.06	0.02	0.49	0.49	0.13	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.11	0.02	0.04	0.01	0.38	0.24	0.11	0.32	0.32
s, saturation flow rate [veh/h]	1687	1697	1506	1687	1676	1687	4826	1506	1687	3373	1752
c, Capacity [veh/h]	233	234	208	104	103	34	2365	738	224	2034	1057
d1, Uniform Delay [s]	35.78	35.78	37.66	40.57	41.15	43.65	18.90	15.43	38.13	10.41	10.42
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.42	1.41	6.91	1.97	4.90	7.13	2.56	2.32	7.91	0.98	1.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.46	0.80	0.35	0.57	0.39	0.77	0.49	0.83	0.53	0.53
d, Delay for Lane Group [s/veh]	37.19	37.19	44.56	42.54	46.05	50.78	21.45	17.75	46.05	11.39	12.30
Lane Group LOS	D	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.23	2.24	3.89	0.82	1.40	0.35	10.26	5.17	4.45	5.79	6.28
50th-Percentile Queue Length [ft/ln]	55.79	56.09	97.16	20.38	35.02	8.76	256.43	129.18	111.33	144.70	157.09
95th-Percentile Queue Length [veh/ln]	4.02	4.04	7.00	1.47	2.52	0.63	15.51	8.90	7.91	9.73	10.39
95th-Percentile Queue Length [ft/ln]	100.43	100.96	174.89	36.68	63.04	15.76	387.74	222.38	197.85	243.34	259.87

Movement, Approach, & Intersection Results

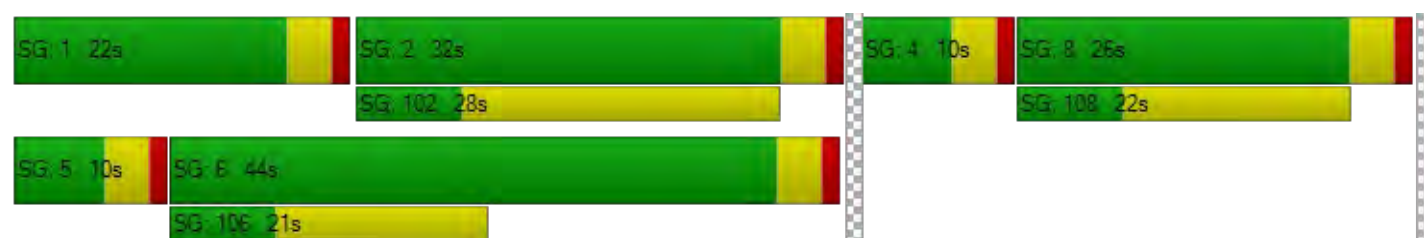
d_M, Delay for Movement [s/veh]	37.19	37.19	44.56	42.54	46.05	46.05	50.78	21.45	17.75	46.05	11.69	12.30
Movement LOS	D	D	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	40.40			44.72			21.02			15.24		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	20.83											
Intersection LOS	C											
Intersection V/C	0.773											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			0.00			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.367			1.990			0.000			3.130		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	489			133			622			889		
d_b, Bicycle Delay [s]	25.69			39.20			21.36			13.89		
I_b,int, Bicycle LOS Score for Intersection	2.188			1.716			2.774			2.558		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	29.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.729

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	168	233	81	311	614	106	129	1218	234	68	1035	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	168	233	81	311	614	106	129	1218	234	68	1035	84
Peak Hour Factor	0.8020	0.8020	0.8020	0.9340	0.9340	0.9340	0.8920	0.8920	0.8920	0.9780	0.9780	0.9780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	73	25	83	164	28	36	341	66	17	265	21
Total Analysis Volume [veh/h]	209	291	101	333	657	113	145	1365	262	70	1058	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	30	0	16	35	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	17	17	12	21	21	6	45	45	5	45	45
g / C, Green / Cycle	0.07	0.18	0.18	0.12	0.23	0.23	0.06	0.48	0.48	0.05	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.06	0.11	0.12	0.10	0.19	0.08	0.04	0.32	0.33	0.02	0.23	0.23
s, saturation flow rate [veh/h]	3277	1772	1618	3277	3373	1506	3277	3373	1630	3277	3373	1704
c, Capacity [veh/h]	244	317	289	400	763	341	210	1608	777	178	1575	796
d1, Uniform Delay [s]	43.53	36.26	36.33	40.81	35.37	30.79	43.61	19.30	19.33	43.48	17.44	17.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.39	2.19	2.48	4.54	3.00	0.57	4.04	2.36	4.85	1.41	1.06	2.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.64	0.65	0.83	0.86	0.33	0.69	0.68	0.68	0.39	0.48	0.48
d, Delay for Lane Group [s/veh]	51.92	38.45	38.80	45.35	38.37	31.36	47.65	21.65	24.18	44.89	18.50	19.54
Lane Group LOS	D	D	D	D	D	C	D	C	C	D	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.69	4.52	4.21	4.02	7.48	2.20	1.77	9.38	9.64	0.83	5.71	6.00
50th-Percentile Queue Length [ft/ln]	67.31	113.01	105.26	100.43	187.03	54.96	44.37	234.40	241.12	20.64	142.64	150.04
95th-Percentile Queue Length [veh/ln]	4.85	8.01	7.58	7.23	11.97	3.96	3.19	14.40	14.74	1.49	9.62	10.02
95th-Percentile Queue Length [ft/ln]	121.15	200.18	189.38	180.77	299.17	98.93	79.87	359.94	368.45	37.14	240.58	250.49

Movement, Approach, & Intersection Results

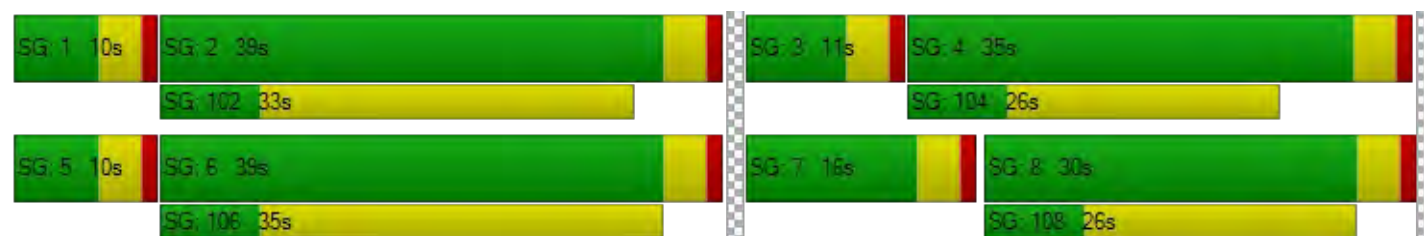
d_M, Delay for Movement [s/veh]	51.92	38.56	38.80	45.35	38.37	31.36	47.65	22.15	24.18	44.89	18.80	19.54
Movement LOS	D	D	D	D	D	C	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	43.25			39.76			24.54			20.35		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.43											
Intersection LOS	C											
Intersection V/C	0.729											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.713			2.823			3.112			3.095		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	547			653			737			737		
d_b, Bicycle Delay [s]	25.06			21.56			18.95			18.95		
I_b,int, Bicycle LOS Score for Intersection	2.055			2.470			2.534			2.227		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	47.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.887

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	142	574	245	232	974	391	244	1099	148	296	1112	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	574	245	232	974	391	244	1099	148	296	1112	138
Peak Hour Factor	0.8190	0.8190	0.8190	0.9240	0.9240	0.9240	0.8870	0.8870	0.8870	0.9290	0.9290	0.9290
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	175	75	63	264	106	69	310	42	80	299	37
Total Analysis Volume [veh/h]	173	701	299	251	1054	423	275	1239	167	319	1197	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	47	47	13	45	45	15	46	0	14	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	42	56	9	40	55	11	43	43	10	42	42
g / C, Green / Cycle	0.09	0.35	0.47	0.08	0.33	0.46	0.09	0.36	0.36	0.08	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.10	0.21	0.20	0.08	0.31	0.28	0.08	0.26	0.11	0.10	0.27	0.27
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1673
c, Capacity [veh/h]	155	1174	700	246	1117	687	301	1738	542	274	1187	589
d1, Uniform Delay [s]	54.50	32.21	21.45	55.50	39.03	24.66	54.03	33.06	27.64	55.00	34.38	34.40
k, delay calibration	0.11	0.11	0.30	0.11	0.11	0.33	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	70.48	0.49	1.15	31.58	4.86	2.73	10.77	2.52	1.47	83.70	4.56	8.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.12	0.60	0.43	1.02	0.94	0.62	0.91	0.71	0.31	1.17	0.76	0.76
d, Delay for Lane Group [s/veh]	124.98	32.70	22.60	87.08	43.89	27.39	64.80	35.58	29.11	138.69	38.94	43.29
Lane Group LOS	F	C	C	F	D	C	E	D	C	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.70	8.41	5.80	4.80	15.62	9.48	4.56	10.66	3.69	7.31	12.24	12.87
50th-Percentile Queue Length [ft/ln]	192.62	210.36	144.96	120.03	390.47	236.92	114.04	266.57	92.21	182.73	306.01	321.70
95th-Percentile Queue Length [veh/ln]	12.75	13.17	9.75	8.45	22.10	14.53	8.06	16.02	6.64	12.36	17.98	18.75
95th-Percentile Queue Length [ft/ln]	318.76	329.29	243.69	211.17	552.50	363.13	201.61	400.45	165.98	308.95	449.45	468.78

Movement, Approach, & Intersection Results

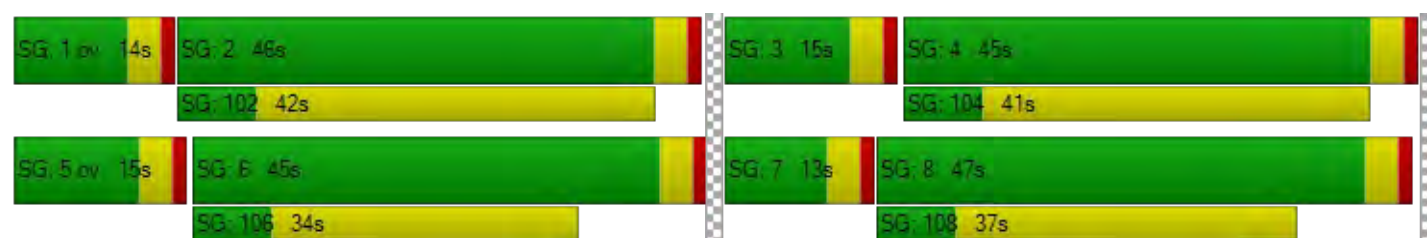
d_M, Delay for Movement [s/veh]	124.98	32.70	22.60	87.08	43.89	27.39	64.80	35.58	29.11	138.69	40.02	43.29
Movement LOS	F	C	C	F	D	C	E	D	C	F	D	D
d_A, Approach Delay [s/veh]	43.73			46.13			39.72			59.22		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	47.44											
Intersection LOS	D											
Intersection V/C	0.887											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.908			3.005			3.239			3.160		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	717			683			700			683		
d_b, Bicycle Delay [s]	24.70			26.00			25.35			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.527			2.985			2.484			2.475		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	34.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.736

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	265	269	14	148	928	215	251	852	522	24	988	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	265	269	14	148	928	215	251	852	522	24	988	107
Peak Hour Factor	0.9290	0.9290	0.9290	0.9170	0.9170	0.9170	0.9110	0.9110	0.9110	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	72	4	40	253	59	69	234	143	6	265	29
Total Analysis Volume [veh/h]	285	290	15	161	1012	234	276	935	573	26	1060	115
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	38	0	23	44	44	16	49	49	10	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	35	8	30	46	12	58	75	4	49	49
g / C, Green / Cycle	0.11	0.29	0.07	0.25	0.38	0.10	0.48	0.62	0.03	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.05	0.21	0.16	0.08	0.28	0.38	0.01	0.23	0.23
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1684
c, Capacity [veh/h]	357	974	222	1195	574	329	1620	937	98	1382	690
d1, Uniform Delay [s]	52.22	33.21	54.88	43.00	27.19	53.04	22.43	13.81	56.95	27.24	27.26
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.15	0.17	4.50	1.75	0.46	5.66	1.50	2.97	1.43	1.69	3.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.30	0.73	0.85	0.41	0.84	0.58	0.61	0.27	0.57	0.57
d, Delay for Lane Group [s/veh]	56.37	33.38	59.38	44.75	27.65	58.70	23.93	16.78	58.38	28.93	30.62
Lane Group LOS	E	C	E	D	C	E	C	B	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.39	3.33	2.53	9.67	4.99	4.35	9.66	9.73	0.41	8.88	9.21
50th-Percentile Queue Length [ft/ln]	109.86	83.16	63.17	241.76	124.77	108.63	241.62	243.35	10.14	222.10	230.27
95th-Percentile Queue Length [veh/ln]	7.83	5.99	4.55	14.77	8.65	7.76	14.76	14.85	0.73	13.77	14.19
95th-Percentile Queue Length [ft/ln]	195.80	149.69	113.71	369.26	216.37	194.09	369.08	371.27	18.26	344.30	354.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.37	33.38	0.00	59.38	44.75	27.65	58.70	23.93	16.78	58.38	29.37	30.62
Movement LOS	E	C		E	D	C	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	44.78			43.58			27.01			30.12		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	34.51											
Intersection LOS	C											
Intersection V/C	0.736											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.006			2.994			3.149			2.928		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	567			667			750			650		
d_b, Bicycle Delay [s]	30.82			26.67			23.44			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.034			2.333			3.031			2.220		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	28.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	113	372	133	94	153	127	82	1377	68	78	1517	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	372	133	94	153	127	82	1377	68	78	1517	138
Peak Hour Factor	0.8320	0.8320	0.8320	0.8070	0.8070	0.8070	0.8830	0.8830	0.8830	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	112	40	29	47	39	23	390	19	20	398	36
Total Analysis Volume [veh/h]	136	447	160	116	190	157	93	1559	77	82	1593	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	34	0	12	33	0	10	34	0	10	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	19	19	8	18	18	6	42	42	6	41	41
g / C, Green / Cycle	0.10	0.21	0.21	0.09	0.20	0.20	0.07	0.46	0.46	0.06	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.08	0.18	0.18	0.07	0.10	0.11	0.06	0.32	0.32	0.05	0.34	0.34
s, saturation flow rate [veh/h]	1687	1772	1614	1687	1772	1515	1687	3373	1729	1687	3373	1697
c, Capacity [veh/h]	167	373	340	145	350	300	114	1562	801	106	1545	778
d1, Uniform Delay [s]	39.80	34.21	34.25	40.44	32.38	32.53	41.49	19.12	19.13	41.65	20.13	20.16
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.13	5.50	6.27	9.57	1.22	1.55	13.05	2.54	4.89	11.53	3.35	6.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.85	0.85	0.80	0.52	0.55	0.82	0.69	0.69	0.78	0.75	0.75
d, Delay for Lane Group [s/veh]	48.93	39.71	40.51	50.01	33.59	34.08	54.54	21.67	24.02	53.18	23.48	26.71
Lane Group LOS	D	D	D	D	C	C	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.33	7.08	6.56	2.88	3.64	3.28	2.43	8.92	9.67	2.11	10.07	10.86
50th-Percentile Queue Length [ft/ln]	83.36	177.06	164.08	71.94	91.03	82.03	60.68	222.88	241.84	52.82	251.72	271.47
95th-Percentile Queue Length [veh/ln]	6.00	11.45	10.76	5.18	6.55	5.91	4.37	13.81	14.77	3.80	15.27	16.26
95th-Percentile Queue Length [ft/ln]	150.05	286.17	269.12	129.50	163.85	147.65	109.22	345.30	369.36	95.08	381.82	406.57

Movement, Approach, & Intersection Results

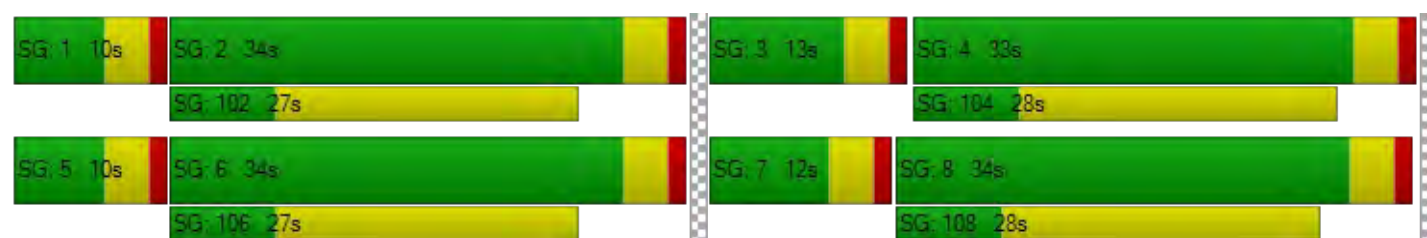
d_M, Delay for Movement [s/veh]	48.93	39.94	40.51	50.01	33.61	34.08	54.54	22.39	24.02	53.18	24.37	26.71
Movement LOS	D	D	D	D	C	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	41.71			37.88			24.19			25.85		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	28.90											
Intersection LOS	C											
Intersection V/C	0.787											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.512			2.523			3.097			3.102		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			644			667			667		
d_b, Bicycle Delay [s]	20.00			20.67			20.00			20.00		
I_b,int, Bicycle LOS Score for Intersection	2.173			1.942			2.511			2.561		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	42.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.876

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	434	679	186	80	304	94	155	1455	368	225	1281	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	434	679	186	80	304	94	155	1455	368	225	1281	76
Peak Hour Factor	0.9000	0.9000	0.9000	0.9430	0.9430	0.9430	0.9070	0.9070	0.9070	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	189	52	21	81	25	43	401	101	65	367	22
Total Analysis Volume [veh/h]	482	754	207	85	322	100	171	1604	406	258	1469	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	45	0	11	33	0	17	42	0	22	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	30	30	7	18	18	13	49	49	18	54	54
g / C, Green / Cycle	0.16	0.25	0.25	0.06	0.15	0.15	0.11	0.41	0.41	0.15	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.15	0.22	0.14	0.05	0.10	0.07	0.10	0.33	0.27	0.15	0.31	0.31
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1721
c, Capacity [veh/h]	520	848	379	100	513	229	184	1959	611	254	1509	770
d1, Uniform Delay [s]	49.83	43.31	38.99	55.97	47.73	46.24	53.05	31.74	29.01	51.01	26.39	26.41
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.17	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.74	3.43	1.23	17.85	1.27	1.31	18.10	3.96	5.62	36.96	2.52	4.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.89	0.55	0.85	0.63	0.44	0.93	0.82	0.66	1.02	0.68	0.68
d, Delay for Lane Group [s/veh]	57.57	46.74	40.22	73.82	49.00	47.56	71.16	35.71	34.63	87.96	28.91	31.29
Lane Group LOS	E	D	D	E	D	D	E	D	C	F	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.67	11.12	5.43	3.05	4.61	2.80	6.03	14.26	10.35	10.20	12.03	12.81
50th-Percentile Queue Length [ft/ln]	191.79	278.03	135.67	76.13	115.29	70.10	150.76	356.50	258.82	255.00	300.75	320.31
95th-Percentile Queue Length [veh/ln]	12.21	16.59	9.25	5.48	8.13	5.05	10.06	20.45	15.63	15.56	17.72	18.68
95th-Percentile Queue Length [ft/ln]	305.36	414.76	231.18	137.03	203.34	126.19	251.44	511.33	390.74	389.08	442.96	467.07

Movement, Approach, & Intersection Results

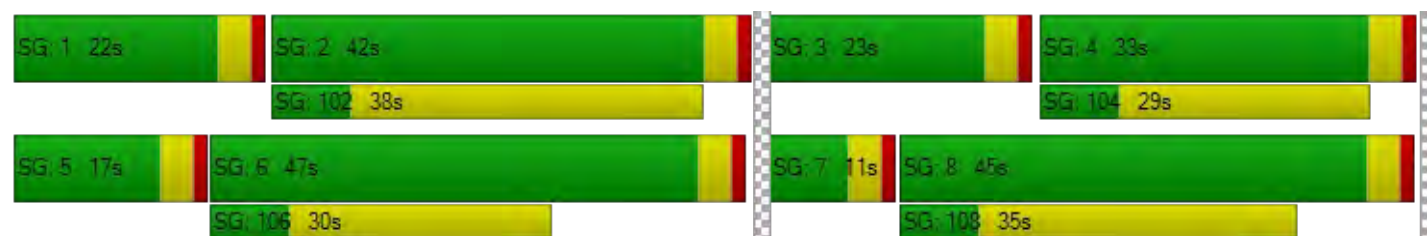
d_M, Delay for Movement [s/veh]	57.57	46.74	40.22	73.82	49.00	47.56	71.16	35.71	34.63	87.96	29.62	31.29
Movement LOS	E	D	D	E	D	D	E	D	C	F	C	C
d_A, Approach Delay [s/veh]	49.42			52.88			38.29			38.00		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.15											
Intersection LOS	D											
Intersection V/C	0.876											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.946			2.713			3.255			3.124		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			483			633			717		
d_b, Bicycle Delay [s]	26.00			34.50			28.02			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.750			1.978			2.759			2.557		
Bicycle LOS	C			A			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	44.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.914

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	318	565	301	535	365	14	37	1381	273	391	1056	673
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	565	301	535	365	14	37	1381	273	391	1056	673
Peak Hour Factor	0.9470	0.9470	0.9470	0.9220	0.9220	0.9220	0.8360	0.8360	0.8360	0.9740	0.9740	0.9740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	149	79	145	99	4	11	413	82	100	271	173
Total Analysis Volume [veh/h]	336	597	318	580	396	15	44	1652	327	401	1084	691
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	36	0	25	44	0	10	40	0	19	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	25	25	25	21	33	33	5	43	43	15	53	78
g / C, Green / Cycle	0.11	0.21	0.21	0.21	0.18	0.28	0.28	0.04	0.36	0.36	0.13	0.44	0.65
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.18	0.18	0.18	0.12	0.12	0.01	0.31	0.31	0.12	0.22	0.46
s, saturation flow rate [veh/h]	3277	1772	1732	1506	3277	1772	1749	3277	4826	1585	3277	4826	1506
c, Capacity [veh/h]	357	372	364	316	574	490	483	129	1719	564	411	2134	980
d1, Uniform Delay [s]	53.12	45.80	45.82	45.93	49.51	35.59	35.59	56.16	36.00	36.00	52.32	24.08	13.53
k, delay calibration	0.11	0.22	0.22	0.23	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.13	11.59	11.98	14.57	20.03	0.58	0.59	1.56	6.18	16.32	15.65	0.87	4.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.87	0.87	0.88	1.01	0.42	0.42	0.34	0.87	0.87	0.98	0.51	0.71
d, Delay for Lane Group [s/veh]	65.26	57.39	57.80	60.50	69.55	36.17	36.18	57.71	42.17	52.32	67.97	24.95	17.79
Lane Group LOS	E	E	E	E	F	D	D	E	D	D	E	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.62	10.44	10.26	9.25	10.16	5.05	4.99	0.68	14.32	15.70	6.90	7.48	12.32
50th-Percentile Queue Length [ft/ln]	140.6	260.9	256.5	231.3	254.12	126.33	124.74	16.95	358.06	392.58	172.45	187.11	308.09
95th-Percentile Queue Length [veh/ln]	9.51	15.73	15.52	14.24	15.47	8.74	8.65	1.22	20.53	22.20	11.21	11.97	18.08
95th-Percentile Queue Length [ft/ln]	237.8	393.3	387.9	356.0	386.82	218.49	216.32	30.52	513.22	555.06	280.13	299.27	452.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.26	57.58	60.37	69.55	36.18	36.18	57.71	43.17	52.32	67.97	24.95	17.79
Movement LOS	E	E	E	F	D	D	E	D	D	E	C	B
d_A, Approach Delay [s/veh]	60.30			55.71			44.97			30.60		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	44.74											
Intersection LOS	D											
Intersection V/C	0.914											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.938			2.844			3.238			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	533			667			600			750		
d_b, Bicycle Delay [s]	32.27			26.67			29.40			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.592			2.377			2.394			2.756		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	28.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	435	0	801	0	1332	808	221	1610	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	435	0	801	0	1332	808	221	1610	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9480	1.0000	0.9480	1.0000	0.8820	0.8820	0.9530	0.9530	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	115	0	211	0	378	229	58	422	0
Total Analysis Volume [veh/h]	0	0	0	459	0	845	0	1510	916	232	1689	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	38	0	0	0	45	0	12	57	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		30	30	30	44	44	44	8	57
g / C, Green / Cycle		0.32	0.32	0.32	0.47	0.47	0.47	0.08	0.60
(v / s)_i Volume / Saturation Flow Rate		0.26	0.29	0.29	0.36	0.40	0.40	0.07	0.35
s, saturation flow rate [veh/h]		1687	1515	1506	3373	1506	1506	3277	4826
c, Capacity [veh/h]		541	486	483	1578	705	705	279	2871
d1, Uniform Delay [s]		29.53	30.74	30.82	21.01	22.53	22.53	42.80	11.99
k, delay calibration		0.25	0.31	0.31	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.31	14.82	15.59	3.66	13.08	13.08	6.38	0.89
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.80	0.89	0.90	0.77	0.86	0.86	0.83	0.59
d, Delay for Lane Group [s/veh]		35.84	45.56	46.41	24.67	35.61	35.61	49.18	12.88
Lane Group LOS		D	D	D	C	D	D	D	B
Critical Lane Group		No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		9.76	11.17	11.29	11.36	13.88	13.88	2.90	6.99
50th-Percentile Queue Length [ft/ln]		243.94	279.28	282.13	284.00	347.00	347.00	72.57	174.87
95th-Percentile Queue Length [veh/ln]		14.88	16.65	16.79	16.89	19.99	19.99	5.23	11.33
95th-Percentile Queue Length [ft/ln]		372.01	416.32	419.86	422.19	499.75	499.75	130.63	283.30

Movement, Approach, & Intersection Results

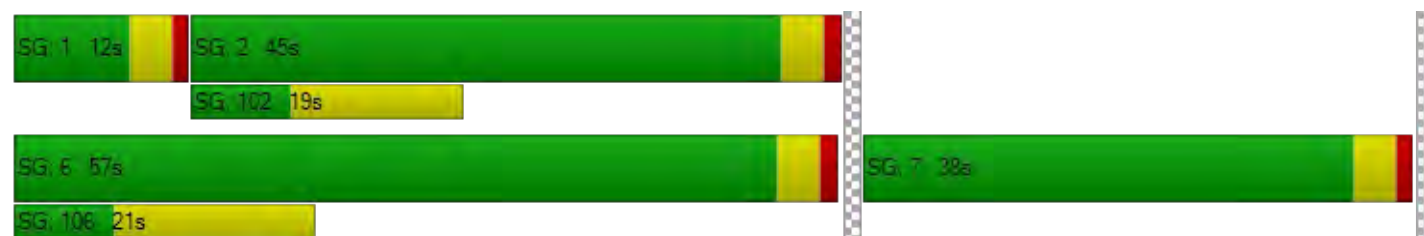
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	36.35	0.00	46.00	0.00	24.67	35.61	49.18	12.88	0.00
Movement LOS				D		D		C	D	D	B	
d_A, Approach Delay [s/veh]	0.00			42.60			30.14			17.26		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	28.64											
Intersection LOS	C											
Intersection V/C	0.872											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.277	2.366	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	863	1116
d_b, Bicycle Delay [s]	47.50	47.50	15.35	9.28
I_b,int, Bicycle LOS Score for Intersection	4.132	6.284	2.894	2.616
Bicycle LOS	D	F	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	24.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.796

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	624	0	255	0	0	0	540	1428	0	0	1035	502
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	624	0	255	0	0	0	540	1428	0	0	1035	502
Peak Hour Factor	0.8400	1.0000	0.8400	1.0000	1.0000	1.0000	0.8440	0.8440	1.0000	1.0000	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	0	76	0	0	0	160	423	0	0	272	132
Total Analysis Volume [veh/h]	743	0	304	0	0	0	640	1692	0	0	1086	527
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	34	0	0	0	0	0	35	56	0	0	21	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24		21	58	34	34	34
g / C, Green / Cycle	0.26	0.26		0.23	0.65	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.23	0.20		0.20	0.35	0.24	0.27	0.27
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1510	1506
c, Capacity [veh/h]	868	399		749	3118	1259	564	562
d1, Uniform Delay [s]	31.45	30.47		33.30	8.68	23.25	24.13	24.16
k, delay calibration	0.11	0.16		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	4.47		2.93	0.68	2.51	7.58	7.67
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.76		0.85	0.54	0.64	0.72	0.72
d, Delay for Lane Group [s/veh]	34.01	34.94		36.23	9.36	25.76	31.71	31.83
Lane Group LOS	C	C		D	A	C	C	C
Critical Lane Group	Yes	No		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.75	6.40		6.83	5.37	7.21	8.22	8.24
50th-Percentile Queue Length [ft/ln]	193.86	159.97		170.78	134.36	180.33	205.47	205.94
95th-Percentile Queue Length [veh/ln]	12.32	10.55		11.12	9.18	11.62	12.92	12.94
95th-Percentile Queue Length [ft/ln]	308.04	263.69		277.94	229.41	290.44	323.01	323.61

Movement, Approach, & Intersection Results

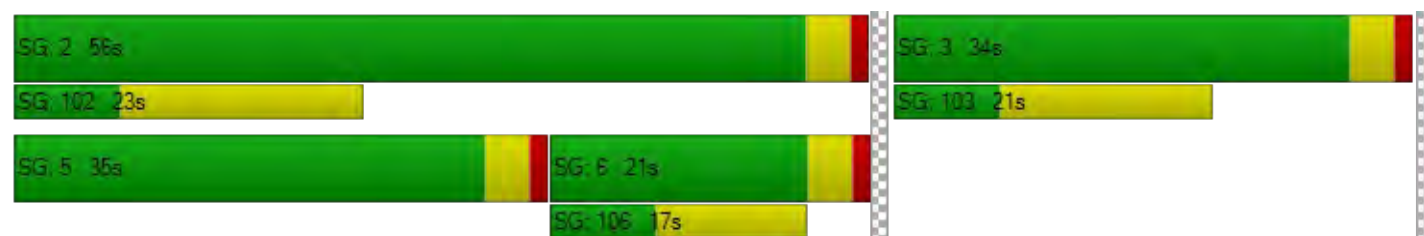
d_M, Delay for Movement [s/veh]	34.01	0.00	34.94	0.00	0.00	0.00	36.23	9.36	0.00	0.00	25.82	31.80
Movement LOS	C		C				D	A			C	C
d_A, Approach Delay [s/veh]	34.28			0.00			16.74			28.76		
Approach LOS	C			A			B			C		
d_I, Intersection Delay [s/veh]	24.30											
Intersection LOS	C											
Intersection V/C	0.796											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.280	2.283	0.000	3.096
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	1156	378
d_b, Bicycle Delay [s]	45.00	45.00	8.02	29.61
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.842	2.447
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.672

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	左 右 左			左 右			左 右 左 右			左 右 左 右		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	479	282	214	4	95	109	174	843	451	80	346	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	479	282	214	4	95	109	174	843	451	80	346	26
Peak Hour Factor	0.9310	0.9310	0.9310	0.9020	0.9020	0.9020	0.7940	0.7940	0.7940	0.8150	0.8150	0.8150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	129	76	57	1	26	30	55	265	142	25	106	8
Total Analysis Volume [veh/h]	515	303	230	4	105	121	219	1062	568	98	425	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	57	57	10	42	0	21	43	43	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	32	42	1	12	12	17	65	90	6	54	54
g / C, Green / Cycle	0.17	0.27	0.35	0.01	0.10	0.10	0.14	0.54	0.75	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.15	0.00	0.06	0.08	0.13	0.31	0.21	0.03	0.09	0.09
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1709
c, Capacity [veh/h]	567	471	527	12	177	151	240	1830	1997	166	1523	772
d1, Uniform Delay [s]	48.69	39.00	29.92	59.31	51.68	52.86	50.78	18.33	4.80	55.76	19.84	19.87
k, delay calibration	0.11	0.11	0.17	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.89	1.47	0.87	14.92	3.13	9.48	12.93	1.35	0.36	3.30	0.29	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.64	0.44	0.33	0.59	0.80	0.91	0.58	0.28	0.59	0.20	0.20
d, Delay for Lane Group [s/veh]	54.58	40.48	30.79	74.23	54.80	62.34	63.71	19.67	5.16	59.06	20.13	20.46
Lane Group LOS	D	D	C	E	D	E	E	B	A	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.01	8.08	5.23	0.17	3.18	3.97	7.34	9.91	2.07	1.53	2.61	2.75
50th-Percentile Queue Length [ft/ln]	200.18	202.03	130.72	4.29	79.55	99.15	183.39	247.66	51.74	38.24	65.33	68.76
95th-Percentile Queue Length [veh/ln]	12.65	12.74	8.98	0.31	5.73	7.14	11.78	15.07	3.73	2.75	4.70	4.95
95th-Percentile Queue Length [ft/ln]	316.20	318.58	224.47	7.72	143.19	178.47	294.43	376.71	93.13	68.84	117.60	123.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.58	40.48	30.79	74.23	54.80	62.34	63.71	19.67	5.16	59.06	20.23	20.46
Movement LOS	D	D	C	E	D	E	E	B	A	E	C	C
d_A, Approach Delay [s/veh]	45.28			59.10			20.43			27.10		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.92											
Intersection LOS	C											
Intersection V/C	0.672											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.762			2.336			3.094			2.866		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	883			633			650			467		
d_b, Bicycle Delay [s]	18.70			28.02			27.34			35.27		
I_b,int, Bicycle LOS Score for Intersection	3.289			1.939			3.085			1.865		
Bicycle LOS	C			A			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.539

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	73	806	355	390	660	55	65	88	31	380	144	554
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	806	355	390	660	55	65	88	31	380	144	554
Peak Hour Factor	0.9480	0.9480	0.9480	0.9200	0.9200	0.9200	0.9080	0.9080	0.9080	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	213	94	106	179	15	18	24	9	102	39	148
Total Analysis Volume [veh/h]	77	850	374	424	717	60	72	97	34	407	154	594
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	34	28	0	33	27	0	10	37	0	22	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	48	48	28	68	68	6	12	17	23	54
g / C, Green / Cycle	0.06	0.40	0.40	0.23	0.57	0.57	0.05	0.10	0.14	0.19	0.45
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.25	0.13	0.15	0.15	0.04	0.08	0.12	0.09	0.39
s, saturation flow rate [veh/h]	1687	3373	1509	3277	3373	1702	1687	1694	3277	1772	1506
c, Capacity [veh/h]	99	1342	600	754	1920	969	86	166	461	333	680
d1, Uniform Delay [s]	55.74	29.04	29.06	40.88	13.15	13.16	56.50	52.92	50.61	43.34	29.83
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.28	2.25	4.98	0.66	0.34	0.68	18.96	8.01	5.73	1.00	14.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.63	0.63	0.56	0.27	0.27	0.84	0.79	0.88	0.46	0.87
d, Delay for Lane Group [s/veh]	68.02	31.30	34.04	41.54	13.50	13.84	75.47	60.93	56.35	44.34	44.42
Lane Group LOS	E	C	C	D	B	B	E	E	E	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.64	10.11	9.52	5.62	3.58	3.71	2.62	4.23	6.36	4.17	17.87
50th-Percentile Queue Length [ft/ln]	65.95	252.66	237.88	140.50	89.57	92.82	65.39	105.76	158.90	104.29	446.79
95th-Percentile Queue Length [veh/ln]	4.75	15.32	14.57	9.51	6.45	6.68	4.71	7.60	10.49	7.51	24.80
95th-Percentile Queue Length [ft/ln]	118.71	383.00	364.36	237.70	161.23	167.08	117.70	190.09	262.26	187.72	620.12

Movement, Approach, & Intersection Results

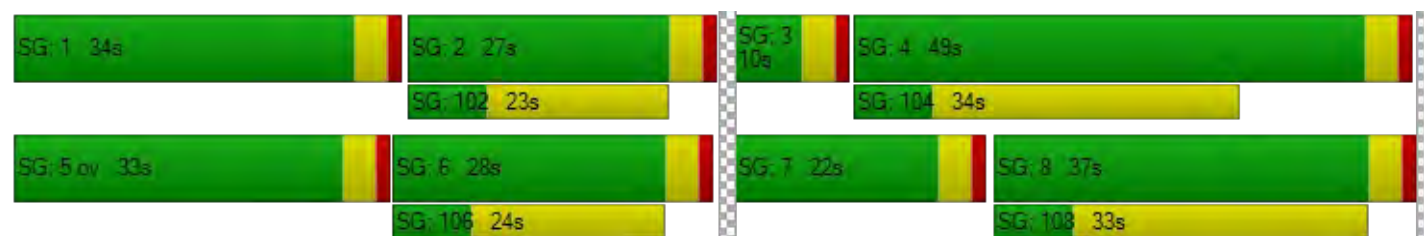
d_M, Delay for Movement [s/veh]	68.02	31.31	34.04	41.54	13.59	13.84	75.47	60.93	60.93	56.35	44.34	44.42
Movement LOS	E	C	C	D	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	34.27			23.47			66.09			48.61		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	36.87											
Intersection LOS	D											
Intersection V/C	0.539											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.950			3.070			2.115			2.800		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	400			383			550			750		
d_b, Bicycle Delay [s]	38.40			39.20			31.54			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.275			2.220			1.895			3.465		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	23.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.577

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	127	55	159	49	47	104	75	665	92	179	1063	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	127	55	159	49	47	104	75	665	92	179	1063	37
Peak Hour Factor	0.8740	0.8740	0.8740	0.7860	0.7860	0.7860	0.9250	0.9250	0.9250	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	16	45	16	15	33	20	180	25	47	279	10
Total Analysis Volume [veh/h]	145	63	182	62	60	132	81	719	99	188	1114	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	19	30	0	22	33	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24	24	24	24	6	42	42	12	48	48
g / C, Green / Cycle	0.27	0.27	0.27	0.27	0.27	0.06	0.46	0.46	0.13	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.12	0.04	0.12	0.05	0.12	0.05	0.24	0.24	0.11	0.33	0.03
s, saturation flow rate [veh/h]	1191	1772	1506	1339	1580	1687	1772	1697	1687	3373	1506
c, Capacity [veh/h]	259	481	409	380	429	103	821	786	223	1802	804
d1, Uniform Delay [s]	36.97	24.77	27.18	28.40	27.20	41.66	16.97	16.97	38.14	14.58	10.03
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.88	0.12	0.76	0.20	0.73	12.19	2.25	2.35	8.37	1.60	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.13	0.45	0.16	0.45	0.78	0.51	0.51	0.84	0.62	0.05
d, Delay for Lane Group [s/veh]	38.85	24.90	27.94	28.60	27.93	53.85	19.22	19.32	46.52	16.19	10.14
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.17	1.02	3.26	1.10	3.44	2.10	6.26	6.02	4.50	7.67	0.38
50th-Percentile Queue Length [ft/ln]	79.22	25.48	81.61	27.39	86.06	52.53	156.55	150.59	112.47	191.83	9.39
95th-Percentile Queue Length [veh/ln]	5.70	1.83	5.88	1.97	6.20	3.78	10.37	10.05	7.98	12.22	0.68
95th-Percentile Queue Length [ft/ln]	142.59	45.86	146.90	49.30	154.91	94.55	259.15	251.21	199.44	305.40	16.90

Movement, Approach, & Intersection Results

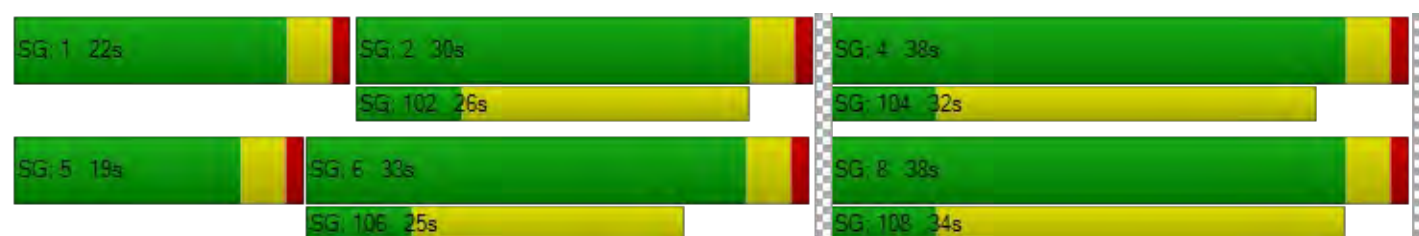
d_M, Delay for Movement [s/veh]	38.85	24.90	27.94	28.60	27.93	27.93	53.85	19.26	19.32	46.52	16.19	10.14
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	31.51			28.10			22.39			20.26		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.13											
Intersection LOS	C											
Intersection V/C	0.577											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.310			2.082			2.952			2.915		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			644		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			20.67		
I_b,int, Bicycle LOS Score for Intersection	2.203			1.979			2.301			2.666		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	39.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.898

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	三三三			三三三			三三三			三三三		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	476	153	315	403	295	256	731	151	138	936	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	476	153	315	403	295	256	731	151	138	936	606
Peak Hour Factor	0.9210	0.9210	0.9210	0.9620	0.9620	0.9620	0.9110	0.9110	0.9110	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	129	42	82	105	77	70	201	41	36	245	159
Total Analysis Volume [veh/h]	148	517	166	327	419	307	281	802	166	145	980	635
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	45	0	18	53	0	15	41	0	11	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	21	21	13	28	28	11	58	58	7	54	54
g / C, Green / Cycle	0.05	0.18	0.18	0.12	0.25	0.25	0.10	0.50	0.50	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.11	0.10	0.22	0.22	0.09	0.24	0.11	0.04	0.29	0.42
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1526	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	173	618	276	382	437	377	315	1687	753	200	1568	700
d1, Uniform Delay [s]	54.05	45.34	43.15	49.88	41.85	41.86	51.41	18.87	16.16	53.08	23.22	28.49
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.14	3.10	2.11	5.55	6.45	7.42	8.60	0.96	0.67	4.93	1.89	17.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.84	0.60	0.86	0.89	0.89	0.89	0.48	0.22	0.72	0.62	0.91
d, Delay for Lane Group [s/veh]	65.19	48.44	45.25	55.42	48.30	49.27	60.00	19.83	16.84	58.01	25.11	46.14
Lane Group LOS	E	D	D	E	D	D	E	B	B	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.39	7.36	4.49	4.90	11.38	9.91	4.37	7.10	2.58	2.20	10.21	19.01
50th-Percentile Queue Length [ft/ln]	59.78	183.93	112.37	122.48	284.41	247.74	109.32	177.44	64.45	54.88	255.30	475.31
95th-Percentile Queue Length [veh/ln]	4.30	11.81	7.97	8.53	16.91	15.07	7.80	11.47	4.64	3.95	15.45	26.16
95th-Percentile Queue Length [ft/ln]	107.61	295.13	199.30	213.23	422.70	376.80	195.06	286.67	116.01	98.78	386.32	654.08

Movement, Approach, & Intersection Results

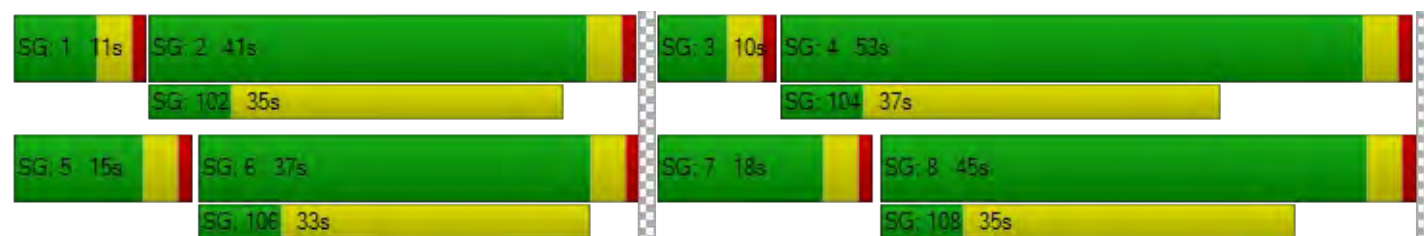
d_M, Delay for Movement [s/veh]	65.19	48.44	45.25	55.42	48.36	49.27	60.00	19.83	16.84	58.01	25.11	46.14
Movement LOS	E	D	D	E	D	D	E	B	B	E	C	D
d_A, Approach Delay [s/veh]	50.78			50.82			28.47			35.41		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	39.57											
Intersection LOS	D											
Intersection V/C	0.898											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.823			2.869			2.979			3.031		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	713			852			643			574		
d_b, Bicycle Delay [s]	23.81			18.94			26.45			29.23		
I_b,int, Bicycle LOS Score for Intersection	2.245			2.428			2.590			3.012		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.740

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	451	31	341	10	19	6	12	853	281	284	1211	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	451	31	341	10	19	6	12	853	281	284	1211	16
Peak Hour Factor	0.9370	0.9370	0.9370	0.8500	0.8500	0.8500	0.9910	0.9910	0.9910	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	8	91	3	6	2	3	215	71	75	321	4
Total Analysis Volume [veh/h]	481	33	364	12	22	7	12	861	284	301	1286	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	65	65	0	37	0	10	38	0	17	45	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	29	46	5	5	2	66	66	13	77	77
g / C, Green / Cycle	0.17	0.24	0.38	0.04	0.04	0.02	0.55	0.55	0.11	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.15	0.02	0.24	0.01	0.02	0.01	0.34	0.34	0.09	0.37	0.37
s, saturation flow rate [veh/h]	3277	1772	1506	1376	1699	1687	1772	1623	3277	1772	1763
c, Capacity [veh/h]	544	427	576	74	71	28	975	894	355	1138	1133
d1, Uniform Delay [s]	48.90	35.22	30.15	59.33	56.07	58.44	18.28	18.30	52.53	12.15	12.16
k, delay calibration	0.11	0.11	0.43	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.96	0.08	4.45	1.02	3.77	10.01	2.86	3.14	5.62	2.10	2.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.08	0.63	0.16	0.41	0.43	0.61	0.61	0.85	0.57	0.57
d, Delay for Lane Group [s/veh]	53.86	35.29	34.59	60.35	59.84	68.45	21.14	21.45	58.15	14.25	14.28
Lane Group LOS	D	D	C	E	E	E	C	C	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.40	0.76	9.20	0.39	0.93	0.44	11.68	10.81	4.73	10.02	10.00
50th-Percentile Queue Length [ft/ln]	184.94	19.05	229.88	9.63	23.27	10.98	291.91	270.33	118.13	250.40	250.11
95th-Percentile Queue Length [veh/ln]	11.86	1.37	14.17	0.69	1.68	0.79	17.28	16.21	8.29	15.21	15.19
95th-Percentile Queue Length [ft/ln]	296.46	34.29	354.21	17.34	41.89	19.77	432.00	405.16	207.25	380.16	379.79

Movement, Approach, & Intersection Results

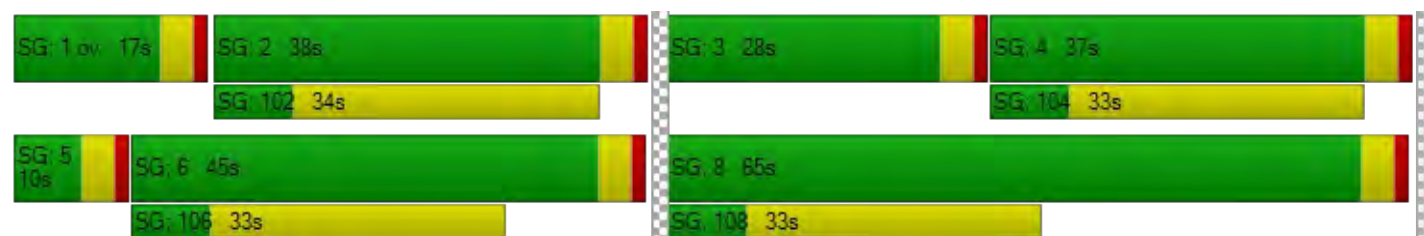
d_M, Delay for Movement [s/veh]	53.86	35.29	34.59	60.35	59.84	59.84	68.45	21.23	21.45	58.15	14.27	14.28
Movement LOS	D	D	C	E	E	E	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	45.18			59.99			21.77			22.50		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	28.10											
Intersection LOS	C											
Intersection V/C	0.740											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.708			1.987			2.885			2.945		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1017			550			567			683		
d_b, Bicycle Delay [s]	14.50			31.54			30.82			26.00		
I_b,int, Bicycle LOS Score for Intersection	3.008			1.627			2.514			2.883		
Bicycle LOS	C			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.893

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	97	3	278	268	894	11	5	1255	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	97	3	278	268	894	11	5	1255	128
Peak Hour Factor	0.7500	0.7500	0.7500	0.8100	0.8100	0.8100	0.9290	0.9290	0.9290	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	3	30	1	86	72	241	3	1	347	35
Total Analysis Volume [veh/h]	16	3	13	120	4	343	288	962	12	6	1388	142
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	22	0	0	34	34	32	54	0	10	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	22	22	57	23	77	77	1	55	55
g / C, Green / Cycle	0.03	0.03	0.03	0.18	0.18	0.47	0.19	0.64	0.64	0.01	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.04	0.04	0.23	0.17	0.28	0.28	0.00	0.41	0.09
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1692	1506	1687	1772	1764	1687	3373	1506
c, Capacity [veh/h]	88	60	51	303	304	711	324	1140	1135	17	1556	695
d1, Uniform Delay [s]	58.34	56.15	56.54	41.93	41.93	21.67	47.25	10.54	10.54	59.04	29.60	19.23
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.39	0.22	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.98	0.34	2.62	0.33	0.33	1.81	14.92	1.18	1.18	12.12	8.18	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.05	0.26	0.20	0.20	0.48	0.89	0.43	0.43	0.35	0.89	0.20
d, Delay for Lane Group [s/veh]	59.32	56.49	59.16	42.26	42.26	23.48	62.17	11.72	11.72	71.16	37.78	19.90
Lane Group LOS	E	E	E	D	D	C	E	B	B	E	D	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.51	0.09	0.42	1.60	1.60	6.90	9.70	6.43	6.40	0.24	19.54	2.49
50th-Percentile Queue Length [ft/ln]	12.66	2.35	10.54	39.98	40.10	172.45	242.46	160.68	160.11	5.96	488.48	62.27
95th-Percentile Queue Length [veh/ln]	0.91	0.17	0.76	2.88	2.89	11.21	14.81	10.58	10.55	0.43	26.79	4.48
95th-Percentile Queue Length [ft/ln]	22.79	4.23	18.98	71.96	72.18	280.14	370.15	264.62	263.87	10.73	669.71	112.09

Movement, Approach, & Intersection Results

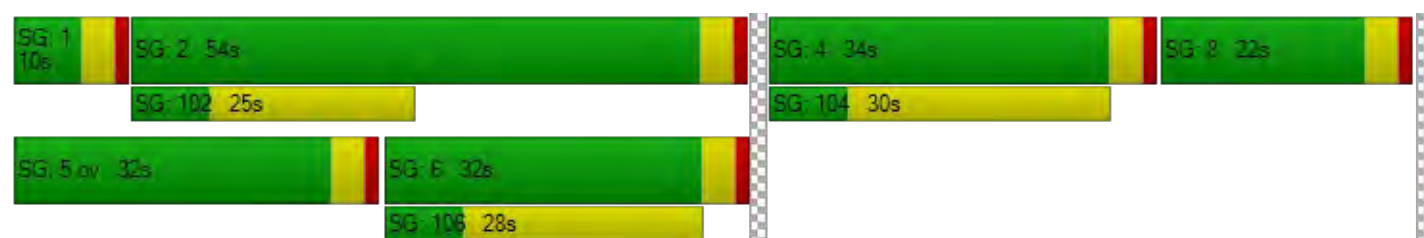
d_M, Delay for Movement [s/veh]	59.32	56.49	59.16	42.26	42.26	23.48	62.17	11.72	11.72	71.16	37.78	19.90
Movement LOS	E	E	E	D	D	C	E	B	B	E	D	B
d_A, Approach Delay [s/veh]	58.99			28.46			23.23			36.26		
Approach LOS	E			C			C			D		
d_I, Intersection Delay [s/veh]	30.39											
Intersection LOS	C											
Intersection V/C	0.893											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.158			2.364			2.923			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	300			500			833			467		
d_b, Bicycle Delay [s]	43.35			33.75			20.42			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.612			2.330			2.601			2.827		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	50.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.798

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	569	703	118	206	356	103	211	703	281	74	677	203
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	569	703	118	206	356	103	211	703	281	74	677	203
Peak Hour Factor	0.9100	0.9100	0.9100	0.8350	0.8350	0.8350	0.8890	0.8890	0.8890	0.8090	0.8090	0.8090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	156	193	32	62	107	31	59	198	79	23	209	63
Total Analysis Volume [veh/h]	625	773	130	247	426	123	237	791	316	91	837	251
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	38	0	24	37	0	19	46	0	12	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	45	45	11	36	36	15	39	39	8	32	32
g / C, Green / Cycle	0.18	0.38	0.38	0.09	0.30	0.30	0.13	0.33	0.33	0.07	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.19	0.18	0.18	0.08	0.11	0.11	0.14	0.23	0.21	0.05	0.25	0.17
s, saturation flow rate [veh/h]	3277	3373	1644	3277	3373	1579	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	574	1274	621	311	1002	469	212	1104	493	113	907	405
d1, Uniform Delay [s]	49.51	28.36	28.36	53.20	33.32	33.41	52.50	35.50	34.39	55.22	42.67	38.50
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.13	0.11	0.17	0.11	0.11	0.14
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	47.00	1.28	2.61	4.63	1.05	2.32	69.85	0.89	2.15	12.28	4.53	2.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.09	0.48	0.48	0.80	0.37	0.38	1.12	0.72	0.64	0.80	0.92	0.62
d, Delay for Lane Group [s/veh]	96.51	29.64	30.97	57.82	34.37	35.73	122.35	36.39	36.54	67.50	47.20	40.53
Lane Group LOS	F	C	C	E	C	D	F	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.31	6.84	6.90	3.85	4.43	4.42	10.47	10.23	8.10	3.10	12.52	6.70
50th-Percentile Queue Length [ft/ln]	307.87	171.03	172.51	96.17	110.85	110.50	261.63	255.63	202.59	77.55	313.10	167.40
95th-Percentile Queue Length [veh/ln]	18.83	11.13	11.21	6.92	7.89	7.87	16.53	15.47	12.77	5.58	18.33	10.94
95th-Percentile Queue Length [ft/ln]	470.78	278.27	280.21	173.10	197.19	196.70	413.26	386.74	319.31	139.59	458.20	273.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	96.51	29.93	30.97	57.82	34.55	35.73	122.35	36.39	36.54	67.50	47.20	40.53
Movement LOS	F	C	C	E	C	D	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	57.25			41.95			51.58			47.35		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	50.76											
Intersection LOS	D											
Intersection V/C	0.798											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.027			2.990			2.943			2.848		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	567			550			700			583		
d_b, Bicycle Delay [s]	30.82			31.54			25.35			30.10		
I_b,int, Bicycle LOS Score for Intersection	2.400			1.997			2.668			2.532		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.210

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	45	302	40	27	240	27	59	4	49	71	4	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	302	40	27	240	27	59	4	49	71	4	36
Peak Hour Factor	0.9560	0.9560	0.9560	0.9590	0.9590	0.9590	0.6990	0.6990	0.6990	0.8710	0.8710	0.8710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	79	10	7	63	7	21	1	18	20	1	10
Total Analysis Volume [veh/h]	47	316	42	28	250	28	84	6	70	82	5	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	21	49	0	11	39	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	62	62	3	60	60	13	13	13	13
g / C, Green / Cycle	0.05	0.68	0.68	0.03	0.67	0.67	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.10	0.02	0.08	0.08	0.06	0.05	0.06	0.03
s, saturation flow rate [veh/h]	1687	1772	1700	1687	1772	1710	1360	1524	1323	1531
c, Capacity [veh/h]	78	1210	1161	57	1188	1147	213	228	185	229
d1, Uniform Delay [s]	42.10	5.04	5.05	42.72	5.31	5.32	39.03	34.23	40.65	33.53
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.19	0.26	0.28	6.36	0.20	0.21	1.18	0.85	1.66	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.15	0.15	0.49	0.12	0.12	0.39	0.33	0.44	0.20
d, Delay for Lane Group [s/veh]	49.29	5.30	5.33	49.08	5.51	5.53	40.21	35.08	42.31	33.96
Lane Group LOS	D	A	A	D	A	A	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.17	1.11	1.08	0.71	0.88	0.87	1.83	1.52	1.85	0.90
50th-Percentile Queue Length [ft/ln]	29.24	27.64	27.03	17.67	22.04	21.72	45.79	38.09	46.14	22.46
95th-Percentile Queue Length [veh/ln]	2.11	1.99	1.95	1.27	1.59	1.56	3.30	2.74	3.32	1.62
95th-Percentile Queue Length [ft/ln]	52.63	49.75	48.65	31.80	39.67	39.09	82.42	68.56	83.05	40.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.29	5.31	5.33	49.08	5.52	5.53	40.21	35.08	35.08	42.31	33.96	33.96
Movement LOS	D	A	A	D	A	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	10.42			9.51			37.78			39.31		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	18.22											
Intersection LOS	B											
Intersection V/C	0.210											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.573			2.565			2.018			2.006		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1000			778			578			578		
d_b, Bicycle Delay [s]	11.25			16.81			22.76			22.76		
I_b,int, Bicycle LOS Score for Intersection	1.894			1.812			1.824			1.771		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	19.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.383

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	308	304	35	339	19	16	3	11	258	3	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	308	304	35	339	19	16	3	11	258	3	44
Peak Hour Factor	0.9560	0.9560	0.9560	0.9310	0.9310	0.9310	0.9380	0.9380	0.9380	0.8620	0.8620	0.8620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	81	79	9	91	5	4	1	3	75	1	13
Total Analysis Volume [veh/h]	16	322	318	38	364	20	17	3	12	299	3	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	29	0	10	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	71	63	63	71	65	65	4	4	13	13
g / C, Green / Cycle	0.71	0.63	0.63	0.71	0.65	0.65	0.04	0.04	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.02	0.18	0.21	0.04	0.11	0.11	0.01	0.01	0.11	0.11
s, saturation flow rate [veh/h]	1040	1772	1506	864	1772	1739	1699	1506	1687	1631
c, Capacity [veh/h]	798	1121	953	639	1153	1132	61	54	222	214
d1, Uniform Delay [s]	4.29	8.23	8.54	4.80	6.86	6.86	47.06	46.88	42.24	42.25
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.65	0.94	0.18	0.31	0.32	3.07	2.03	6.87	7.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.29	0.33	0.06	0.17	0.17	0.33	0.22	0.81	0.81
d, Delay for Lane Group [s/veh]	4.30	8.88	9.48	4.98	7.17	7.18	50.12	48.91	49.11	49.42
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	3.07	3.19	0.23	1.58	1.56	0.54	0.32	4.69	4.56
50th-Percentile Queue Length [ft/ln]	2.11	76.76	79.72	5.73	39.39	38.98	13.40	8.00	117.19	114.00
95th-Percentile Queue Length [veh/ln]	0.15	5.53	5.74	0.41	2.84	2.81	0.96	0.58	8.24	8.06
95th-Percentile Queue Length [ft/ln]	3.80	138.16	143.50	10.32	70.91	70.16	24.12	14.39	205.95	201.55

Movement, Approach, & Intersection Results

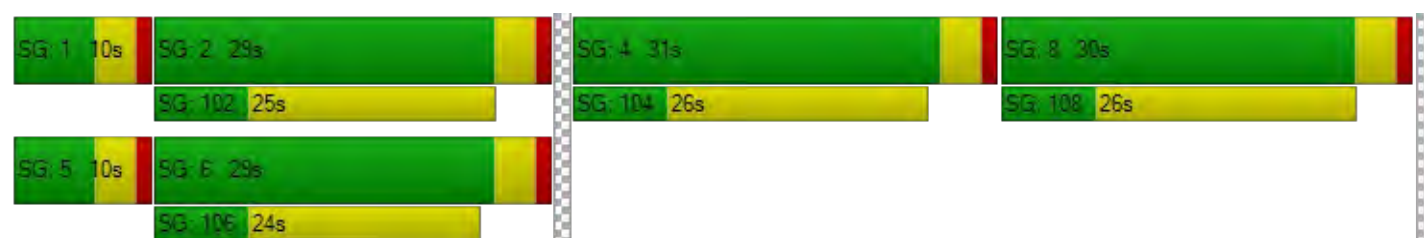
d_M, Delay for Movement [s/veh]	4.30	8.88	9.48	4.98	7.18	7.18	50.12	50.12	48.91	49.23	49.42	49.42
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.06			6.98			49.67			49.26		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	19.05											
Intersection LOS	B											
Intersection V/C	0.383											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.564			2.463			1.983			2.212		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			500			520			540		
d_b, Bicycle Delay [s]	28.13			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.101			1.908			1.612			2.142		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.719

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	135	19	63	42	12	361	466	614	22	93	491	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	19	63	42	12	361	466	614	22	93	491	26
Peak Hour Factor	0.8330	0.8330	0.8330	0.9000	0.9000	0.9000	0.8700	0.8700	0.8700	0.9090	0.9090	0.9090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	6	19	12	3	100	134	176	6	26	135	7
Total Analysis Volume [veh/h]	162	23	76	47	13	401	536	706	25	102	540	29
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	26	31	0	27	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11	6	6	47	22	64	64	8	50	50
g / C, Green / Cycle	0.10	0.10	0.10	0.06	0.06	0.44	0.21	0.61	0.61	0.08	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.05	0.03	0.01	0.27	0.16	0.21	0.21	0.06	0.16	0.16
s, saturation flow rate [veh/h]	1417	1512	1506	1687	1612	1506	3277	1772	1750	1687	1772	1740
c, Capacity [veh/h]	188	213	151	99	95	669	686	1083	1070	131	850	835
d1, Uniform Delay [s]	44.78	46.08	44.87	47.95	46.99	22.14	39.33	10.03	10.03	47.65	17.00	17.01
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.40	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	2.24	2.58	3.48	0.65	3.18	1.99	0.85	0.86	9.53	1.08	1.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.55	0.50	0.47	0.14	0.60	0.78	0.34	0.34	0.78	0.34	0.34
d, Delay for Lane Group [s/veh]	45.92	48.32	47.45	51.43	47.65	25.33	41.32	10.88	10.90	57.18	18.08	18.10
Lane Group LOS	D	D	D	D	D	C	D	B	B	E	B	B
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.70	3.13	1.98	1.29	0.34	7.90	6.66	4.16	4.12	2.96	4.46	4.39
50th-Percentile Queue Length [ft/ln]	42.62	78.13	49.52	32.16	8.50	197.39	166.56	103.98	102.96	74.01	111.50	109.85
95th-Percentile Queue Length [veh/ln]	3.07	5.63	3.57	2.32	0.61	12.50	10.90	7.49	7.41	5.33	7.92	7.83
95th-Percentile Queue Length [ft/ln]	76.72	140.63	89.13	57.88	15.29	312.60	272.38	187.17	185.32	133.22	198.08	195.80

Movement, Approach, & Intersection Results

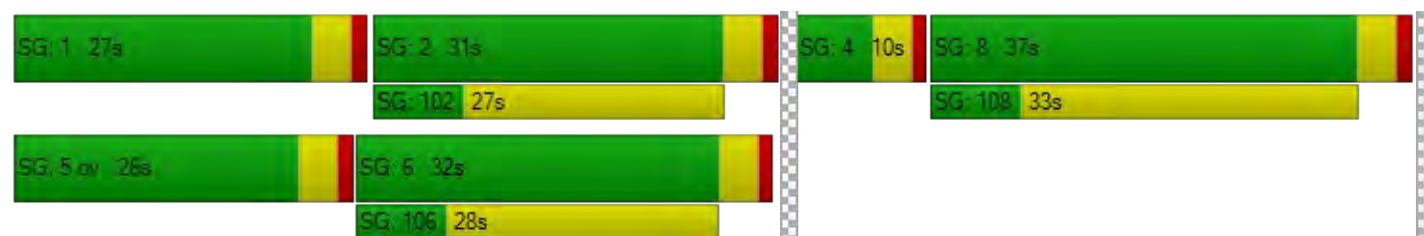
d_M, Delay for Movement [s/veh]	47.29	48.32	47.45	51.43	47.65	25.33	41.32	10.89	10.90	57.18	18.09	18.10
Movement LOS	D	D	D	D	D	C	D	B	B	E	B	B
d_A, Approach Delay [s/veh]	47.45			28.62			23.76			24.03		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	27.00											
Intersection LOS	C											
Intersection V/C	0.719											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			0.00			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.385			2.512			0.000			2.600		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	629			114			514			533		
d_b, Bicycle Delay [s]	24.69			46.67			28.97			28.23		
I_b,int, Bicycle LOS Score for Intersection	1.990			1.940			2.605			2.113		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.003

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	418	1099	207	255	923	401	296	1217	281	417	1505	235
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	418	1099	207	255	923	401	296	1217	281	417	1505	235
Peak Hour Factor	0.9550	0.9550	0.9550	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	109	288	54	67	244	106	78	322	74	110	398	62
Total Analysis Volume [veh/h]	438	1151	217	270	976	424	313	1286	297	441	1593	249
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	42	0	16	39	0	21	42	0	20	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	38	38	12	35	35	14	38	38	16	41	41
g / C, Green / Cycle	0.13	0.32	0.32	0.10	0.29	0.29	0.11	0.32	0.32	0.13	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.14	0.08	0.20	0.28	0.10	0.32	0.32	0.13	0.33	0.17
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1608	3277	4826	1506
c, Capacity [veh/h]	410	1530	477	321	1399	437	371	1073	512	437	1633	509
d1, Uniform Delay [s]	52.50	36.76	32.70	53.21	37.92	42.11	52.17	40.84	40.91	52.00	39.22	31.47
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.43	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	41.76	0.77	0.68	5.91	0.64	33.51	5.25	26.57	40.90	22.15	17.19	3.33
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.75	0.45	0.84	0.70	0.97	0.84	1.00	1.00	1.01	0.98	0.49
d, Delay for Lane Group [s/veh]	94.26	37.52	33.38	59.12	38.56	75.62	57.42	67.41	81.82	74.15	56.40	34.80
Lane Group LOS	F	D	C	E	D	E	E	E	F	F	E	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.53	10.11	5.12	4.26	8.55	16.32	4.89	19.51	20.72	7.90	17.81	6.20
50th-Percentile Queue Length [ft/ln]	213.36	252.81	128.09	106.58	213.71	407.90	122.16	487.77	517.95	197.62	445.35	154.94
95th-Percentile Queue Length [veh/ln]	13.70	15.33	8.84	7.65	13.34	22.94	8.51	26.75	28.27	12.56	24.74	10.28
95th-Percentile Queue Length [ft/ln]	342.43	383.19	220.90	191.24	333.59	573.51	212.80	668.87	706.70	314.08	618.40	257.01

Movement, Approach, & Intersection Results

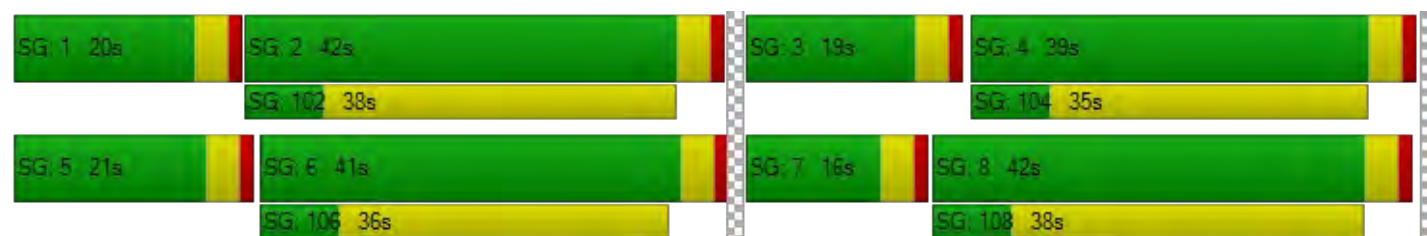
d_M, Delay for Movement [s/veh]	94.26	37.52	33.38	59.12	38.56	75.62	57.42	69.84	81.82	74.15	56.40	34.80
Movement LOS	F	D	C	E	D	E	E	E	F	F	E	C
d_A, Approach Delay [s/veh]	50.78			51.29			69.66			57.48		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	57.57											
Intersection LOS	E											
Intersection V/C	1.003											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.244			3.229			3.270			3.302		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			583			633			617		
d_b, Bicycle Delay [s]	28.02			30.10			28.02			28.70		
I_b,int, Bicycle LOS Score for Intersection	2.553			2.478			2.602			2.815		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	23.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.749

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	34	46	85	160	102	200	123	1507	36	107	1703	248
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	46	85	160	102	200	123	1507	36	107	1703	248
Peak Hour Factor	0.7970	0.7970	0.7970	0.6700	0.6700	0.6700	0.9700	0.9700	0.9700	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	14	27	60	38	75	32	388	9	29	465	68
Total Analysis Volume [veh/h]	43	58	107	239	152	299	127	1554	37	117	1859	271
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	28	43	0	19	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25	25	25	25	9	54	54	9	53	53
g / C, Green / Cycle	0.25	0.25	0.25	0.25	0.25	0.25	0.09	0.54	0.54	0.09	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.07	0.18	0.05	0.20	0.08	0.31	0.31	0.07	0.39	0.18
s, saturation flow rate [veh/h]	1235	1772	1506	1345	3373	1506	1687	3373	1751	1687	4826	1506
c, Capacity [veh/h]	312	449	381	347	854	381	158	1823	946	145	2573	803
d1, Uniform Delay [s]	33.62	28.82	30.01	38.48	29.20	34.79	44.43	15.31	15.32	44.86	17.72	13.29
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.15	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	0.13	0.40	2.44	0.10	4.84	9.20	1.32	2.54	9.88	1.80	1.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.13	0.28	0.69	0.18	0.78	0.80	0.57	0.57	0.80	0.72	0.34
d, Delay for Lane Group [s/veh]	33.82	28.95	30.41	40.92	29.29	39.63	53.64	16.64	17.85	54.74	19.52	14.43
Lane Group LOS	C	C	C	D	C	D	D	B	B	D	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.88	1.09	2.10	5.81	1.43	7.17	3.47	7.85	8.47	3.23	10.61	3.59
50th-Percentile Queue Length [ft/ln]	22.12	27.14	52.41	145.33	35.78	179.17	86.66	196.27	211.80	80.72	265.20	89.79
95th-Percentile Queue Length [veh/ln]	1.59	1.95	3.77	9.77	2.58	11.56	6.24	12.45	13.25	5.81	15.95	6.46
95th-Percentile Queue Length [ft/ln]	39.81	48.85	94.34	244.18	64.40	288.93	156.00	311.15	331.14	145.29	398.74	161.62

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.82	28.95	30.41	40.92	29.29	39.63	53.64	17.03	17.85	54.74	19.52	14.43
Movement LOS	C	C	C	D	C	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	30.71			37.80			19.76			20.74		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	23.24											
Intersection LOS	C											
Intersection V/C	0.749											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.405			2.528			3.206			3.576		
Crosswalk LOS	B			B			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			780			600		
d_b, Bicycle Delay [s]	21.78			21.78			18.61			24.50		
I_b,int, Bicycle LOS Score for Intersection	1.903			2.129			2.505			2.795		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	45.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	497	837	238	221	652	203	235	1688	400	225	1731	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	497	837	238	221	652	203	235	1688	400	225	1731	145
Peak Hour Factor	0.9630	0.9630	0.9630	0.9380	0.9380	0.9380	0.9710	0.9710	0.9710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	129	217	62	59	174	54	61	435	103	58	448	37
Total Analysis Volume [veh/h]	516	869	247	236	695	216	242	1738	412	233	1790	150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	47	0	14	39	0	13	42	0	12	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	35	35	10	27	27	9	46	46	8	45	45
g / C, Green / Cycle	0.16	0.30	0.30	0.09	0.23	0.23	0.08	0.40	0.40	0.07	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.16	0.18	0.16	0.07	0.21	0.14	0.07	0.36	0.27	0.07	0.37	0.10
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	515	1461	456	289	789	352	261	1926	601	232	1885	588
d1, Uniform Delay [s]	48.54	34.14	33.49	51.59	42.58	39.46	52.67	32.49	28.62	53.50	34.00	23.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.00	0.39	1.00	5.62	3.44	1.74	13.57	7.38	6.25	27.95	11.84	1.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.59	0.54	0.82	0.88	0.61	0.93	0.90	0.69	1.00	0.95	0.26
d, Delay for Lane Group [s/veh]	67.53	34.53	34.49	57.21	46.01	41.20	66.25	39.87	34.86	81.45	45.84	24.80
Lane Group LOS	F	C	C	E	D	D	E	D	C	F	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.71	6.91	5.86	3.57	9.84	5.62	3.96	16.06	10.28	4.26	17.78	2.93
50th-Percentile Queue Length [ft/ln]	217.71	172.69	146.50	89.19	245.94	140.52	99.04	401.57	257.02	106.52	444.41	73.25
95th-Percentile Queue Length [veh/ln]	13.56	11.22	9.83	6.42	14.98	9.51	7.13	22.64	15.54	7.65	24.69	5.27
95th-Percentile Queue Length [ft/ln]	339.08	280.44	245.75	160.54	374.54	237.72	178.27	565.89	388.48	191.28	617.27	131.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.53	34.53	34.49	57.21	46.01	41.20	66.25	39.87	34.86	81.45	45.84	24.80
Movement LOS	F	C	C	E	D	D	E	D	C	F	D	C
d_A, Approach Delay [s/veh]	44.96			47.41			41.68			48.20		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.23											
Intersection LOS	D											
Intersection V/C	0.939											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	3.099			3.031			3.393			3.337		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	748			609			661			643		
d_b, Bicycle Delay [s]	22.54			27.83			25.78			26.45		
I_b,int, Bicycle LOS Score for Intersection	2.457			2.506			2.875			2.755		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	28.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	42	32	58	308	24	204	240	1659	27	55	1902	316
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	32	58	308	24	204	240	1659	27	55	1902	316
Peak Hour Factor	0.8890	0.8890	0.8890	0.8820	0.8820	0.8820	0.9540	0.9540	0.9540	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	9	16	87	7	58	63	435	7	15	503	84
Total Analysis Volume [veh/h]	47	36	65	349	27	231	252	1739	28	58	2013	334
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	46	0	14	44	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	22	22	10	60	60	5	55	55
g / C, Green / Cycle	0.07	0.07	0.07	0.20	0.20	0.09	0.54	0.54	0.05	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.05	0.11	0.17	0.08	0.34	0.34	0.03	0.42	0.22
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1530	3277	3373	1757	1687	4826	1506
c, Capacity [veh/h]	114	119	92	647	302	300	1834	956	78	2405	751
d1, Uniform Delay [s]	49.26	48.88	50.27	39.70	42.66	49.22	17.48	17.49	51.86	23.76	17.79
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.39	1.40	9.37	0.70	6.86	6.27	1.68	3.20	13.00	3.66	1.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.30	0.70	0.54	0.85	0.84	0.63	0.63	0.74	0.84	0.44
d, Delay for Lane Group [s/veh]	51.65	50.28	59.64	40.40	49.52	55.49	19.15	20.69	64.86	27.41	19.70
Lane Group LOS	D	D	E	D	D	E	B	C	E	C	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.32	0.99	1.99	4.29	7.30	3.66	10.19	11.04	1.86	15.11	5.73
50th-Percentile Queue Length [ft/ln]	32.88	24.71	49.74	107.34	182.44	91.49	254.86	276.12	46.51	377.81	143.21
95th-Percentile Queue Length [veh/ln]	2.37	1.78	3.58	7.69	11.73	6.59	15.43	16.49	3.35	21.49	9.65
95th-Percentile Queue Length [ft/ln]	59.18	44.49	89.54	192.30	293.19	164.68	385.77	412.37	83.73	537.20	241.34

Movement, Approach, & Intersection Results

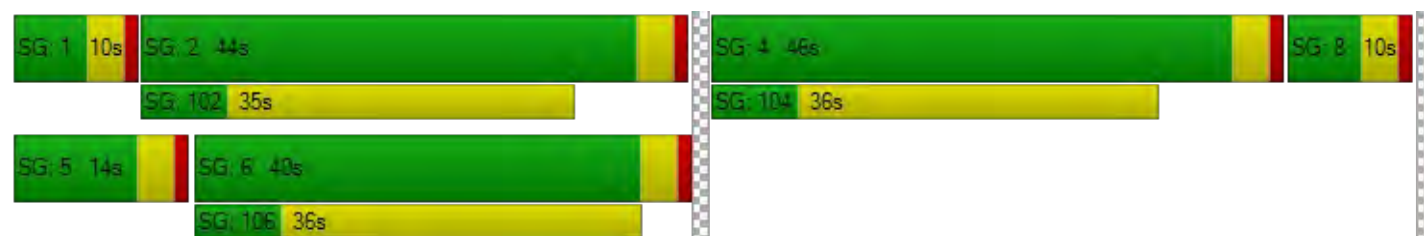
d_M, Delay for Movement [s/veh]	51.65	50.28	59.64	40.40	49.52	49.52	55.49	19.66	20.69	64.86	27.41	19.70
Movement LOS	D	D	E	D	D	D	E	B	C	E	C	B
d_A, Approach Delay [s/veh]	54.82			44.28			24.15			27.25		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	28.82											
Intersection LOS	C											
Intersection V/C	0.831											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.204			2.549			3.260			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			764			727			655		
d_b, Bicycle Delay [s]	49.16			21.02			22.27			24.89		
I_b,int, Bicycle LOS Score for Intersection	1.682			2.561			2.670			2.882		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	84.2
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.056

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	354	558	338	473	291	92	105	1813	98	431	1840	554
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	354	558	338	473	291	92	105	1813	98	431	1840	554
Peak Hour Factor	0.8990	0.8990	0.8990	0.8970	0.8970	0.8970	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	98	155	94	132	81	26	27	474	26	113	482	145
Total Analysis Volume [veh/h]	394	621	376	527	324	103	110	1894	102	451	1927	580
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	29	41	0	27	39	0	10	34	0	18	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	17	33	33	23	39	39	6	34	34	14	42	69
g / C, Green / Cycle	0.14	0.27	0.27	0.19	0.32	0.32	0.05	0.29	0.29	0.12	0.35	0.58
(v / s)_i Volume / Saturation Flow Rate	0.12	0.18	0.25	0.22	0.13	0.13	0.03	0.31	0.31	0.14	0.40	0.39
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1627	3277	4826	1713	3277	4826	1506
c, Capacity [veh/h]	464	920	411	454	572	525	165	1373	487	385	1698	869
d1, Uniform Delay [s]	50.30	38.94	42.34	48.54	31.48	31.48	56.06	42.97	42.97	53.00	38.93	17.47
k, delay calibration	0.11	0.11	0.32	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.42	0.87	19.97	77.91	0.43	0.47	4.61	46.38	61.73	83.16	68.57	4.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.68	0.92	1.16	0.39	0.39	0.67	1.07	1.07	1.17	1.13	0.67
d, Delay for Lane Group [s/veh]	54.72	39.81	62.31	126.44	31.92	31.96	60.66	89.35	104.70	136.16	107.50	21.52
Lane Group LOS	D	D	E	F	C	C	E	F	F	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.05	8.25	12.99	11.68	5.08	4.67	1.75	19.30	22.63	10.25	27.11	11.54
50th-Percentile Queue Length [ft/ln]	151.30	206.13	324.72	291.96	127.02	116.79	43.63	482.62	565.79	256.21	677.82	288.41
95th-Percentile Queue Length [veh/ln]	10.09	12.95	18.90	18.54	8.78	8.22	3.14	27.68	31.81	16.48	38.72	17.11
95th-Percentile Queue Length [ft/ln]	252.16	323.86	472.49	463.46	219.43	205.41	78.54	691.94	795.16	412.12	968.06	427.67

Movement, Approach, & Intersection Results

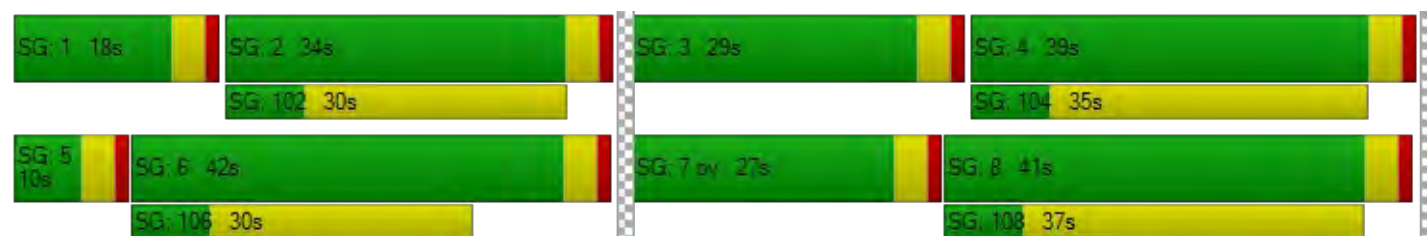
d_M, Delay for Movement [s/veh]	54.72	39.81	62.31	126.44	31.93	31.96	60.66	92.76	104.70	136.16	107.50	21.52
Movement LOS	D	D	E	F	C	C	E	F	F	F	F	C
d_A, Approach Delay [s/veh]	50.11			84.14			91.66			95.01		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]	84.23											
Intersection LOS	F											
Intersection V/C	1.056											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.924			2.835			3.354			3.541		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			500			633		
d_b, Bicycle Delay [s]	28.70			30.10			33.75			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.707			2.347			2.428			3.187		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	652	0	521	0	1643	1000	0	2305	393
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	652	0	521	0	1643	1000	0	2305	393
Peak Hour Factor	1.0000	1.0000	1.0000	0.9390	1.0000	0.9390	1.0000	0.9540	0.9540	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	174	0	139	0	431	262	0	592	101
Total Analysis Volume [veh/h]	0	0	0	694	0	555	0	1722	1048	0	2369	404
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		29	29	29	53	53
g / C, Green / Cycle		0.32	0.32	0.32	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate		0.25	0.26	0.28	0.36	0.49
s, saturation flow rate [veh/h]		1687	1622	1506	4826	4826
c, Capacity [veh/h]		542	521	484	2846	2846
d1, Uniform Delay [s]		27.47	27.84	28.60	11.76	14.85
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.32	2.87	4.62	0.96	3.02
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.80	0.86	0.61	0.83
d, Delay for Lane Group [s/veh]		29.79	30.71	33.22	12.72	17.88
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		8.12	8.29	8.71	6.84	12.24
50th-Percentile Queue Length [ft/ln]		202.94	207.17	217.69	170.95	305.98
95th-Percentile Queue Length [veh/ln]		12.79	13.01	13.55	11.13	17.98
95th-Percentile Queue Length [ft/ln]		319.75	325.20	338.68	278.16	449.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	30.16	0.00	32.59	0.00	12.72	0.00	0.00	17.88	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			31.24			12.72			17.88		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	19.34											
Intersection LOS	B											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.435			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.193			2.507			2.863		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1027	77	401	0	0	281	206	1736	353	0	2237	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1027	77	401	0	0	281	206	1736	353	0	2237	57
Peak Hour Factor	0.9490	0.9490	0.9490	1.0000	1.0000	0.8840	0.9510	0.9510	0.9510	1.0000	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	271	20	106	0	0	79	54	456	93	0	569	14
Total Analysis Volume [veh/h]	1082	81	423	0	0	318	217	1825	371	0	2276	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	54	0	0	0	19	19	66	0	0	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	37	15	15	75	56	56
g / C, Green / Cycle	0.31	0.31	0.31	0.13	0.13	0.62	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.27	0.12	0.13	0.38	0.36	0.34
s, saturation flow rate [veh/h]	3277	1693	1506	2665	1687	4826	4826	1741
c, Capacity [veh/h]	1011	522	465	335	212	3014	2248	811
d1, Uniform Delay [s]	37.64	37.60	39.11	52.06	52.44	13.59	26.86	25.74
k, delay calibration	0.11	0.15	0.20	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.29	3.26	8.69	13.75	35.07	0.91	2.74	5.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.77	0.87	0.95	1.02	0.61	0.78	0.72
d, Delay for Lane Group [s/veh]	38.93	40.86	47.81	65.81	87.51	14.50	29.60	31.20
Lane Group LOS	D	D	D	E	F	B	C	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.52	11.11	12.18	5.38	8.43	9.67	14.23	14.32
50th-Percentile Queue Length [ft/ln]	262.93	277.66	304.61	134.52	210.67	241.87	355.70	358.00
95th-Percentile Queue Length [veh/ln]	15.84	16.57	17.91	9.18	13.32	14.78	20.41	20.53
95th-Percentile Queue Length [ft/ln]	395.90	414.30	447.72	229.62	333.10	369.39	510.35	513.15

Movement, Approach, & Intersection Results

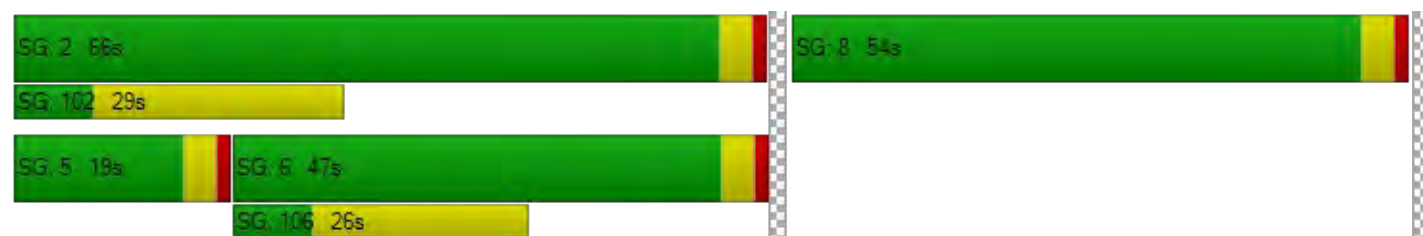
d_M, Delay for Movement [s/veh]	39.46	40.86	47.37	0.00	0.00	65.81	87.51	14.50	0.00	0.00	29.97	31.20
Movement LOS	D	D	D			E	F	B			C	C
d_A, Approach Delay [s/veh]	41.67			65.81			22.26			30.00		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	32.24											
Intersection LOS	C											
Intersection V/C	0.843											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.623	2.173	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	0	1033	717
d_b, Bicycle Delay [s]	20.42	60.00	14.02	24.70
I_b,int, Bicycle LOS Score for Intersection	4.177	4.132	2.683	2.522
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	47.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.936

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	207	257	80	289	341	214	242	1743	134	167	1636	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	207	257	80	289	341	214	242	1743	134	167	1636	163
Peak Hour Factor	0.9100	0.9100	0.9100	0.8290	0.8290	0.8290	0.9480	0.9480	0.9480	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	57	71	22	87	103	65	64	460	35	45	437	44
Total Analysis Volume [veh/h]	227	282	88	349	411	258	255	1839	141	179	1750	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	39	0	15	42	0	20	41	0	15	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	25	25	11	28	28	16	47	47	11	42	42
g / C, Green / Cycle	0.07	0.23	0.23	0.10	0.26	0.26	0.15	0.42	0.42	0.10	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.11	0.11	0.23	0.17	0.15	0.39	0.39	0.11	0.30	0.30
s, saturation flow rate [veh/h]	3277	1772	1630	3277	1772	1506	1687	3373	1708	1687	4826	1668
c, Capacity [veh/h]	243	406	374	331	454	386	247	1428	723	171	1825	631
d1, Uniform Delay [s]	50.75	36.71	36.76	49.53	39.69	36.79	47.05	29.96	30.16	49.53	30.27	30.27
k, delay calibration	0.11	0.11	0.11	0.11	0.22	0.11	0.12	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.07	0.85	0.95	38.32	12.91	2.01	37.65	10.84	19.72	45.54	3.44	9.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.47	0.48	1.05	0.91	0.67	1.03	0.92	0.93	1.05	0.78	0.78
d, Delay for Lane Group [s/veh]	65.82	37.56	37.71	87.84	52.61	38.79	84.70	40.80	49.87	95.07	33.71	39.68
Lane Group LOS	E	D	D	F	D	D	F	D	D	F	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.61	4.54	4.24	6.30	12.26	6.40	9.29	17.91	20.19	6.84	11.49	12.96
50th-Percentile Queue Length [ft/ln]	90.32	113.55	106.09	157.60	306.45	159.98	232.31	447.77	504.78	170.88	287.15	324.07
95th-Percentile Queue Length [veh/ln]	6.50	8.04	7.62	10.62	18.00	10.55	14.51	24.85	27.56	11.32	17.04	18.87
95th-Percentile Queue Length [ft/ln]	162.57	200.93	190.55	265.56	449.99	263.70	362.75	621.29	689.01	283.09	426.10	471.69

Movement, Approach, & Intersection Results

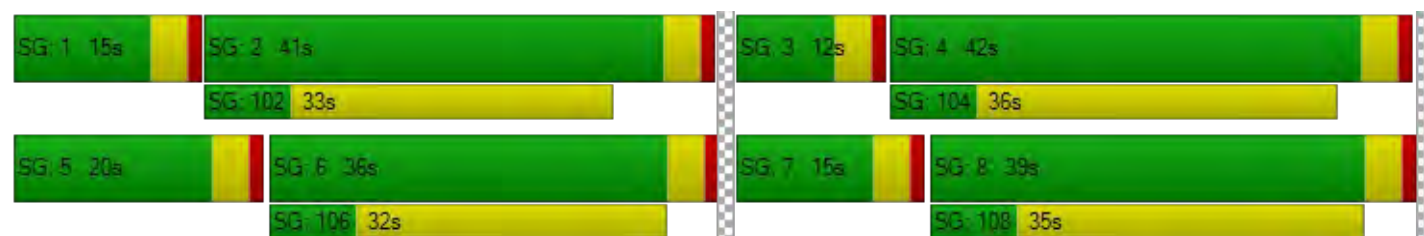
d_M, Delay for Movement [s/veh]	65.82	37.61	37.71	87.84	52.61	38.79	84.70	43.41	49.87	95.07	34.80	39.68
Movement LOS	E	D	D	F	D	D	F	D	D	F	C	D
d_A, Approach Delay [s/veh]	48.35			61.19			48.53			40.33		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	47.78											
Intersection LOS	D											
Intersection V/C	0.936											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.568			2.743			3.280			3.269		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			691			673			582		
d_b, Bicycle Delay [s]	25.57			23.56			24.22			27.65		
I_b,int, Bicycle LOS Score for Intersection	2.052			3.239			2.789			2.427		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	32.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.864

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	234	45	253	24	22	13	18	1760	272	219	1795	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	45	253	24	22	13	18	1760	272	219	1795	54
Peak Hour Factor	0.8580	0.8580	0.8580	0.6480	0.6480	0.6480	0.9520	0.9520	0.9520	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	68	13	74	9	8	5	5	462	71	58	474	14
Total Analysis Volume [veh/h]	273	52	295	37	34	20	19	1849	286	232	1897	57
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	48	0	0	10	0	10	32	0	30	52	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	6	6	3	53	53	19	69	69
g / C, Green / Cycle	0.22	0.22	0.22	0.05	0.05	0.02	0.44	0.44	0.15	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.10	0.10	0.20	0.02	0.03	0.01	0.38	0.19	0.14	0.38	0.38
s, saturation flow rate [veh/h]	1687	1713	1506	1687	1663	1687	4826	1506	1687	3373	1745
c, Capacity [veh/h]	371	377	331	82	80	41	2142	668	261	1936	1002
d1, Uniform Delay [s]	40.39	40.39	45.43	55.58	56.19	57.79	30.10	22.92	49.75	17.61	17.65
k, delay calibration	0.11	0.11	0.12	0.11	0.11	0.11	0.50	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.80	0.79	8.73	3.89	9.28	7.85	4.91	2.00	11.00	1.82	3.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.43	0.89	0.45	0.67	0.46	0.86	0.43	0.89	0.66	0.67
d, Delay for Lane Group [s/veh]	41.20	41.18	54.16	59.47	65.47	65.64	35.01	24.92	60.75	19.42	21.16
Lane Group LOS	D	D	D	E	E	E	D	C	E	B	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.21	4.27	9.29	1.18	1.82	0.66	16.60	5.89	7.60	12.22	13.19
50th-Percentile Queue Length [ft/ln]	105.23	106.69	232.22	29.50	45.45	16.49	414.92	147.28	190.12	305.50	329.74
95th-Percentile Queue Length [veh/ln]	7.57	7.66	14.29	2.12	3.27	1.19	23.28	9.87	12.13	17.95	19.15
95th-Percentile Queue Length [ft/ln]	189.35	191.38	357.18	53.09	81.81	29.69	581.95	246.80	303.19	448.82	478.64

Movement, Approach, & Intersection Results

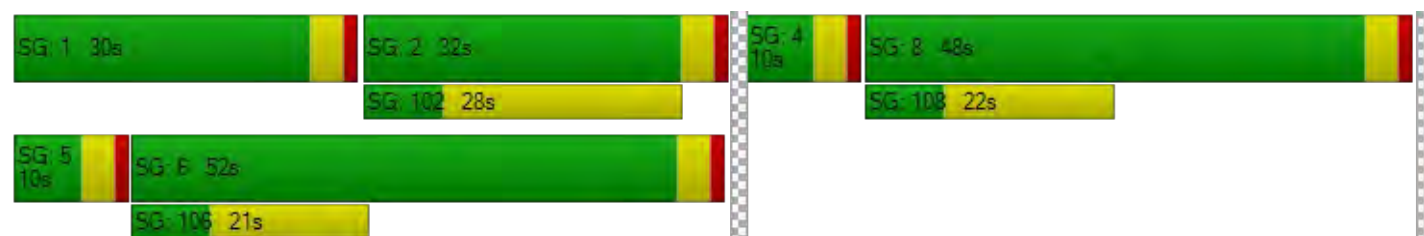
d_M, Delay for Movement [s/veh]	41.19	41.18	54.16	59.47	65.47	65.47	65.64	35.01	24.92	60.75	19.98	21.16
Movement LOS	D	D	D	E	E	E	E	D	C	E	B	C
d_A, Approach Delay [s/veh]	47.36			63.03			33.94			24.34		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	31.96											
Intersection LOS	C											
Intersection V/C	0.864											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.431			2.025			0.000			3.216		
Crosswalk LOS	B			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	733			100			467			800		
d_b, Bicycle Delay [s]	24.07			54.15			35.27			21.60		
I_b,int, Bicycle LOS Score for Intersection	2.583			1.710			2.744			2.762		
Bicycle LOS	B			A			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.889

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	344	586	98	253	449	108	204	1329	203	176	1446	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	344	586	98	253	449	108	204	1329	203	176	1446	306
Peak Hour Factor	0.9600	0.9600	0.9600	0.8590	0.8590	0.8590	0.9620	0.9620	0.9620	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	153	26	74	131	31	53	345	53	49	399	85
Total Analysis Volume [veh/h]	358	610	102	295	523	126	212	1381	211	194	1598	338
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	33	0	15	31	0	12	46	0	11	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	24	24	11	22	22	8	47	47	7	46	46
g / C, Green / Cycle	0.12	0.23	0.23	0.11	0.21	0.21	0.08	0.45	0.45	0.07	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.11	0.21	0.21	0.09	0.16	0.08	0.06	0.32	0.32	0.06	0.39	0.39
s, saturation flow rate [veh/h]	3277	1772	1684	3277	3373	1506	3277	3373	1654	3277	3373	1620
c, Capacity [veh/h]	409	406	386	347	710	317	254	1499	735	224	1468	705
d1, Uniform Delay [s]	45.25	39.37	39.37	46.22	38.83	35.80	47.86	23.75	23.79	48.56	27.32	27.64
k, delay calibration	0.11	0.25	0.25	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.04	14.67	15.33	5.84	1.52	0.81	6.99	2.90	5.85	9.81	8.21	17.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.90	0.90	0.85	0.74	0.40	0.83	0.71	0.71	0.87	0.89	0.90
d, Delay for Lane Group [s/veh]	51.29	54.03	54.71	52.07	40.34	36.61	54.85	26.64	29.63	58.37	35.53	44.64
Lane Group LOS	D	D	D	D	D	D	D	C	C	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.90	10.67	10.22	4.05	6.39	2.84	2.97	10.98	11.43	2.81	16.04	17.55
50th-Percentile Queue Length [ft/ln]	122.55	266.74	255.51	101.22	159.78	71.11	74.37	274.61	285.82	70.37	401.06	438.64
95th-Percentile Queue Length [veh/ln]	8.53	16.03	15.46	7.29	10.54	5.12	5.35	16.42	16.98	5.07	22.61	24.42
95th-Percentile Queue Length [ft/ln]	213.33	400.66	386.58	182.19	263.44	128.00	133.87	410.50	424.45	126.67	565.27	610.38

Movement, Approach, & Intersection Results

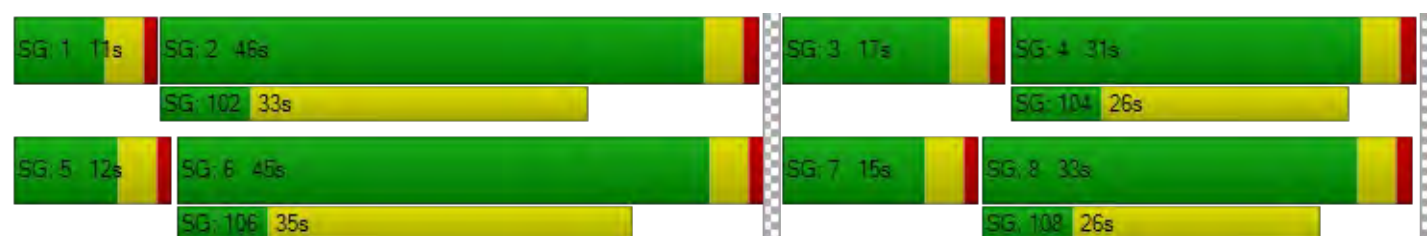
d_M, Delay for Movement [s/veh]	51.29	54.30	54.71	52.07	40.34	36.61	54.85	27.32	29.63	58.37	37.23	44.64
Movement LOS	D	D	D	D	D	D	D	C	C	E	D	D
d_A, Approach Delay [s/veh]	53.34			43.51			30.83			40.33		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	40.29											
Intersection LOS	D											
Intersection V/C	0.889											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.785			2.894			3.206			3.209		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	552			514			800			781		
d_b, Bicycle Delay [s]	27.50			28.97			18.90			19.50		
I_b,int, Bicycle LOS Score for Intersection	2.442			2.338			2.552			2.731		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	46.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.943

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	77	870	318	166	618	334	551	1266	68	314	1129	255
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	870	318	166	618	334	551	1266	68	314	1129	255
Peak Hour Factor	0.9210	0.9210	0.9210	0.9300	0.9300	0.9300	0.8600	0.8600	0.8600	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	236	86	45	166	90	160	368	20	81	291	66
Total Analysis Volume [veh/h]	84	945	345	178	665	359	641	1472	79	323	1163	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	44	44	11	45	45	27	48	0	17	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	37	54	7	38	65	23	47	47	13	37	37
g / C, Green / Cycle	0.05	0.30	0.45	0.06	0.31	0.54	0.19	0.39	0.39	0.11	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.23	0.05	0.20	0.24	0.20	0.31	0.05	0.10	0.29	0.29
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1610
c, Capacity [veh/h]	85	1026	672	192	1054	810	628	1907	595	356	1052	502
d1, Uniform Delay [s]	56.96	40.35	23.88	56.23	35.32	16.84	48.51	31.60	23.17	52.91	39.78	39.84
k, delay calibration	0.11	0.11	0.39	0.11	0.11	0.24	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.55	3.96	2.18	16.76	0.63	0.84	22.05	3.10	0.46	8.87	13.72	24.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.92	0.51	0.93	0.63	0.44	1.02	0.77	0.13	0.91	0.92	0.92
d, Delay for Lane Group [s/veh]	99.50	44.31	26.06	73.00	35.95	17.69	70.56	34.70	23.64	61.78	53.50	64.29
Lane Group LOS	F	D	C	E	D	B	F	C	C	E	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.55	13.88	7.37	3.13	8.38	6.08	11.28	12.76	1.52	5.25	15.55	16.41
50th-Percentile Queue Length [ft/ln]	88.72	347.00	184.26	78.26	209.46	152.12	281.88	318.95	37.96	131.17	388.82	410.20
95th-Percentile Queue Length [veh/ln]	6.39	19.99	11.82	5.63	13.13	10.13	16.96	18.62	2.73	9.00	22.02	23.05
95th-Percentile Queue Length [ft/ln]	159.69	499.75	295.57	140.86	328.13	253.26	423.95	465.40	68.33	225.08	550.52	576.27

Movement, Approach, & Intersection Results

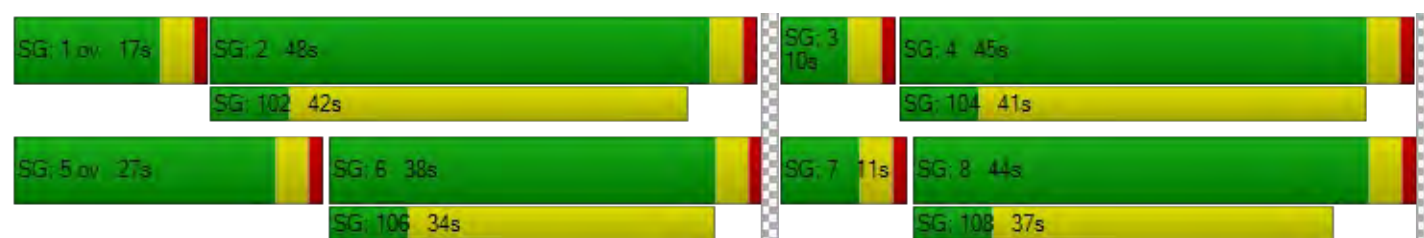
d_M, Delay for Movement [s/veh]	99.50	44.31	26.06	73.00	35.95	17.69	70.56	34.70	23.64	61.78	55.34	64.29
Movement LOS	F	D	C	E	D	B	F	C	C	E	E	E
d_A, Approach Delay [s/veh]	43.10			35.98			44.79			57.88		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	46.32											
Intersection LOS	D											
Intersection V/C	0.943											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.863			3.033			3.274			3.196		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			683			733			567		
d_b, Bicycle Delay [s]	26.67			26.00			24.07			30.82		
I_b,int, Bicycle LOS Score for Intersection	2.693			2.551			2.765			2.522		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	55.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	404	958	25	131	386	248	339	1077	296	20	1013	295
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	404	958	25	131	386	248	339	1077	296	20	1013	295
Peak Hour Factor	0.9360	0.9360	0.9360	0.9320	0.9320	0.9320	0.8080	0.8080	0.8080	0.9070	0.9070	0.9070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	256	7	35	104	67	105	333	92	6	279	81
Total Analysis Volume [veh/h]	432	1024	27	141	414	266	420	1333	366	22	1117	325
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	51	0	10	44	44	16	42	42	17	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	40	6	33	49	12	55	72	3	46	46
g / C, Green / Cycle	0.11	0.33	0.05	0.27	0.41	0.10	0.46	0.60	0.03	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.30	0.04	0.09	0.18	0.13	0.40	0.24	0.01	0.29	0.29
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1575
c, Capacity [veh/h]	356	1112	165	1309	610	329	1553	907	87	1304	609
d1, Uniform Delay [s]	53.50	38.74	56.55	34.86	25.81	54.00	28.90	12.54	57.27	31.88	31.88
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	102.26	3.71	11.71	0.14	0.51	130.51	6.39	1.34	1.52	4.08	8.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.92	0.85	0.32	0.44	1.28	0.86	0.40	0.25	0.75	0.75
d, Delay for Lane Group [s/veh]	155.76	42.44	68.27	34.99	26.33	184.51	35.29	13.88	58.79	35.96	40.30
Lane Group LOS	F	D	E	C	C	F	D	B	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.41	14.88	2.39	3.25	5.56	10.91	18.02	5.35	0.35	12.93	12.80
50th-Percentile Queue Length [ft/ln]	260.21	371.91	59.72	81.17	139.07	272.64	450.58	133.86	8.65	323.16	320.10
95th-Percentile Queue Length [veh/ln]	16.88	21.20	4.30	5.84	9.43	17.79	24.99	9.15	0.62	18.82	18.67
95th-Percentile Queue Length [ft/ln]	421.92	530.05	107.50	146.11	235.77	444.84	624.64	228.73	15.56	470.56	466.80

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	155.76	42.44	0.00	68.27	34.99	26.33	184.51	35.29	13.88	58.79	36.48	40.30
Movement LOS	F	D		E	C	C	F	D	B	E	D	D
d_A, Approach Delay [s/veh]	76.06			37.90			61.17			37.66		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	55.74											
Intersection LOS	E											
Intersection V/C	0.884											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.014			3.055			3.219			3.017		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	783			667			633			650		
d_b, Bicycle Delay [s]	22.20			26.67			28.02			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.761			2.011			3.308			2.365		
Bicycle LOS	C			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	17.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.543

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	66	111	52	97	116	72	65	1181	48	43	1192	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	111	52	97	116	72	65	1181	48	43	1192	72
Peak Hour Factor	0.9400	0.9400	0.9400	0.8420	0.8420	0.8420	0.9760	0.9760	0.9760	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	18	30	14	29	34	21	17	303	12	12	343	21
Total Analysis Volume [veh/h]	70	118	55	115	138	86	67	1210	49	49	1372	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	32	0	17	32	0	10	31	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	7	7	8	10	10	5	55	55	4	54	54
g / C, Green / Cycle	0.06	0.08	0.08	0.09	0.11	0.11	0.05	0.61	0.61	0.05	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.05	0.07	0.07	0.07	0.04	0.25	0.25	0.03	0.29	0.29
s, saturation flow rate [veh/h]	1687	1772	1589	1687	1772	1553	1687	3373	1736	1687	3373	1720
c, Capacity [veh/h]	95	139	124	146	192	168	94	2056	1059	82	2032	1037
d1, Uniform Delay [s]	41.89	40.33	40.46	40.39	38.38	38.53	41.89	9.12	9.12	42.05	9.97	9.97
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.50	4.84	6.34	9.12	3.08	4.02	9.76	0.59	1.15	6.87	0.80	1.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.64	0.68	0.79	0.61	0.64	0.72	0.40	0.40	0.60	0.47	0.47
d, Delay for Lane Group [s/veh]	52.39	45.16	46.80	49.52	41.46	42.55	51.65	9.71	10.27	48.92	10.77	11.53
Lane Group LOS	D	D	D	D	D	D	D	A	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.79	2.07	2.02	2.84	2.59	2.44	1.70	3.94	4.22	1.21	4.96	5.28
50th-Percentile Queue Length [ft/ln]	44.81	51.76	50.47	70.92	64.65	60.92	42.56	98.58	105.61	30.32	123.99	131.95
95th-Percentile Queue Length [veh/ln]	3.23	3.73	3.63	5.11	4.65	4.39	3.06	7.10	7.60	2.18	8.61	9.05
95th-Percentile Queue Length [ft/ln]	80.66	93.16	90.84	127.66	116.37	109.66	76.61	177.44	189.88	54.58	215.30	226.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.39	45.57	46.80	49.52	41.63	42.55	51.65	9.89	10.27	48.92	10.99	11.53
Movement LOS	D	D	D	D	D	D	D	A	B	D	B	B
d_A, Approach Delay [s/veh]	47.81			44.54			12.01			12.26		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	17.90											
Intersection LOS	B											
Intersection V/C	0.543											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.393			2.418			2.991			2.995		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	622			622			600			600		
d_b, Bicycle Delay [s]	21.36			21.36			22.05			22.05		
I_b,int, Bicycle LOS Score for Intersection	1.760			1.839			2.289			2.387		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	40.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.824

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	291	365	165	155	691	140	63	1125	258	230	981	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	291	365	165	155	691	140	63	1125	258	230	981	44
Peak Hour Factor	0.9230	0.9230	0.9230	0.9210	0.9210	0.9210	0.9640	0.9640	0.9640	0.8850	0.8850	0.8850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	99	45	42	188	38	16	292	67	65	277	12
Total Analysis Volume [veh/h]	315	395	179	168	750	152	65	1167	268	260	1108	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	39	0	16	38	0	10	42	0	23	55	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	30	30	12	29	29	6	43	43	19	56	56
g / C, Green / Cycle	0.11	0.25	0.25	0.10	0.24	0.24	0.05	0.35	0.35	0.16	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.10	0.12	0.12	0.10	0.22	0.10	0.04	0.24	0.18	0.15	0.23	0.23
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1733
c, Capacity [veh/h]	358	851	380	171	824	368	84	1710	534	268	1563	803
d1, Uniform Delay [s]	52.72	38.02	38.10	53.90	44.13	38.17	56.38	33.01	30.45	50.23	22.37	22.37
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.17	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.01	0.39	0.91	28.65	4.35	0.74	13.66	2.23	3.35	25.47	1.10	2.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.46	0.47	0.99	0.91	0.41	0.77	0.68	0.50	0.97	0.49	0.49
d, Delay for Lane Group [s/veh]	59.72	38.42	39.00	82.55	48.47	38.91	70.04	35.24	33.80	75.71	23.47	24.50
Lane Group LOS	E	D	D	F	D	D	E	D	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.03	4.97	4.57	6.42	11.25	3.85	2.27	9.92	6.57	9.64	7.66	8.10
50th-Percentile Queue Length [ft/ln]	125.63	124.35	114.27	160.39	281.32	96.17	56.72	247.93	164.36	240.88	191.42	202.41
95th-Percentile Queue Length [veh/ln]	8.70	8.63	8.08	10.57	16.75	6.92	4.08	15.08	10.78	14.73	12.19	12.76
95th-Percentile Queue Length [ft/ln]	217.54	215.80	201.92	264.24	418.86	173.11	102.09	377.04	269.49	368.15	304.87	319.07

Movement, Approach, & Intersection Results

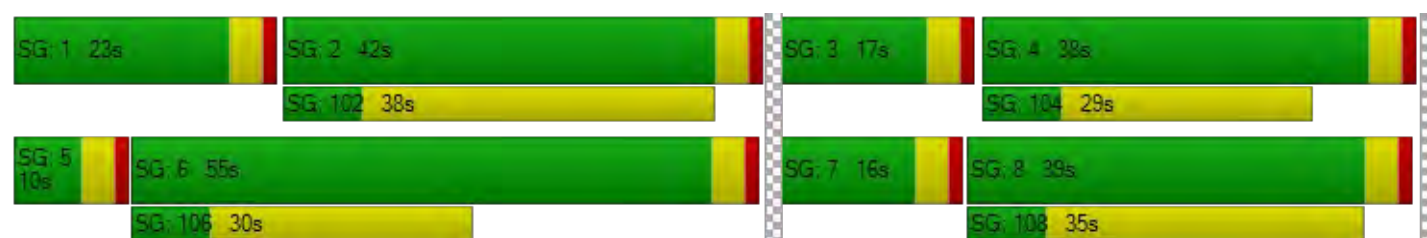
d_M, Delay for Movement [s/veh]	59.72	38.42	39.00	82.55	48.47	38.91	70.04	35.24	33.80	75.71	23.79	24.50
Movement LOS	E	D	D	F	D	D	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	46.08			52.47			36.49			33.34		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	40.83											
Intersection LOS	D											
Intersection V/C	0.824											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.910			2.723			3.114			3.016		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			567			633			850		
d_b, Bicycle Delay [s]	30.10			30.82			28.02			19.84		
I_b,int, Bicycle LOS Score for Intersection	2.293			2.442			2.385			2.340		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	50.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.927

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	159	242	395	486	344	5	18	1090	287	721	1389	676
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	242	395	486	344	5	18	1090	287	721	1389	676
Peak Hour Factor	0.9010	0.9010	0.9010	0.8760	0.8760	0.8760	0.8390	0.8390	0.8390	0.9650	0.9650	0.9650
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	67	110	139	98	1	5	325	86	187	360	175
Total Analysis Volume [veh/h]	176	269	438	555	393	6	21	1299	342	747	1439	701
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	29	0	25	44	0	10	39	0	27	56	56
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	20	20	20	21	35	35	3	40	40	23	60	85
g / C, Green / Cycle	0.05	0.17	0.17	0.17	0.18	0.29	0.29	0.03	0.33	0.33	0.19	0.50	0.70
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.15	0.15	0.17	0.11	0.11	0.01	0.26	0.26	0.23	0.30	0.47
s, saturation flow rate [veh/h]	3277	1772	1514	1506	3277	1772	1762	3277	4826	1538	3277	4826	1506
c, Capacity [veh/h]	166	301	257	256	574	521	519	86	1592	507	628	2391	1060
d1, Uniform Delay [s]	56.98	48.52	48.53	48.53	49.17	33.70	33.70	57.31	36.32	36.36	48.52	21.77	9.84
k, delay calibration	0.11	0.15	0.15	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	48.98	10.06	11.64	11.70	11.25	0.46	0.47	1.47	3.89	11.49	88.64	1.13	3.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.87	0.87	0.87	0.97	0.38	0.38	0.25	0.78	0.78	1.19	0.60	0.66
d, Delay for Lane Group [s/veh]	105.9	58.58	60.17	60.23	60.42	34.16	34.16	58.78	40.21	47.84	137.16	22.90	13.08
Lane Group LOS	F	E	E	E	E	C	C	E	D	D	F	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.65	8.44	7.33	7.30	9.12	4.72	4.70	0.33	11.44	12.04	17.09	9.76	10.09
50th-Percentile Queue Length [ft/ln]	91.31	210.9	183.3	182.4	228.06	118.01	117.40	8.26	285.90	301.12	427.32	244.04	252.32
95th-Percentile Queue Length [veh/ln]	6.57	13.20	11.77	11.73	14.08	8.28	8.25	0.59	16.98	17.74	25.98	14.89	15.30
95th-Percentile Queue Length [ft/ln]	164.3	330.0	294.3	293.2	351.89	207.09	206.24	14.87	424.55	443.41	649.45	372.14	382.58

Movement, Approach, & Intersection Results

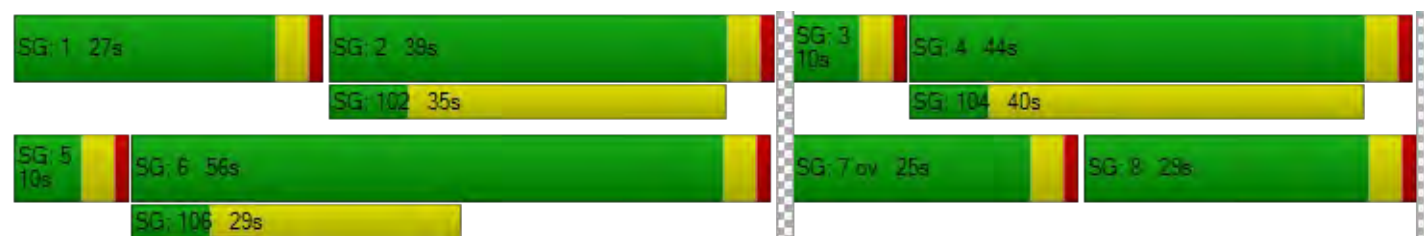
d_M, Delay for Movement [s/veh]	105.97	58.62	60.20	60.42	34.16	34.16	58.78	40.53	47.84	137.16	22.90	13.08
Movement LOS	F	E	E	E	C	C	E	D	D	F	C	B
d_A, Approach Delay [s/veh]	68.84			49.44			42.27			50.08		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	50.55											
Intersection LOS	D											
Intersection V/C	0.927											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.937			2.783			3.219			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417			667			583			867		
d_b, Bicycle Delay [s]	37.60			26.67			30.10			19.27		
I_b,int, Bicycle LOS Score for Intersection	2.288			2.347			2.245			3.147		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.945

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	779	0	1129	0	1405	552	162	1656	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	779	0	1129	0	1405	552	162	1656	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9460	1.0000	0.9460	1.0000	0.9230	0.9230	0.9510	0.9510	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	206	0	298	0	381	150	43	435	0
Total Analysis Volume [veh/h]	0	0	0	823	0	1193	0	1522	598	170	1741	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	62	0	0	0	47	0	11	58	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		56	56	56	45	45	45	7	56
g / C, Green / Cycle		0.47	0.47	0.47	0.37	0.37	0.37	0.06	0.46
(v / s)_i Volume / Saturation Flow Rate		0.40	0.44	0.45	0.31	0.34	0.35	0.05	0.36
s, saturation flow rate [veh/h]		1687	1543	1506	3373	1541	1506	3277	4826
c, Capacity [veh/h]		791	723	706	1256	574	561	194	2243
d1, Uniform Delay [s]		28.15	30.00	30.59	34.46	36.01	36.46	55.99	26.88
k, delay calibration		0.34	0.40	0.42	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		7.86	17.01	21.28	7.06	22.81	26.67	11.85	2.71
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.85	0.93	0.95	0.84	0.92	0.95	0.88	0.78
d, Delay for Lane Group [s/veh]		36.01	47.01	51.86	41.51	58.82	63.14	67.84	29.59
Lane Group LOS		D	D	D	D	E	E	E	C
Critical Lane Group		No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		18.27	21.05	22.15	15.17	18.20	18.90	2.87	14.15
50th-Percentile Queue Length [ft/ln]		456.85	526.35	553.77	379.13	454.96	472.48	71.81	353.65
95th-Percentile Queue Length [veh/ln]		25.28	28.58	29.87	21.55	25.19	26.03	5.17	20.31
95th-Percentile Queue Length [ft/ln]		632.12	714.48	746.74	538.79	629.87	650.71	129.26	507.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	38.03	0.00	49.75	0.00	42.75	62.65	67.84	29.59	0.00
Movement LOS				D		D		D	E	E	C	
d_A, Approach Delay [s/veh]	0.00			44.96			51.25			32.99		
Approach LOS	A			D			D			C		
d_I, Intersection Delay [s/veh]	43.38											
Intersection LOS	D											
Intersection V/C	0.945											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.103			2.609			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			717			900		
d_b, Bicycle Delay [s]	60.00			60.00			24.70			18.15		
I_b,int, Bicycle LOS Score for Intersection	4.132			7.459			2.726			2.611		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.858

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1011	0	413	0	0	0	671	1516	0	0	807	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1011	0	413	0	0	0	671	1516	0	0	807	391
Peak Hour Factor	0.9860	1.0000	0.9860	1.0000	1.0000	1.0000	0.9080	0.9080	1.0000	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	256	0	105	0	0	0	185	417	0	0	215	104
Total Analysis Volume [veh/h]	1025	0	419	0	0	0	739	1670	0	0	859	416
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	42	0	0	0	0	0	32	53	0	0	21	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	95	95		95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33		24	54	26	26	26
g / C, Green / Cycle	0.35	0.35		0.25	0.56	0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.31	0.28		0.23	0.35	0.19	0.21	0.21
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1511	1506
c, Capacity [veh/h]	1151	529		827	2725	911	408	407
d1, Uniform Delay [s]	29.11	27.71		34.28	13.77	31.22	32.09	32.11
k, delay calibration	0.11	0.23		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.62	5.73		3.66	1.04	4.46	13.82	14.03
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.79		0.89	0.61	0.70	0.78	0.78
d, Delay for Lane Group [s/veh]	31.72	33.45		37.94	14.81	35.68	45.91	46.14
Lane Group LOS	C	C		D	B	D	D	D
Critical Lane Group	Yes	No		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.04	9.11		8.46	7.59	7.00	8.18	8.21
50th-Percentile Queue Length [ft/ln]	276.00	227.75		211.46	189.68	175.02	204.57	205.16
95th-Percentile Queue Length [veh/ln]	16.49	14.06		13.23	12.10	11.34	12.87	12.90
95th-Percentile Queue Length [ft/ln]	412.23	351.50		330.70	302.61	283.50	321.85	322.61

Movement, Approach, & Intersection Results

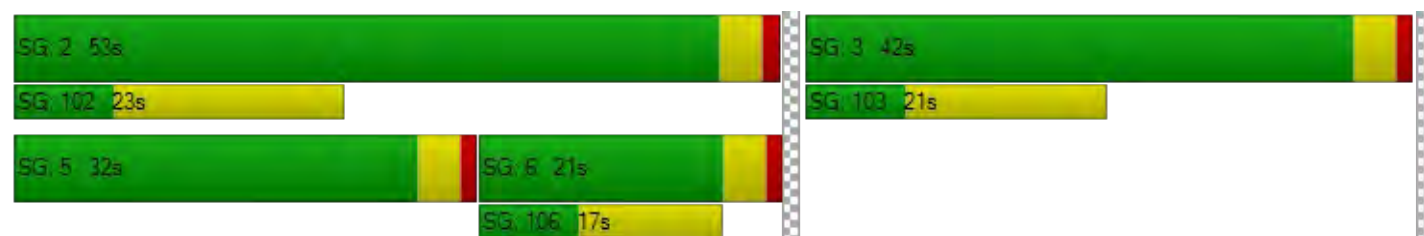
d_M, Delay for Movement [s/veh]	31.72	0.00	33.45	0.00	0.00	0.00	37.94	14.81	0.00	0.00	35.78	46.09
Movement LOS	C		C				D	B			D	D
d_A, Approach Delay [s/veh]	32.22			0.00			21.91			40.85		
Approach LOS	C			A			C			D		
d_I, Intersection Delay [s/veh]	29.52											
Intersection LOS	C											
Intersection V/C	0.858											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	37.14
I_p,int, Pedestrian LOS Score for Intersection	2.412	2.280	0.000	3.065
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	1032	358
d_b, Bicycle Delay [s]	47.50	47.50	11.14	32.02
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.885	2.261
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	25.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.598

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	214	144	79	1	141	176	149	761	606	88	584	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	144	79	1	141	176	149	761	606	88	584	7
Peak Hour Factor	0.8290	0.8290	0.8290	0.8490	0.8490	0.8490	0.8680	0.8680	0.8680	0.8840	0.8840	0.8840
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	43	24	0	42	52	43	219	175	25	165	2
Total Analysis Volume [veh/h]	258	174	95	1	166	207	172	877	698	100	661	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	46	46	10	42	0	17	39	39	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	27	37	0	17	17	12	56	70	6	50	50
g / C, Green / Cycle	0.10	0.25	0.35	0.00	0.16	0.16	0.12	0.53	0.67	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.10	0.06	0.00	0.09	0.14	0.10	0.26	0.26	0.03	0.13	0.13
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1761
c, Capacity [veh/h]	314	452	529	5	287	244	201	1795	1775	190	1588	829
d1, Uniform Delay [s]	46.64	32.34	23.62	52.30	40.73	42.80	45.39	15.56	7.95	48.11	16.93	16.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.34	0.54	0.16	21.49	1.84	8.01	9.86	0.95	0.66	2.25	0.43	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.39	0.18	0.21	0.58	0.85	0.85	0.49	0.39	0.53	0.28	0.28
d, Delay for Lane Group [s/veh]	51.97	32.88	23.79	73.79	42.57	50.81	55.25	16.51	8.60	50.37	17.37	17.77
Lane Group LOS	D	C	C	E	D	D	E	B	A	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.52	3.71	1.65	0.05	4.10	5.72	4.92	6.61	3.40	1.33	3.26	3.50
50th-Percentile Queue Length [ft/ln]	88.12	92.66	41.32	1.35	102.50	143.06	123.09	165.13	84.96	33.23	81.54	87.55
95th-Percentile Queue Length [veh/ln]	6.34	6.67	2.98	0.10	7.38	9.65	8.56	10.82	6.12	2.39	5.87	6.30
95th-Percentile Queue Length [ft/ln]	158.62	166.78	74.38	2.43	184.50	241.14	214.07	270.50	152.92	59.81	146.78	157.59

Movement, Approach, & Intersection Results

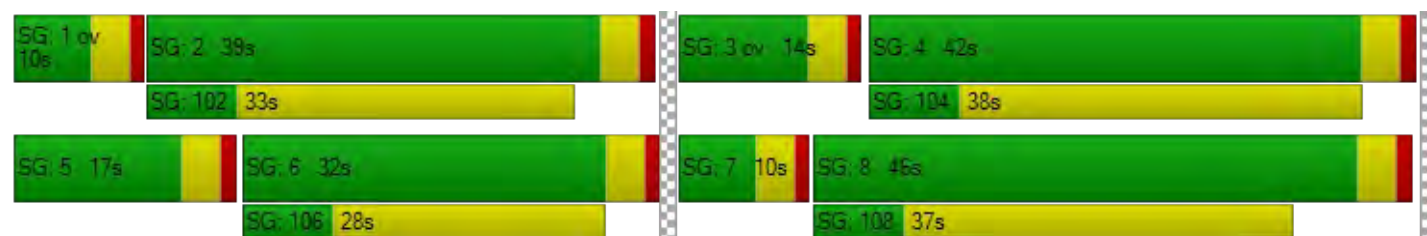
d_M, Delay for Movement [s/veh]	51.97	32.88	23.79	73.79	42.57	50.81	55.25	16.51	8.60	50.37	17.50	17.77
Movement LOS	D	C	C	E	D	D	E	B	A	D	B	B
d_A, Approach Delay [s/veh]	40.59			47.22			17.17			21.78		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	25.10											
Intersection LOS	C											
Intersection V/C	0.598											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.702			2.316			3.083			2.844		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			724			667			533		
d_b, Bicycle Delay [s]	18.90			21.38			23.33			28.23		
I_b,int, Bicycle LOS Score for Intersection	2.429			2.177			3.001			1.983		
Bicycle LOS	B			B			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	32.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.668

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	94	451	292	346	880	96	83	114	38	329	127	312
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	451	292	346	880	96	83	114	38	329	127	312
Peak Hour Factor	0.9110	0.9110	0.9110	0.9020	0.9020	0.9020	0.8540	0.8540	0.8540	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	124	80	96	244	27	24	33	11	92	35	87
Total Analysis Volume [veh/h]	103	495	321	384	976	106	97	133	44	367	142	348
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	23	28	0	24	29	0	25	39	0	24	38	38
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	50	50	20	61	61	8	14	15	21	45
g / C, Green / Cycle	0.08	0.43	0.43	0.17	0.53	0.53	0.07	0.12	0.13	0.18	0.39
(v / s)_i Volume / Saturation Flow Rate	0.06	0.15	0.21	0.12	0.21	0.21	0.06	0.10	0.11	0.08	0.23
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1684	1687	1697	3277	1772	1506
c, Capacity [veh/h]	129	1456	650	570	1786	892	122	209	433	324	590
d1, Uniform Delay [s]	52.29	21.78	23.62	44.46	16.21	16.21	52.53	49.41	48.80	41.78	27.70
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.78	0.64	2.67	1.39	0.68	1.36	10.94	9.18	4.66	0.94	1.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.34	0.49	0.67	0.40	0.40	0.79	0.85	0.85	0.44	0.59
d, Delay for Lane Group [s/veh]	63.07	22.42	26.29	45.85	16.89	17.57	63.47	58.60	53.46	42.72	28.97
Lane Group LOS	E	C	C	D	B	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.31	4.55	6.71	5.22	5.74	5.90	3.13	5.50	5.42	3.67	7.71
50th-Percentile Queue Length [ft/ln]	82.71	113.86	167.68	130.59	143.39	147.40	78.16	137.56	135.42	91.79	192.64
95th-Percentile Queue Length [veh/ln]	5.96	8.05	10.95	8.97	9.66	9.88	5.63	9.35	9.23	6.61	12.26
95th-Percentile Queue Length [ft/ln]	148.88	201.36	273.86	224.30	241.58	246.95	140.68	233.73	230.84	165.21	306.45

Movement, Approach, & Intersection Results

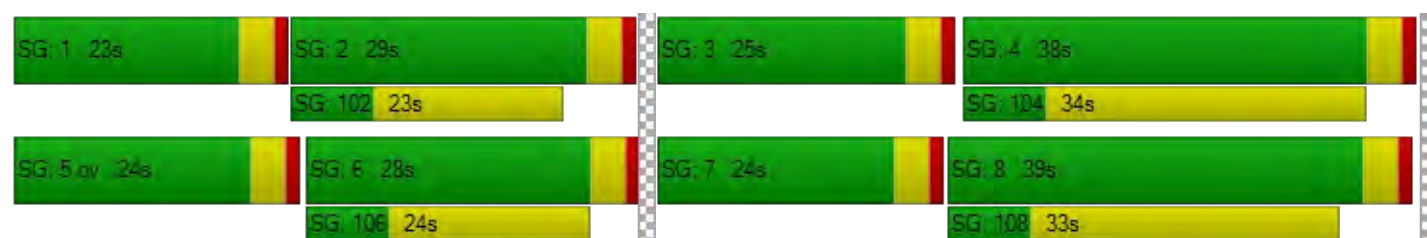
d_M, Delay for Movement [s/veh]	63.07	22.42	26.29	45.85	17.06	17.57	63.47	58.60	58.60	53.46	42.72	28.97
Movement LOS	E	C	C	D	B	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	28.32			24.64			60.32			41.74		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	32.55											
Intersection LOS	C											
Intersection V/C	0.668											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.927			3.030			2.155			2.740		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417			435			609			591		
d_b, Bicycle Delay [s]	36.00			35.22			27.83			28.53		
I_b,int, Bicycle LOS Score for Intersection	2.065			2.366			2.012			2.974		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.514

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	94	72	165	53	36	75	84	624	118	143	767	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	72	165	53	36	75	84	624	118	143	767	25
Peak Hour Factor	0.8630	0.8630	0.8630	0.7790	0.7790	0.7790	0.9320	0.9320	0.9320	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	27	21	48	17	12	24	23	167	32	37	198	6
Total Analysis Volume [veh/h]	109	83	191	68	46	96	90	670	127	148	793	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	19	19	19	19	6	49	49	10	53	53
g / C, Green / Cycle	0.22	0.22	0.22	0.22	0.22	0.07	0.54	0.54	0.11	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate	0.09	0.05	0.13	0.05	0.09	0.05	0.23	0.23	0.09	0.24	0.02
s, saturation flow rate [veh/h]	1246	1772	1506	1315	1583	1687	1772	1675	1687	3373	1506
c, Capacity [veh/h]	227	383	325	286	342	115	963	910	181	1966	877
d1, Uniform Delay [s]	38.35	29.02	31.68	33.74	30.39	41.29	12.20	12.21	39.31	10.24	7.97
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.57	0.28	1.69	0.42	0.81	11.05	1.38	1.46	8.68	0.62	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.48	0.22	0.59	0.24	0.42	0.78	0.43	0.43	0.82	0.40	0.03
d, Delay for Lane Group [s/veh]	39.92	29.31	33.37	34.17	31.20	52.34	13.58	13.66	47.98	10.86	8.04
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.39	1.49	3.81	1.34	2.69	2.29	4.90	4.66	3.59	4.07	0.21
50th-Percentile Queue Length [ft/ln]	59.75	37.18	95.34	33.50	67.18	57.33	122.60	116.46	89.73	101.79	5.36
95th-Percentile Queue Length [veh/ln]	4.30	2.68	6.86	2.41	4.84	4.13	8.54	8.20	6.46	7.33	0.39
95th-Percentile Queue Length [ft/ln]	107.55	66.93	171.60	60.29	120.93	103.20	213.39	204.95	161.51	183.22	9.65

Movement, Approach, & Intersection Results

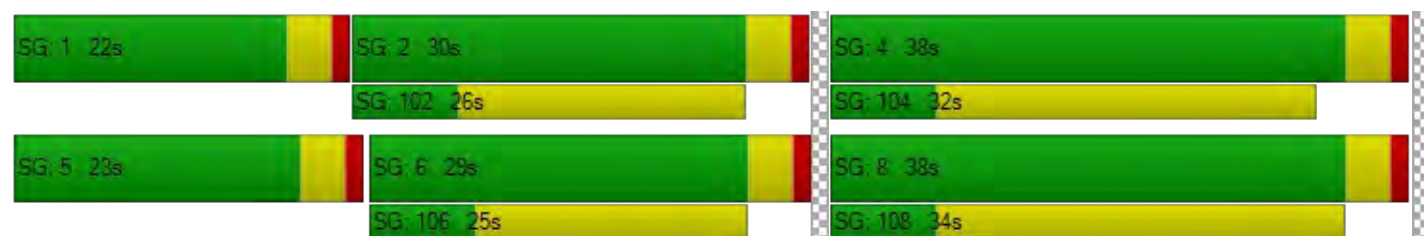
d_M, Delay for Movement [s/veh]	39.92	29.31	33.37	34.17	31.20	31.20	52.34	13.61	13.66	47.98	10.86	8.04
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	34.35			32.16			17.55			16.47		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	21.01											
Intersection LOS	C											
Intersection V/C	0.514											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.302			2.073			2.822			2.857		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.192			1.906			2.291			2.357		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	45.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	121	391	173	264	672	487	286	683	159	161	649	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	391	173	264	672	487	286	683	159	161	649	229
Peak Hour Factor	0.9440	0.9440	0.9440	0.9150	0.9150	0.9150	0.9030	0.9030	0.9030	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	104	46	72	184	133	79	189	44	43	175	62
Total Analysis Volume [veh/h]	128	414	183	289	734	532	317	756	176	174	701	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	27	56	0	17	42	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	43	43	13	49	49	13	41	41	8	36	36
g / C, Green / Cycle	0.05	0.35	0.35	0.11	0.41	0.41	0.11	0.34	0.34	0.07	0.30	0.30
(v / s)_i Volume / Saturation Flow Rate	0.04	0.12	0.12	0.09	0.37	0.39	0.10	0.22	0.12	0.05	0.21	0.16
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1533	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	164	1192	532	354	729	631	355	1141	510	219	1001	447
d1, Uniform Delay [s]	56.34	28.59	28.55	52.35	33.22	34.26	52.81	33.85	29.74	55.19	37.46	35.50
k, delay calibration	0.11	0.11	0.11	0.11	0.37	0.40	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.78	0.17	0.38	4.62	13.72	23.00	7.83	3.03	1.85	6.46	4.08	4.86
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.35	0.34	0.82	0.91	0.96	0.89	0.66	0.35	0.80	0.70	0.55
d, Delay for Lane Group [s/veh]	64.13	28.76	28.93	56.97	46.94	57.26	60.64	36.89	31.59	61.66	41.54	40.36
Lane Group LOS	E	C	C	E	D	E	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.09	4.43	3.94	4.48	20.49	20.64	5.10	9.83	4.09	2.79	9.67	6.68
50th-Percentile Queue Length [ft/ln]	52.36	110.70	98.51	112.05	512.25	515.88	127.39	245.77	102.17	69.75	241.82	167.10
95th-Percentile Queue Length [veh/ln]	3.77	7.88	7.09	7.95	27.91	28.09	8.80	14.97	7.36	5.02	14.77	10.92
95th-Percentile Queue Length [ft/ln]	94.24	196.98	177.32	198.85	697.83	702.13	219.94	374.32	183.91	125.54	369.33	273.10

Movement, Approach, & Intersection Results

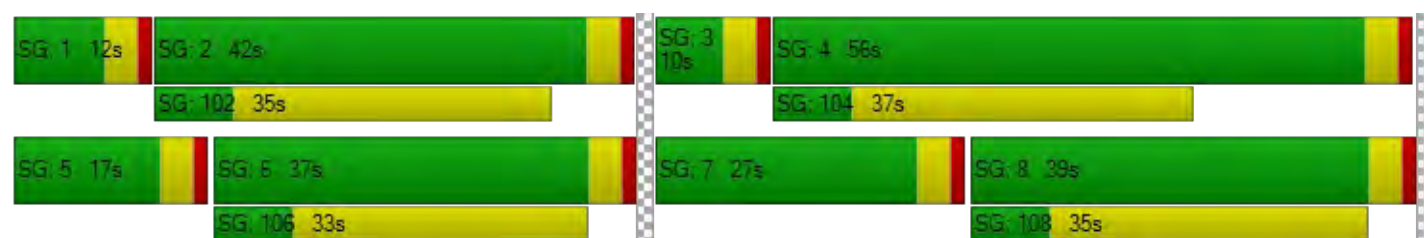
d_M, Delay for Movement [s/veh]	64.13	28.76	28.93	56.97	47.94	57.26	60.64	36.89	31.59	61.66	41.54	40.36
Movement LOS	E	C	C	E	D	E	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	35.05			52.81			42.17			44.40		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.15											
Intersection LOS	D											
Intersection V/C	0.850											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.860			2.878			2.971			2.935		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			867			633			550		
d_b, Bicycle Delay [s]	30.10			19.27			28.02			31.54		
I_b,int, Bicycle LOS Score for Intersection	2.158			2.842			2.590			2.485		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.602

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	312	19	169	11	21	12	8	713	328	155	698	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	19	169	11	21	12	8	713	328	155	698	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.7170	0.7170	0.7170	0.9350	0.9350	0.9350	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	5	44	4	7	4	2	191	88	42	188	3
Total Analysis Volume [veh/h]	325	20	176	15	29	17	9	763	351	167	754	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	56	56	0	37	0	10	38	0	11	39	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	22	33	5	5	1	64	64	7	70	70
g / C, Green / Cycle	0.12	0.20	0.31	0.05	0.05	0.01	0.61	0.61	0.07	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.10	0.01	0.12	0.01	0.03	0.01	0.33	0.33	0.05	0.22	0.22
s, saturation flow rate [veh/h]	3277	1772	1506	1392	1663	1687	1772	1585	3277	1772	1761
c, Capacity [veh/h]	390	364	467	99	80	23	1087	972	220	1181	1174
d1, Uniform Delay [s]	45.25	33.56	28.29	50.81	48.96	51.37	11.74	11.75	48.18	7.45	7.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.66	0.06	0.50	0.70	6.40	10.21	1.93	2.16	5.34	0.73	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.06	0.38	0.15	0.58	0.39	0.54	0.54	0.76	0.33	0.33
d, Delay for Lane Group [s/veh]	49.90	33.62	28.79	51.51	55.37	61.57	13.67	13.92	53.52	8.19	8.19
Lane Group LOS	D	C	C	D	E	E	B	B	D	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.37	0.42	3.50	0.41	1.32	0.30	7.94	7.19	2.30	3.59	3.57
50th-Percentile Queue Length [ft/ln]	109.23	10.43	87.59	10.21	33.00	7.50	198.48	179.81	57.62	89.77	89.27
95th-Percentile Queue Length [veh/ln]	7.80	0.75	6.31	0.74	2.38	0.54	12.56	11.59	4.15	6.46	6.43
95th-Percentile Queue Length [ft/ln]	194.93	18.78	157.67	18.38	59.40	13.51	314.00	289.76	103.71	161.58	160.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.90	33.62	28.79	51.51	55.37	55.37	61.57	13.73	13.92	53.52	8.19	8.19
Movement LOS	D	C	C	D	E	E	E	B	B	D	A	A
d_A, Approach Delay [s/veh]	42.15			54.42			14.17			16.29		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	21.37											
Intersection LOS	C											
Intersection V/C	0.602											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.634			1.981			2.740			2.788		
Crosswalk LOS	B			A			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	990			629			648			667		
d_b, Bicycle Delay [s]	13.38			24.69			24.00			23.33		
I_b,int, Bicycle LOS Score for Intersection	2.419			1.660			2.486			2.330		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	18.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.510

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	93	4	197	161	767	5	11	620	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	93	4	197	161	767	5	11	620	72
Peak Hour Factor	0.7140	0.7140	0.7140	0.9130	0.9130	0.9130	0.9210	0.9210	0.9210	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	3	25	1	54	44	208	1	3	172	20
Total Analysis Volume [veh/h]	14	3	11	102	4	216	175	833	5	12	687	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	39	37	0	34	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	15	15	42	15	78	78	2	65	65
g / C, Green / Cycle	0.03	0.03	0.03	0.13	0.13	0.36	0.13	0.68	0.68	0.02	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.03	0.03	0.14	0.10	0.24	0.24	0.01	0.20	0.05
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1693	1506	1687	1772	1768	1687	3373	1506
c, Capacity [veh/h]	88	57	48	219	220	547	223	1207	1204	30	1913	854
d1, Uniform Delay [s]	56.04	54.01	54.31	44.96	44.96	27.22	48.38	7.66	7.66	55.93	13.54	11.39
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.12	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.83	0.38	2.37	0.56	0.56	0.52	6.06	0.79	0.79	8.58	0.53	0.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.05	0.23	0.24	0.24	0.39	0.79	0.35	0.35	0.40	0.36	0.09
d, Delay for Lane Group [s/veh]	56.88	54.39	56.68	45.52	45.52	27.74	54.44	8.45	8.45	64.51	14.07	11.61
Lane Group LOS	E	D	E	D	D	C	D	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.42	0.09	0.34	1.40	1.40	4.48	5.23	4.26	4.25	0.42	4.86	0.98
50th-Percentile Queue Length [ft/ln]	10.59	2.26	8.57	34.88	34.98	112.08	130.69	106.58	106.37	10.39	121.50	24.40
95th-Percentile Queue Length [veh/ln]	0.76	0.16	0.62	2.51	2.52	7.96	8.98	7.65	7.64	0.75	8.48	1.76
95th-Percentile Queue Length [ft/ln]	19.06	4.07	15.42	62.78	62.97	198.89	224.43	191.23	190.94	18.70	211.88	43.93

Movement, Approach, & Intersection Results

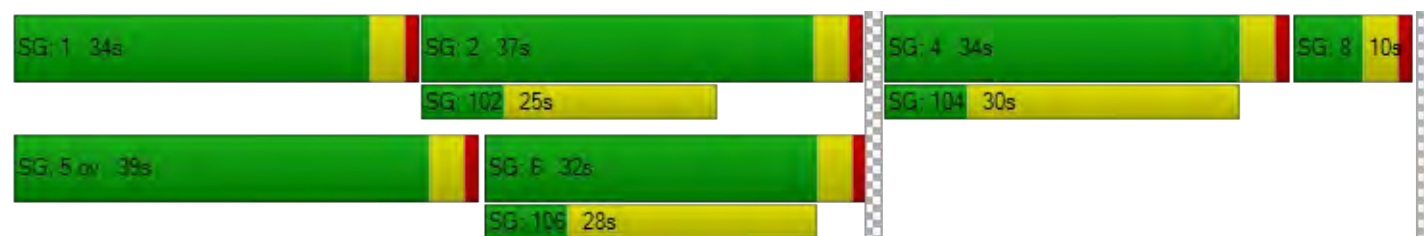
d_M, Delay for Movement [s/veh]	56.88	54.39	56.68	45.52	45.52	27.74	54.44	8.45	8.45	64.51	14.07	11.61
Movement LOS	E	D	E	D	D	C	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	56.53			33.59			16.40			14.60		
Approach LOS	E			C			B			B		
d_I, Intersection Delay [s/veh]	18.85											
Intersection LOS	B											
Intersection V/C	0.510											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.155			2.284			2.708			0.000		
Crosswalk LOS	B			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	104			522			574			487		
d_b, Bicycle Delay [s]	51.66			31.41			29.23			32.91		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.091			2.395			2.202		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	34.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.586

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	227	306	60	158	606	105	111	443	294	55	381	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	306	60	158	606	105	111	443	294	55	381	88
Peak Hour Factor	0.8820	0.8820	0.8820	0.8520	0.8520	0.8520	0.9210	0.9210	0.9210	0.8340	0.8340	0.8340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	87	17	46	178	31	30	120	80	16	114	26
Total Analysis Volume [veh/h]	257	347	68	185	711	123	121	481	319	66	457	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	38	0	13	37	0	15	44	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	51	51	8	48	48	9	25	25	5	21	21
g / C, Green / Cycle	0.10	0.48	0.48	0.08	0.46	0.46	0.09	0.24	0.24	0.05	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.08	0.06	0.17	0.17	0.07	0.14	0.21	0.04	0.14	0.07
s, saturation flow rate [veh/h]	3277	3373	1629	3277	3373	1642	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	314	1619	782	247	1550	755	149	816	364	85	689	307
d1, Uniform Delay [s]	46.62	15.49	15.52	47.61	18.40	18.43	47.08	35.23	38.32	49.33	38.51	35.81
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.23	0.23	0.49	4.49	0.65	1.36	10.19	0.68	7.70	13.99	1.11	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.17	0.18	0.75	0.36	0.36	0.81	0.59	0.88	0.78	0.66	0.34
d, Delay for Lane Group [s/veh]	51.86	15.72	16.01	52.10	19.06	19.78	57.27	35.91	46.02	63.32	39.61	36.47
Lane Group LOS	D	B	B	D	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.51	1.91	1.94	2.52	4.46	4.52	3.52	5.48	8.57	2.04	5.48	2.38
50th-Percentile Queue Length [ft/ln]	87.67	47.66	48.62	62.94	111.38	112.93	87.88	136.90	214.22	50.91	137.12	59.43
95th-Percentile Queue Length [veh/ln]	6.31	3.43	3.50	4.53	7.92	8.00	6.33	9.31	13.37	3.67	9.33	4.28
95th-Percentile Queue Length [ft/ln]	157.80	85.78	87.52	113.29	197.91	200.08	158.19	232.84	334.24	91.65	233.14	106.98

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.86	15.78	16.01	52.10	19.21	19.78	57.27	35.91	46.02	63.32	39.61	36.47
Movement LOS	D	B	B	D	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	29.60			25.25			42.22			41.57		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.14											
Intersection LOS	C											
Intersection V/C	0.586											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.948			2.927			2.746			2.682		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	648			629			762			667		
d_b, Bicycle Delay [s]	24.00			24.69			20.12			23.33		
I_b,int, Bicycle LOS Score for Intersection	1.929			2.120			2.319			2.079		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.272

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	21	268	109	68	254	20	33	10	57	78	4	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	268	109	68	254	20	33	10	57	78	4	56
Peak Hour Factor	0.9200	0.9200	0.9200	0.9030	0.9030	0.9030	0.6380	0.6380	0.6380	0.9310	0.9310	0.9310
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	73	30	19	70	6	13	4	22	21	1	15
Total Analysis Volume [veh/h]	23	291	118	75	281	22	52	16	89	84	4	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	26	0	34	34	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	57	57	5	60	60	15	15	15	15
g / C, Green / Cycle	0.03	0.64	0.64	0.06	0.67	0.67	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.12	0.04	0.09	0.09	0.04	0.07	0.07	0.04
s, saturation flow rate [veh/h]	1687	1772	1602	1687	1772	1727	1338	1541	1289	1520
c, Capacity [veh/h]	50	1131	1023	97	1181	1151	223	263	186	259
d1, Uniform Delay [s]	42.96	6.68	6.70	41.83	5.48	5.48	37.35	33.24	40.53	32.34
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.37	0.37	0.42	12.05	0.23	0.23	0.53	0.98	1.70	0.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.19	0.19	0.77	0.13	0.13	0.23	0.40	0.45	0.25
d, Delay for Lane Group [s/veh]	49.32	7.04	7.12	53.88	5.71	5.72	37.88	34.22	42.23	32.83
Lane Group LOS	D	A	A	D	A	A	D	C	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.59	1.60	1.51	1.95	0.99	0.98	1.08	2.08	1.89	1.23
50th-Percentile Queue Length [ft/ln]	14.69	39.96	37.69	48.73	24.72	24.39	27.09	52.03	47.20	30.67
95th-Percentile Queue Length [veh/ln]	1.06	2.88	2.71	3.51	1.78	1.76	1.95	3.75	3.40	2.21
95th-Percentile Queue Length [ft/ln]	26.44	71.93	67.84	87.71	44.49	43.91	48.76	93.65	84.96	55.21

Movement, Approach, & Intersection Results

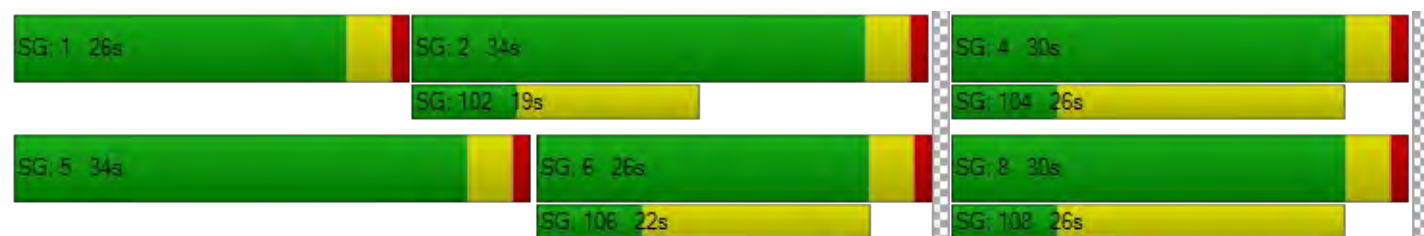
d_M, Delay for Movement [s/veh]	49.32	7.06	7.12	53.88	5.71	5.72	37.88	34.22	34.22	42.23	32.83	32.83
Movement LOS	D	A	A	D	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	9.33			15.27			35.43			38.17		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	18.85											
Intersection LOS	B											
Intersection V/C	0.272											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.592			2.526			2.007			2.056		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	489			667			578			578		
d_b, Bicycle Delay [s]	25.69			20.00			22.76			22.76		
I_b,int, Bicycle LOS Score for Intersection	1.916			1.871			1.819			1.804		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	24.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.540

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	22	318	406	40	286	21	24	13	26	373	6	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	318	406	40	286	21	24	13	26	373	6	73
Peak Hour Factor	0.9560	0.9560	0.9560	0.8510	0.8510	0.8510	0.8970	0.8970	0.8970	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	83	106	12	84	6	7	4	7	107	2	21
Total Analysis Volume [veh/h]	23	333	425	47	336	25	27	14	29	429	7	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	65	56	56	65	58	58	5	5	18	18
g / C, Green / Cycle	0.65	0.56	0.56	0.65	0.58	0.58	0.05	0.05	0.18	0.18
(v / s)_i Volume / Saturation Flow Rate	0.02	0.19	0.28	0.06	0.10	0.10	0.02	0.02	0.16	0.16
s, saturation flow rate [veh/h]	1071	1772	1506	804	1772	1729	1715	1506	1687	1625
c, Capacity [veh/h]	742	994	845	497	1021	997	89	78	308	297
d1, Uniform Delay [s]	6.53	11.87	13.43	8.21	10.01	10.01	46.07	45.85	39.64	39.64
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.91	2.14	0.38	0.38	0.40	3.66	2.90	6.92	7.17
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.34	0.50	0.09	0.18	0.18	0.46	0.37	0.86	0.86
d, Delay for Lane Group [s/veh]	6.54	12.78	15.57	8.59	10.39	10.41	49.74	48.75	46.56	46.80
Lane Group LOS	A	B	B	A	B	B	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.17	4.06	6.00	0.39	1.91	1.88	1.08	0.76	6.82	6.59
50th-Percentile Queue Length [ft/ln]	4.14	101.56	150.11	9.71	47.66	47.00	26.91	18.92	170.58	164.82
95th-Percentile Queue Length [veh/ln]	0.30	7.31	10.02	0.70	3.43	3.38	1.94	1.36	11.11	10.80
95th-Percentile Queue Length [ft/ln]	7.46	182.80	250.57	17.48	85.78	84.60	48.44	34.06	277.68	270.10

Movement, Approach, & Intersection Results

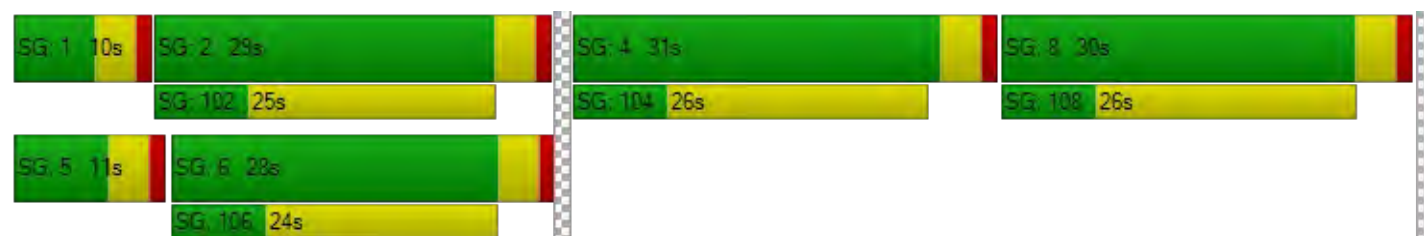
d_M, Delay for Movement [s/veh]	6.54	12.78	15.57	8.59	10.40	10.41	49.74	49.74	48.75	46.65	46.80	46.80
Movement LOS	A	B	B	A	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	14.11			10.19			49.33			46.68		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	24.12											
Intersection LOS	C											
Intersection V/C	0.540											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.612			2.471			2.005			2.311		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	480			500			520			540		
d_b, Bicycle Delay [s]	28.88			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.204			1.896			1.675			2.418		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.924

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	165	24	89	59	19	500	639	476	29	84	705	34
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	165	24	89	59	19	500	639	476	29	84	705	34
Peak Hour Factor	0.8300	0.8300	0.8300	0.8970	0.8970	0.8970	0.9440	0.9440	0.9440	0.8860	0.8860	0.8860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	7	27	16	5	139	169	126	8	24	199	10
Total Analysis Volume [veh/h]	199	29	107	66	21	557	677	504	31	95	796	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	14	14	37	31	0	38	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	14	10	10	64	32	72	72	8	48	48
g / C, Green / Cycle	0.11	0.11	0.11	0.08	0.08	0.53	0.27	0.60	0.60	0.07	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.07	0.04	0.01	0.37	0.21	0.15	0.15	0.06	0.24	0.24
s, saturation flow rate [veh/h]	1417	1509	1506	1687	1612	1506	3277	1772	1736	1687	1772	1743
c, Capacity [veh/h]	198	224	170	142	135	805	888	1061	1039	120	706	695
d1, Uniform Delay [s]	50.40	51.95	50.84	52.43	51.04	20.64	40.21	11.41	11.41	54.89	28.45	28.45
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.53	2.87	3.78	2.37	0.53	4.85	1.39	0.58	0.59	11.03	3.67	3.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.63	0.63	0.47	0.16	0.69	0.76	0.25	0.25	0.79	0.60	0.60
d, Delay for Lane Group [s/veh]	51.93	54.82	54.63	54.80	51.57	25.49	41.60	11.99	12.00	65.91	32.12	32.18
Lane Group LOS	D	D	D	D	D	C	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.57	4.32	3.25	1.99	0.61	12.28	9.32	3.51	3.45	3.20	10.16	10.01
50th-Percentile Queue Length [ft/ln]	64.18	107.95	81.31	49.85	15.21	306.92	233.03	87.79	86.22	79.90	254.09	250.33
95th-Percentile Queue Length [veh/ln]	4.62	7.73	5.85	3.59	1.10	18.02	14.33	6.32	6.21	5.75	15.39	15.20
95th-Percentile Queue Length [ft/ln]	115.52	193.15	146.36	89.72	27.38	450.57	358.21	158.02	155.20	143.82	384.80	380.07

Movement, Approach, & Intersection Results

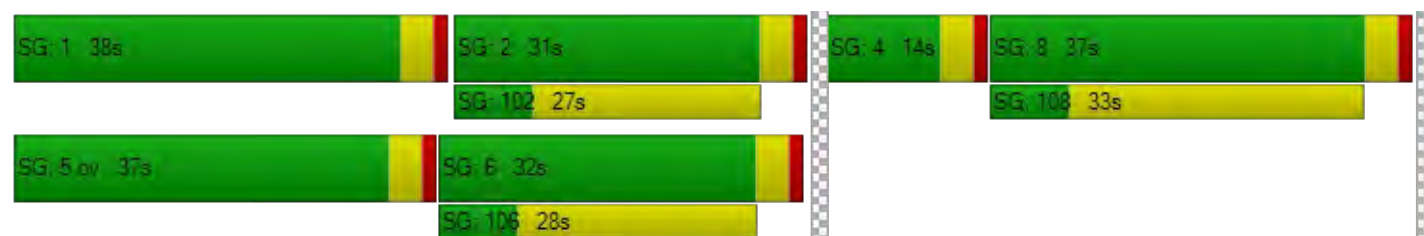
d_M, Delay for Movement [s/veh]	53.51	54.82	54.63	54.80	51.57	25.49	41.60	11.99	12.00	65.91	32.15	32.18
Movement LOS	D	D	D	D	D	C	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	54.01			29.34			28.53			35.60		
Approach LOS	D			C			C			D		
d_I, Intersection Delay [s/veh]	33.54											
Intersection LOS	C											
Intersection V/C	0.924											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.408			2.584			0.000			2.627		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			167			450			467		
d_b, Bicycle Delay [s]	31.54			50.42			36.04			35.27		
I_b,int, Bicycle LOS Score for Intersection	2.112			2.091			2.560			2.326		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.840

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	337	768	195	232	800	312	352	1137	267	339	1233	196
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	337	768	195	232	800	312	352	1137	267	339	1233	196
Peak Hour Factor	0.9070	0.9070	0.9070	0.9640	0.9640	0.9640	0.9710	0.9710	0.9710	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	212	54	60	207	81	91	293	69	88	321	51
Total Analysis Volume [veh/h]	372	847	215	241	830	324	363	1171	275	353	1284	204
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	43	0	15	39	0	19	43	0	19	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	34	34	11	29	29	15	45	45	15	45	45
g / C, Green / Cycle	0.13	0.28	0.28	0.09	0.24	0.24	0.13	0.37	0.37	0.12	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.11	0.18	0.14	0.07	0.17	0.22	0.11	0.29	0.29	0.11	0.27	0.14
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1605	3277	4826	1506
c, Capacity [veh/h]	412	1352	422	296	1181	368	412	1257	598	406	1788	558
d1, Uniform Delay [s]	51.77	37.74	36.30	53.66	41.39	43.66	51.61	33.31	33.38	51.68	32.43	27.53
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.27	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.44	0.48	0.95	5.44	0.78	14.93	6.22	4.80	9.85	5.85	2.52	1.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.63	0.51	0.82	0.70	0.88	0.88	0.78	0.78	0.87	0.72	0.37
d, Delay for Lane Group [s/veh]	59.22	38.22	37.25	59.10	42.16	58.60	57.84	38.11	43.22	57.54	34.95	29.38
Lane Group LOS	E	D	D	E	D	E	E	D	D	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.94	7.29	5.41	3.80	7.54	10.73	5.72	13.25	13.54	5.54	10.97	4.56
50th-Percentile Queue Length [ft/ln]	148.52	182.20	135.14	94.93	188.39	268.34	143.03	331.30	338.51	138.57	274.21	113.90
95th-Percentile Queue Length [veh/ln]	9.94	11.72	9.22	6.83	12.04	16.11	9.64	19.22	19.58	9.40	16.40	8.06
95th-Percentile Queue Length [ft/ln]	248.46	292.88	230.46	170.87	300.93	402.67	241.09	480.55	489.38	235.09	410.00	201.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.22	38.22	37.25	59.10	42.16	58.60	57.84	38.95	43.22	57.54	34.95	29.38
Movement LOS	E	D	D	E	D	E	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	43.52			48.91			43.39			38.66		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.26											
Intersection LOS	D											
Intersection V/C	0.840											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.176			3.167			3.201			3.239		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			583			650			650		
d_b, Bicycle Delay [s]	27.34			30.10			27.34			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.348			2.327			2.555			2.572		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.545

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	26	30	101	118	41	112	68	1324	35	84	1407	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	30	101	118	41	112	68	1324	35	84	1407	145
Peak Hour Factor	0.8200	0.8200	0.8200	0.7710	0.7710	0.7710	0.9890	0.9890	0.9890	0.9120	0.9120	0.9120
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	9	31	38	13	36	17	335	9	23	386	40
Total Analysis Volume [veh/h]	32	37	123	153	53	145	69	1339	35	92	1543	159
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	10	28	0	24	42	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16	16	16	16	5	55	55	6	57	57
g / C, Green / Cycle	0.18	0.18	0.18	0.18	0.18	0.18	0.06	0.61	0.61	0.07	0.63	0.63
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.08	0.11	0.02	0.10	0.04	0.27	0.27	0.05	0.32	0.11
s, saturation flow rate [veh/h]	1351	1772	1506	1371	3373	1506	1687	3373	1749	1687	4826	1506
c, Capacity [veh/h]	272	322	273	269	612	273	93	2075	1076	118	3039	948
d1, Uniform Delay [s]	33.91	30.80	32.84	37.65	30.64	33.37	41.88	9.11	9.11	41.18	9.07	6.90
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.19	0.16	1.16	1.89	0.06	1.60	10.78	0.67	1.29	10.54	0.61	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.12	0.45	0.57	0.09	0.53	0.74	0.44	0.44	0.78	0.51	0.17
d, Delay for Lane Group [s/veh]	34.10	30.95	34.00	39.54	30.70	34.96	52.66	9.78	10.39	51.72	9.68	7.28
Lane Group LOS	C	C	C	D	C	C	D	A	B	D	A	A
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.62	0.68	2.44	3.35	0.48	2.94	1.77	4.37	4.71	2.33	5.00	1.24
50th-Percentile Queue Length [ft/ln]	15.55	16.94	61.01	83.84	11.95	73.48	44.30	109.14	117.77	58.20	124.92	30.88
95th-Percentile Queue Length [veh/ln]	1.12	1.22	4.39	6.04	0.86	5.29	3.19	7.79	8.27	4.19	8.66	2.22
95th-Percentile Queue Length [ft/ln]	28.00	30.50	109.82	150.91	21.51	132.26	79.74	194.81	206.76	104.76	216.57	55.58

Movement, Approach, & Intersection Results

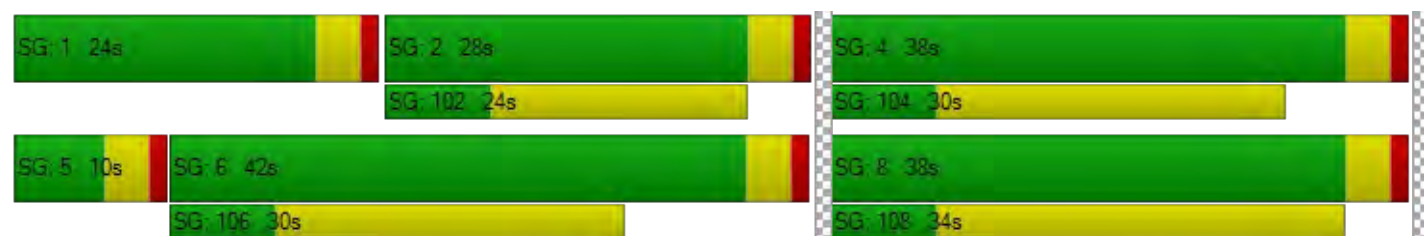
d_M, Delay for Movement [s/veh]	34.10	30.95	34.00	39.54	30.70	34.96	52.66	9.98	10.39	51.72	9.68	7.28
Movement LOS	C	C	C	D	C	C	D	A	B	D	A	A
d_A, Approach Delay [s/veh]	33.43			36.31			12.03			11.62		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	15.18											
Intersection LOS	B											
Intersection V/C	0.545											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.372			2.419			3.079			3.358		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			533			844		
d_b, Bicycle Delay [s]	17.42			17.42			24.20			15.02		
I_b,int, Bicycle LOS Score for Intersection	1.876			1.849			2.353			2.546		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	49.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.968

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	394	518	255	282	863	216	231	1388	253	335	1373	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	518	255	282	863	216	231	1388	253	335	1373	156
Peak Hour Factor	0.9240	0.9240	0.9240	0.9170	0.9170	0.9170	0.9130	0.9130	0.9130	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	140	69	77	235	59	63	380	69	94	386	44
Total Analysis Volume [veh/h]	426	561	276	308	941	236	253	1520	277	376	1543	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	41	0	18	39	0	14	43	0	18	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	38	38	13	35	35	10	39	39	14	43	43
g / C, Green / Cycle	0.13	0.31	0.31	0.11	0.29	0.29	0.08	0.33	0.33	0.12	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.12	0.18	0.09	0.28	0.16	0.08	0.31	0.18	0.11	0.32	0.12
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	437	1512	472	360	978	437	274	1576	492	383	1736	542
d1, Uniform Delay [s]	51.80	32.01	34.64	52.47	41.96	35.88	54.62	39.73	33.35	52.88	36.15	27.83
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.81	0.15	1.59	5.84	7.13	1.11	12.72	15.68	4.61	17.65	7.23	1.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	0.37	0.58	0.86	0.96	0.54	0.92	0.96	0.56	0.98	0.89	0.32
d, Delay for Lane Group [s/veh]	66.61	32.16	36.23	58.32	49.10	36.99	67.35	55.41	37.97	70.53	43.38	29.40
Lane Group LOS	E	C	D	E	D	D	E	E	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.27	4.25	6.96	4.85	14.52	5.94	4.28	16.78	7.28	6.58	15.13	3.90
50th-Percentile Queue Length [ft/ln]	181.66	106.21	173.99	121.15	362.90	148.61	106.91	419.41	181.99	164.47	378.32	97.40
95th-Percentile Queue Length [veh/ln]	11.69	7.63	11.29	8.46	20.76	9.94	7.67	23.49	11.70	10.79	21.51	7.01
95th-Percentile Queue Length [ft/ln]	292.18	190.71	282.15	211.40	519.11	248.57	191.70	587.35	292.61	269.63	537.81	175.33

Movement, Approach, & Intersection Results

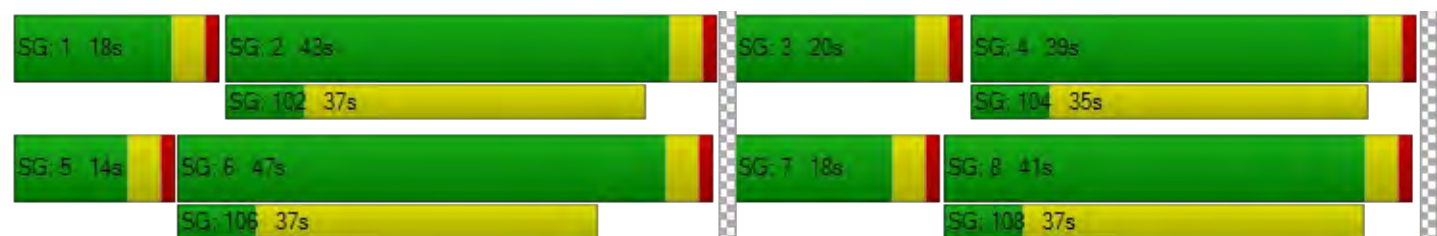
d_M, Delay for Movement [s/veh]	66.61	32.16	36.23	58.32	49.10	36.99	67.35	55.41	37.97	70.53	43.38	29.40
Movement LOS	E	C	D	E	D	D	E	E	D	E	D	C
d_A, Approach Delay [s/veh]	44.67			49.08			54.53			47.08		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	49.29											
Intersection LOS	D											
Intersection V/C	0.968											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.087			3.041			3.324			3.318		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			650			717		
d_b, Bicycle Delay [s]	28.70			30.10			27.34			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.254			2.785			2.687			2.711		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	54.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.979

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	37	169	390	74	279	301	1464	31	107	1653	442
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	37	169	390	74	279	301	1464	31	107	1653	442
Peak Hour Factor	0.8250	0.8250	0.8250	0.9010	0.9010	0.9010	0.9400	0.9400	0.9400	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	11	51	108	21	77	80	389	8	27	421	113
Total Analysis Volume [veh/h]	80	45	205	433	82	310	320	1557	33	109	1683	450
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	17	0	0	41	0	16	48	0	14	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	33	33	12	45	45	9	42	42
g / C, Green / Cycle	0.14	0.14	0.14	0.27	0.27	0.10	0.37	0.37	0.08	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.15	0.13	0.25	0.10	0.31	0.31	0.06	0.35	0.30
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1555	3277	3373	1753	1687	4826	1506
c, Capacity [veh/h]	240	252	195	898	426	331	1252	651	134	1687	526
d1, Uniform Delay [s]	46.40	45.35	51.52	36.48	42.33	53.79	34.42	34.44	54.41	39.02	36.24
k, delay calibration	0.11	0.11	0.16	0.11	0.32	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	0.34	50.58	0.40	20.26	16.26	6.69	12.13	11.14	21.36	16.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.18	1.05	0.48	0.92	0.97	0.84	0.84	0.81	1.00	0.85
d, Delay for Lane Group [s/veh]	47.21	45.69	102.10	36.88	62.60	70.05	41.11	46.57	65.56	60.38	52.38
Lane Group LOS	D	D	F	D	E	E	D	D	E	E	D
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.21	1.21	8.58	5.37	13.58	5.56	14.86	16.44	3.66	19.52	14.42
50th-Percentile Queue Length [ft/ln]	55.35	30.28	214.46	134.33	339.54	138.89	371.43	411.11	91.47	488.03	360.48
95th-Percentile Queue Length [veh/ln]	3.99	2.18	13.68	9.17	19.63	9.42	21.18	23.10	6.59	26.77	20.65
95th-Percentile Queue Length [ft/ln]	99.63	54.50	342.10	229.36	490.64	235.53	529.46	577.38	164.64	669.17	516.16

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	47.21	45.69	102.10	36.88	62.60	62.60	70.05	42.90	46.57	65.56	60.38	52.38
Movement LOS	D	D	F	D	E	E	E	D	D	E	E	D
d_A, Approach Delay [s/veh]	81.10			49.10			47.51			59.02		
Approach LOS	F			D			D			E		
d_I, Intersection Delay [s/veh]	54.71											
Intersection LOS	D											
Intersection V/C	0.979											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.280			2.633			3.225			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	217			617			733			700		
d_b, Bicycle Delay [s]	47.70			28.70			24.07			25.35		
I_b,int, Bicycle LOS Score for Intersection	1.832			2.921			2.610			2.793		
Bicycle LOS	A			C			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	173.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.425

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	271	522	551	650	402	174	130	1522	183	621	1838	1004
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	271	522	551	650	402	174	130	1522	183	621	1838	1004
Peak Hour Factor	0.9800	0.9800	0.9800	0.8330	0.8330	0.8330	0.9250	0.9250	0.9250	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	69	133	141	195	121	52	35	411	49	168	498	272
Total Analysis Volume [veh/h]	277	533	562	780	483	209	141	1645	198	673	1991	1088
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	41	0	27	51	0	10	34	0	18	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	37	37	23	48	48	6	30	30	14	38	65
g / C, Green / Cycle	0.10	0.31	0.31	0.19	0.40	0.40	0.05	0.25	0.25	0.12	0.32	0.54
(v / s)_i Volume / Saturation Flow Rate	0.08	0.16	0.37	0.33	0.20	0.21	0.04	0.28	0.28	0.21	0.41	0.72
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1595	3277	4826	1649	3277	4826	1506
c, Capacity [veh/h]	330	1035	462	454	705	634	165	1212	414	383	1533	817
d1, Uniform Delay [s]	53.01	34.25	41.60	48.51	27.30	27.49	56.55	44.94	44.94	53.00	40.94	27.44
k, delay calibration	0.11	0.11	0.50	0.20	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.70	0.40	115.78	327.38	0.57	0.68	11.71	70.57	85.70	343.04	139.21	157.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.51	1.22	1.72	0.51	0.52	0.85	1.13	1.13	1.76	1.30	1.33
d, Delay for Lane Group [s/veh]	58.72	34.65	157.38	375.89	27.88	28.17	68.27	115.50	130.64	396.04	180.15	184.80
Lane Group LOS	E	C	F	F	C	C	E	F	F	F	F	F
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.36	6.45	28.32	27.38	7.86	7.33	2.39	19.85	22.09	24.01	34.66	57.85
50th-Percentile Queue Length [ft/ln]	109.03	161.28	708.12	684.60	196.41	183.21	59.72	496.21	552.17	600.21	866.42	1446.35
95th-Percentile Queue Length [veh/ln]	7.79	10.62	41.61	44.15	12.45	11.77	4.30	29.14	32.00	38.27	51.52	85.80
95th-Percentile Queue Length [ft/ln]	194.65	265.42	1040.20	1103.68	311.33	294.20	107.50	728.46	800.05	956.82	1287.91	2144.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.72	34.65	157.38	375.89	27.95	28.17	68.27	118.00	130.64	396.04	180.15	184.80
Movement LOS	E	C	F	F	C	C	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	89.78			212.36			115.73			220.22		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	173.85											
Intersection LOS	F											
Intersection V/C	1.425											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.987			2.992			3.346			3.637		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			783			500			633		
d_b, Bicycle Delay [s]	28.70			22.20			33.75			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.692			2.774			2.378			3.623		
Bicycle LOS	B			C			B			D		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.918

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	537	0	725	0	1881	1129	0	2605	358
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	537	0	725	0	1881	1129	0	2605	358
Peak Hour Factor	1.0000	1.0000	1.0000	0.9240	1.0000	0.9240	1.0000	0.9460	0.9460	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	145	0	196	0	497	298	0	669	92
Total Analysis Volume [veh/h]	0	0	0	581	0	785	0	1988	1193	0	2677	368
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	49	0	0	0	71	0	0	71	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		40	40	40	72	72
g / C, Green / Cycle		0.33	0.33	0.33	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate		0.27	0.29	0.30	0.41	0.55
s, saturation flow rate [veh/h]		1687	1552	1506	4826	4826
c, Capacity [veh/h]		557	512	497	2912	2912
d1, Uniform Delay [s]		36.84	38.07	38.56	16.02	21.16
k, delay calibration		0.26	0.30	0.32	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		6.86	13.47	17.44	1.32	6.04
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.89	0.92	0.68	0.92
d, Delay for Lane Group [s/veh]		43.70	51.54	56.00	17.34	27.21
Lane Group LOS		D	D	E	B	C
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		13.17	14.43	15.08	12.01	22.35
50th-Percentile Queue Length [ft/ln]		329.24	360.71	377.00	300.23	558.85
95th-Percentile Queue Length [veh/ln]		19.12	20.66	21.45	17.69	30.11
95th-Percentile Queue Length [ft/ln]		478.03	516.44	536.21	442.31	752.70

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	45.40	0.00	54.13	0.00	17.34	0.00	0.00	27.21	0.00
Movement LOS				D		D		B			C	
d_A, Approach Delay [s/veh]	0.00			50.41			17.34			27.21		
Approach LOS	A			D			B			C		
d_I, Intersection Delay [s/veh]	29.21											
Intersection LOS	C											
Intersection V/C	0.918											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.478			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			1117			1117		
d_b, Bicycle Delay [s]	60.00			60.00			11.70			11.70		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.386			2.653			3.032		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG 2 71s

SG 6 71s

SG 7 45s

SG 106 22s

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	41.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.944

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1414	168	542	0	0	258	272	1710	544	0	1753	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1414	168	542	0	0	258	272	1710	544	0	1753	43
Peak Hour Factor	0.9320	0.9320	0.9320	1.0000	1.0000	0.8040	0.9340	0.9340	0.9340	1.0000	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	379	45	145	0	0	80	73	458	146	0	461	11
Total Analysis Volume [veh/h]	1517	180	582	0	0	321	291	1831	582	0	1843	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	62	0	0	0	23	23	58	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	51	51	51	19	19	61	38	38
g / C, Green / Cycle	0.43	0.43	0.43	0.16	0.16	0.50	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.34	0.34	0.38	0.12	0.17	0.38	0.29	0.27
s, saturation flow rate [veh/h]	3277	1711	1506	2665	1687	4826	4826	1742
c, Capacity [veh/h]	1403	733	645	423	268	2437	1510	545
d1, Uniform Delay [s]	29.82	29.60	31.82	48.24	50.44	23.67	40.07	38.83
k, delay calibration	0.11	0.25	0.32	0.11	0.22	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.10	4.31	12.18	2.81	62.29	2.19	12.44	16.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.79	0.90	0.76	1.09	0.75	0.94	0.87
d, Delay for Lane Group [s/veh]	30.92	33.91	44.00	51.06	112.74	25.86	52.50	55.52
Lane Group LOS	C	C	D	D	F	C	D	E
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.02	14.99	17.35	4.76	12.65	13.88	15.11	15.48
50th-Percentile Queue Length [ft/ln]	350.41	374.73	433.71	118.89	316.17	347.10	377.64	387.04
95th-Percentile Queue Length [veh/ln]	20.16	21.34	24.18	8.33	19.22	19.99	21.48	21.93
95th-Percentile Queue Length [ft/ln]	503.91	533.47	604.49	208.30	480.41	499.87	536.99	548.36

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.68	33.91	43.78	0.00	0.00	51.06	112.74	25.86	0.00	0.00	53.20	55.52
Movement LOS	C	C	D			D	F	C			D	E
d_A, Approach Delay [s/veh]	34.99			51.06			37.77			53.26		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	41.88											
Intersection LOS	D											
Intersection V/C	0.944											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.758	2.226	0.000	0.000
Crosswalk LOS	C	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	0	900	517
d_b, Bicycle Delay [s]	16.02	60.00	18.15	33.00
I_b,int, Bicycle LOS Score for Intersection	5.320	4.132	2.727	2.338
Bicycle LOS	F	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	38.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.846

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	234	186	107	327	236	176	207	1636	235	141	1448	201
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	234	186	107	327	236	176	207	1636	235	141	1448	201
Peak Hour Factor	0.9140	0.9140	0.9140	0.8970	0.8970	0.8970	0.9020	0.9020	0.9020	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	51	29	91	66	49	57	453	65	37	381	53
Total Analysis Volume [veh/h]	256	204	117	365	263	196	229	1814	261	149	1526	212
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	39	0	19	43	0	26	46	0	16	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	16	16	15	20	20	18	60	60	12	54	54
g / C, Green / Cycle	0.09	0.14	0.14	0.13	0.17	0.17	0.15	0.50	0.50	0.10	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.08	0.10	0.10	0.11	0.15	0.13	0.14	0.41	0.42	0.09	0.27	0.27
s, saturation flow rate [veh/h]	3277	1772	1560	3277	1772	1506	1687	3373	1661	1687	4826	1633
c, Capacity [veh/h]	302	243	214	411	302	257	256	1698	836	170	2181	738
d1, Uniform Delay [s]	53.66	49.38	49.48	51.67	48.49	47.47	49.96	25.07	25.44	53.27	24.66	24.67
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.12	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.51	3.54	4.28	6.64	7.63	4.67	11.05	4.38	9.39	13.32	1.21	3.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.69	0.71	0.89	0.87	0.76	0.89	0.81	0.83	0.88	0.60	0.60
d, Delay for Lane Group [s/veh]	60.17	52.92	53.76	58.31	56.12	52.14	61.01	29.45	34.83	66.60	25.87	28.19
Lane Group LOS	E	D	D	E	E	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.08	5.08	4.61	5.78	8.29	5.92	7.52	16.99	18.47	5.06	9.35	9.96
50th-Percentile Queue Length [ft/ln]	101.92	126.97	115.25	144.42	207.30	147.89	187.92	424.69	461.76	126.48	233.63	249.00
95th-Percentile Queue Length [veh/ln]	7.34	8.77	8.13	9.72	13.01	9.90	12.01	23.75	25.52	8.75	14.36	15.14
95th-Percentile Queue Length [ft/ln]	183.45	219.37	203.28	242.97	325.36	247.61	300.33	593.68	637.97	218.70	358.96	378.39

Movement, Approach, & Intersection Results

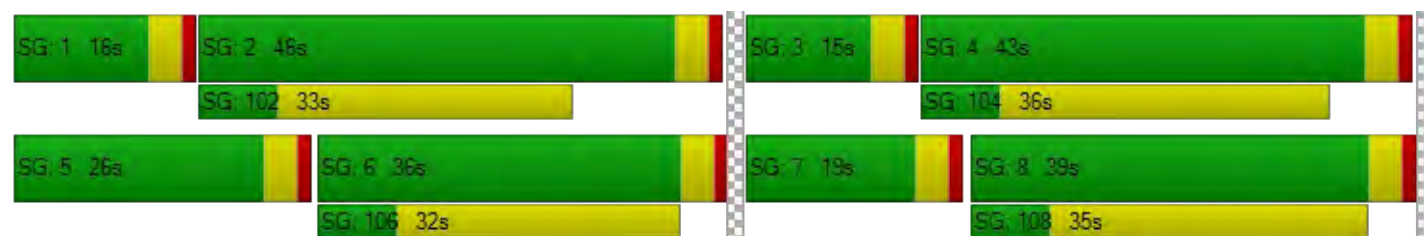
d_M, Delay for Movement [s/veh]	60.17	53.07	53.76	58.31	56.12	52.14	61.01	30.74	34.83	66.60	26.22	28.19
Movement LOS	E	D	D	E	E	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	56.36			56.15			34.21			29.63		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	38.18											
Intersection LOS	D											
Intersection V/C	0.846											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.557			2.705			3.261			3.249		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			650			700			533		
d_b, Bicycle Delay [s]	30.10			27.34			25.35			32.27		
I_b,int, Bicycle LOS Score for Intersection	2.036			2.919			2.827			2.338		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	154	16	227	25	10	11	24	1805	269	196	1718	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	154	16	227	25	10	11	24	1805	269	196	1718	44
Peak Hour Factor	0.9770	0.9770	0.9770	0.8650	0.8650	0.8650	0.9010	0.9010	0.9010	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	4	58	7	3	3	7	501	75	54	476	12
Total Analysis Volume [veh/h]	158	16	232	29	12	13	27	2003	299	217	1903	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	31	0	0	10	0	10	39	0	25	54	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	19	19	5	5	3	50	50	15	62	62
g / C, Green / Cycle	0.18	0.18	0.18	0.05	0.05	0.03	0.48	0.48	0.15	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.15	0.02	0.02	0.02	0.42	0.20	0.13	0.38	0.38
s, saturation flow rate [veh/h]	1687	1702	1506	1687	1623	1687	4826	1506	1687	3373	1749
c, Capacity [veh/h]	299	301	266	78	75	54	2301	718	249	1998	1036
d1, Uniform Delay [s]	37.53	37.53	42.09	48.64	48.55	50.02	24.60	17.96	43.81	14.11	14.14
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.53	0.53	8.90	2.90	2.55	6.83	4.86	1.78	9.07	1.61	3.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.29	0.87	0.37	0.33	0.50	0.87	0.42	0.87	0.64	0.64
d, Delay for Lane Group [s/veh]	38.06	38.06	51.00	51.54	51.10	56.85	29.46	19.73	52.88	15.72	17.23
Lane Group LOS	D	D	D	D	D	E	C	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.97	1.99	6.46	0.80	0.69	0.80	15.14	4.97	6.11	9.76	10.60
50th-Percentile Queue Length [ft/ln]	49.36	49.77	161.40	19.99	17.18	19.99	378.62	124.15	152.66	244.04	264.96
95th-Percentile Queue Length [veh/ln]	3.55	3.58	10.62	1.44	1.24	1.44	21.53	8.62	10.16	14.89	15.94
95th-Percentile Queue Length [ft/ln]	88.84	89.59	265.58	35.98	30.92	35.97	538.17	215.52	253.97	372.14	398.43

Movement, Approach, & Intersection Results

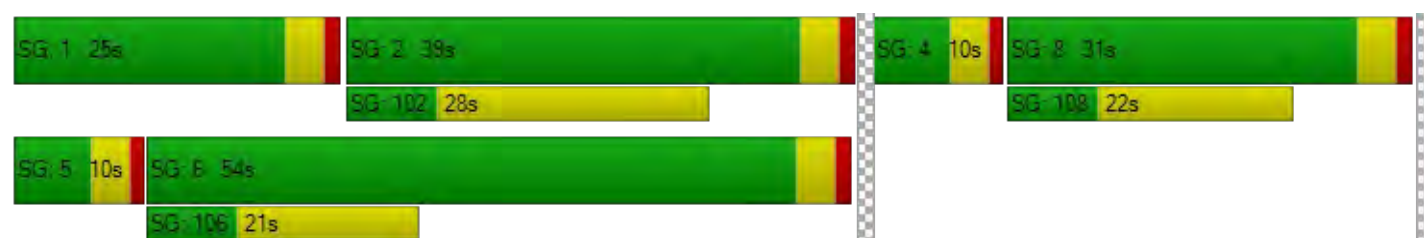
d_M, Delay for Movement [s/veh]	38.06	38.06	51.00	51.54	51.10	51.10	56.85	29.46	19.73	52.88	16.21	17.23
Movement LOS	D	D	D	D	D	D	E	C	B	D	B	B
d_A, Approach Delay [s/veh]	45.45			51.34			28.53			19.90		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	26.39											
Intersection LOS	C											
Intersection V/C	0.843											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			0.00			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.366			1.995			0.000			3.219		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	514			114			667			952		
d_b, Bicycle Delay [s]	28.97			46.67			23.33			14.40		
I_b,int, Bicycle LOS Score for Intersection	2.230			1.649			2.841			2.753		
Bicycle LOS	B			A			C			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	33.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.763

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	290	285	71	268	621	126	163	1098	286	115	1164	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	290	285	71	268	621	126	163	1098	286	115	1164	102
Peak Hour Factor	0.8830	0.8830	0.8830	0.8790	0.8790	0.8790	0.9500	0.9500	0.9500	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	81	20	76	177	36	43	289	75	31	315	28
Total Analysis Volume [veh/h]	328	323	80	305	706	143	172	1156	301	125	1261	111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	30	0	21	35	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	24	24	12	24	24	6	42	42	6	42	42
g / C, Green / Cycle	0.12	0.24	0.24	0.12	0.24	0.24	0.06	0.42	0.42	0.06	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.10	0.12	0.12	0.09	0.21	0.09	0.05	0.29	0.29	0.04	0.27	0.27
s, saturation flow rate [veh/h]	3277	1772	1652	3277	3373	1506	3277	3373	1591	3277	3373	1699
c, Capacity [veh/h]	390	429	400	381	806	360	199	1427	673	194	1421	716
d1, Uniform Delay [s]	43.17	32.61	32.63	43.12	36.67	32.04	46.61	23.59	23.60	46.09	22.99	22.99
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.91	0.85	0.92	3.93	3.21	0.71	10.48	2.80	5.83	3.59	2.24	4.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.49	0.49	0.80	0.88	0.40	0.86	0.69	0.69	0.65	0.64	0.64
d, Delay for Lane Group [s/veh]	48.08	33.46	33.55	47.05	39.89	32.75	57.08	26.39	29.44	49.68	25.23	27.39
Lane Group LOS	D	C	C	D	D	C	E	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.20	4.39	4.12	3.86	8.52	2.96	2.40	9.75	9.78	1.61	8.68	9.18
50th-Percentile Queue Length [ft/ln]	105.12	109.80	103.05	96.39	212.95	73.96	59.97	243.71	244.48	40.23	217.11	229.43
95th-Percentile Queue Length [veh/ln]	7.57	7.83	7.42	6.94	13.30	5.33	4.32	14.87	14.91	2.90	13.52	14.15
95th-Percentile Queue Length [ft/ln]	189.19	195.73	185.49	173.50	332.62	133.13	107.95	371.72	372.70	72.42	337.93	353.64

Movement, Approach, & Intersection Results

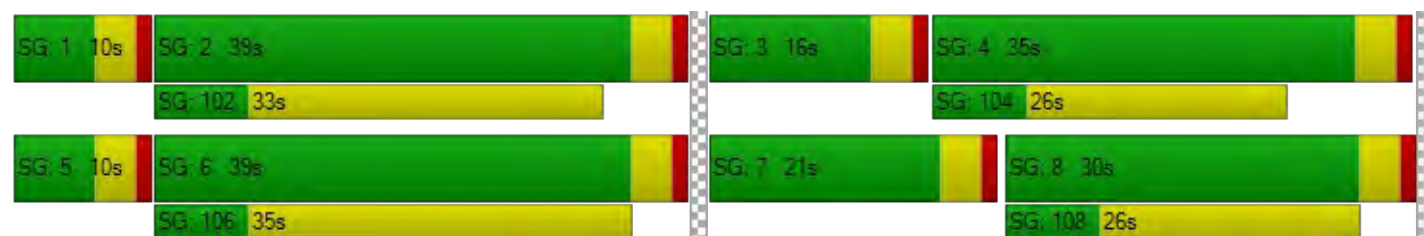
d_M, Delay for Movement [s/veh]	48.08	33.49	33.55	47.05	39.89	32.75	57.08	26.83	29.44	49.68	25.83	27.39
Movement LOS	D	C	C	D	D	C	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	40.04			40.89			30.50			27.94		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.52											
Intersection LOS	C											
Intersection V/C	0.763											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.760			2.844			3.140			3.101		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			620			700			700		
d_b, Bicycle Delay [s]	27.38			23.81			21.13			21.13		
I_b,int, Bicycle LOS Score for Intersection	2.163			2.512			2.456			2.383		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	38.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.712

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	77	552	334	201	745	366	383	843	76	305	802	169
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	552	334	201	745	366	383	843	76	305	802	169
Peak Hour Factor	0.9000	0.9000	0.9000	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550	0.9150	0.9150	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	153	93	53	195	96	100	221	20	83	219	46
Total Analysis Volume [veh/h]	86	613	371	210	778	382	401	883	80	333	877	185
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	43	43	13	45	45	23	46	0	18	41	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	29	48	9	31	54	19	51	51	14	46	46
g / C, Green / Cycle	0.06	0.25	0.40	0.08	0.26	0.45	0.16	0.43	0.43	0.12	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.05	0.18	0.25	0.06	0.23	0.25	0.12	0.18	0.05	0.10	0.21	0.21
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1618
c, Capacity [veh/h]	101	827	596	250	882	683	521	2065	644	385	1304	626
d1, Uniform Delay [s]	55.95	41.83	29.08	54.76	42.57	24.01	48.42	24.06	20.76	52.06	28.71	28.71
k, delay calibration	0.11	0.11	0.44	0.11	0.11	0.28	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.65	1.33	4.28	7.41	3.11	1.83	2.45	0.65	0.40	5.87	1.68	3.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.74	0.62	0.84	0.88	0.56	0.77	0.43	0.12	0.86	0.55	0.55
d, Delay for Lane Group [s/veh]	73.60	43.17	33.36	62.17	45.67	25.84	50.87	24.71	21.16	57.93	30.39	32.18
Lane Group LOS	E	D	C	E	D	C	D	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.08	8.50	9.21	3.39	11.37	8.20	5.93	5.95	1.44	5.24	8.30	8.28
50th-Percentile Queue Length [ft/ln]	76.92	212.55	230.28	84.81	284.26	204.90	148.22	148.71	35.92	130.91	207.58	206.98
95th-Percentile Queue Length [veh/ln]	5.54	13.28	14.19	6.11	16.90	12.89	9.92	9.95	2.59	8.99	13.03	13.00
95th-Percentile Queue Length [ft/ln]	138.45	332.10	354.71	152.66	422.51	322.27	248.05	248.71	64.65	224.73	325.73	324.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.60	43.17	33.36	62.17	45.67	25.84	50.87	24.71	21.16	57.93	30.71	32.18
Movement LOS	E	D	C	E	D	C	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	42.21			42.67			32.19			37.40		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	38.41											
Intersection LOS	D											
Intersection V/C	0.712											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.834			2.966			3.156			3.088		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			683			700			617		
d_b, Bicycle Delay [s]	27.34			26.00			25.35			28.70		
I_b,int, Bicycle LOS Score for Intersection	2.442			2.690			2.310			2.327		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.725

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	291	801	462	141	484	290	289	789	222	39	765	167
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	291	801	462	141	484	290	289	789	222	39	765	167
Peak Hour Factor	0.8670	0.8670	0.8670	0.8450	0.8450	0.8450	0.9130	0.9130	0.9130	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	231	133	42	143	86	79	216	61	11	210	46
Total Analysis Volume [veh/h]	336	924	533	167	573	343	317	864	243	43	841	184
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	49	0	12	44	44	16	47	47	12	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	36	8	31	47	12	55	72	5	48	48
g / C, Green / Cycle	0.11	0.30	0.07	0.26	0.39	0.10	0.46	0.60	0.04	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.10	0.27	0.05	0.12	0.23	0.10	0.26	0.16	0.01	0.21	0.21
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1614
c, Capacity [veh/h]	357	1010	220	1244	590	329	1556	909	128	1348	645
d1, Uniform Delay [s]	53.12	40.58	55.04	37.53	28.77	53.77	23.43	11.26	56.18	27.22	27.27
k, delay calibration	0.11	0.11	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.13	3.77	5.30	0.27	1.92	15.67	1.44	0.72	1.54	1.40	2.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.91	0.76	0.46	0.58	0.96	0.56	0.27	0.34	0.51	0.52
d, Delay for Lane Group [s/veh]	65.26	44.34	60.34	37.79	30.69	69.44	24.86	11.98	57.73	28.62	30.21
Lane Group LOS	E	D	E	D	C	E	C	B	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.62	13.55	2.65	4.77	8.04	5.48	9.06	3.18	0.66	7.71	7.72
50th-Percentile Queue Length [ft/ln]	140.62	338.76	66.14	119.19	201.09	136.88	226.50	79.42	16.57	192.84	192.93
95th-Percentile Queue Length [veh/ln]	9.51	19.59	4.76	8.35	12.69	9.31	14.00	5.72	1.19	12.27	12.27
95th-Percentile Queue Length [ft/ln]	237.86	489.69	119.06	208.72	317.37	232.81	349.90	142.95	29.83	306.72	306.83

Movement, Approach, & Intersection Results

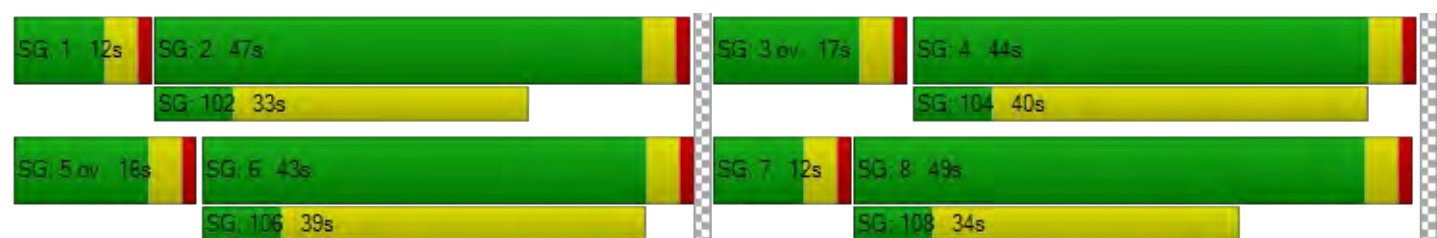
d_M, Delay for Movement [s/veh]	65.26	44.34	0.00	60.34	37.79	30.69	69.44	24.86	11.98	57.73	28.90	30.21
Movement LOS	E	D		E	D	C	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	49.92			39.02			32.59			30.29		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	38.04											
Intersection LOS	D											
Intersection V/C	0.725											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.997			3.045			3.098			2.900		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	750			667			717			650		
d_b, Bicycle Delay [s]	23.44			26.67			24.70			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.599			2.155			2.734			2.147		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-V

YEAR 2022 CUMULATIVE PLUS PROJECT
TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	26.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	53	151	98	155	327	75	83	1278	130	114	1321	63
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	53	151	98	155	327	75	83	1278	130	114	1321	63
Peak Hour Factor	0.8300	0.8300	0.8300	0.8190	0.8190	0.8190	0.8940	0.8940	0.8940	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	45	30	47	100	23	23	357	36	31	363	17
Total Analysis Volume [veh/h]	64	182	118	189	399	92	93	1430	145	125	1452	69
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	32	0	19	38	0	11	31	0	13	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	11	11	12	19	19	7	47	47	9	49	49
g / C, Green / Cycle	0.05	0.12	0.12	0.13	0.20	0.20	0.07	0.49	0.49	0.09	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.04	0.09	0.09	0.11	0.14	0.14	0.06	0.31	0.31	0.07	0.30	0.30
s, saturation flow rate [veh/h]	1687	1772	1547	1687	1772	1658	1687	3373	1689	1687	3373	1731
c, Capacity [veh/h]	89	211	184	223	352	329	118	1650	826	154	1722	884
d1, Uniform Delay [s]	44.38	40.49	40.69	40.37	35.65	35.69	43.54	18.02	18.03	42.41	16.23	16.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.42	5.03	6.95	8.69	2.77	3.01	10.87	1.88	3.73	9.62	1.45	2.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.72	0.74	0.78	0.85	0.72	0.72	0.79	0.64	0.64	0.81	0.58	0.58
d, Delay for Lane Group [s/veh]	54.80	45.52	47.64	49.06	38.42	38.70	54.41	19.90	21.76	52.03	17.69	19.05
Lane Group LOS	D	D	D	D	D	D	D	B	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.73	3.79	3.59	4.81	5.67	5.36	2.49	8.48	8.93	3.26	7.51	8.04
50th-Percentile Queue Length [ft/ln]	43.27	94.79	89.63	120.15	141.68	134.06	62.30	211.99	223.21	81.61	187.73	201.10
95th-Percentile Queue Length [veh/ln]	3.12	6.82	6.45	8.40	9.57	9.16	4.49	13.26	13.83	5.88	12.00	12.70
95th-Percentile Queue Length [ft/ln]	77.88	170.62	161.34	210.04	239.29	229.00	112.14	331.38	345.72	146.90	300.08	317.39

Movement, Approach, & Intersection Results

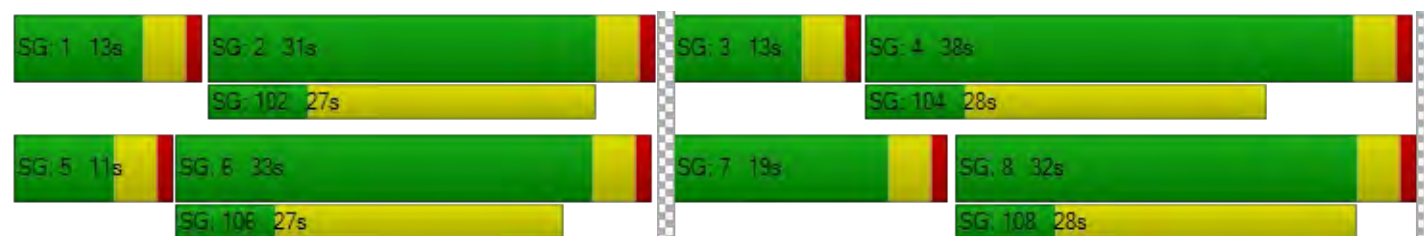
d_M, Delay for Movement [s/veh]	54.80	45.82	47.64	49.06	38.53	38.70	54.41	20.40	21.76	52.03	18.11	19.05
Movement LOS	D	D	D	D	D	D	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	47.99			41.48			22.41			20.72		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	26.89											
Intersection LOS	C											
Intersection V/C	0.710											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.504			2.502			3.052			3.067		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	589			716			568			611		
d_b, Bicycle Delay [s]	23.63			19.58			24.34			22.93		
I_b,int, Bicycle LOS Score for Intersection	1.860			2.121			2.477			2.465		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	42.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.881

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	226	344	150	122	872	253	87	1257	289	209	1361	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	226	344	150	122	872	253	87	1257	289	209	1361	137
Peak Hour Factor	0.8680	0.8680	0.8680	0.9380	0.9380	0.9380	0.9390	0.9390	0.9390	0.9470	0.9470	0.9470
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	99	43	33	232	67	23	335	77	55	359	36
Total Analysis Volume [veh/h]	260	396	173	130	930	270	93	1339	308	221	1437	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	39	0	18	42	0	12	42	0	21	51	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	36	36	11	36	36	8	40	40	17	49	49
g / C, Green / Cycle	0.09	0.30	0.30	0.09	0.30	0.30	0.07	0.34	0.34	0.14	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.08	0.12	0.11	0.08	0.28	0.18	0.06	0.28	0.20	0.13	0.31	0.31
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1690
c, Capacity [veh/h]	301	999	446	155	1000	446	113	1624	507	239	1388	695
d1, Uniform Delay [s]	53.75	33.68	33.58	53.60	41.02	36.20	55.29	36.56	33.21	50.86	30.23	30.27
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.14	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.27	0.26	0.55	11.15	4.54	1.70	13.63	4.90	5.34	13.95	3.94	7.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.40	0.39	0.84	0.93	0.60	0.82	0.82	0.61	0.92	0.76	0.76
d, Delay for Lane Group [s/veh]	61.02	33.93	34.13	64.75	45.56	37.90	68.92	41.47	38.55	64.81	34.18	37.96
Lane Group LOS	E	C	C	E	D	D	E	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.17	4.65	4.09	4.34	13.82	6.97	3.21	12.63	8.20	7.47	13.58	14.38
50th-Percentile Queue Length [ft/ln]	104.31	116.18	102.15	108.47	345.62	174.30	80.15	315.68	205.12	186.76	339.56	359.52
95th-Percentile Queue Length [veh/ln]	7.51	8.18	7.36	7.76	19.92	11.30	5.77	18.46	12.90	11.95	19.63	20.60
95th-Percentile Queue Length [ft/ln]	187.75	204.56	183.88	193.88	498.06	282.55	144.27	461.38	322.56	298.83	490.67	515.01

Movement, Approach, & Intersection Results

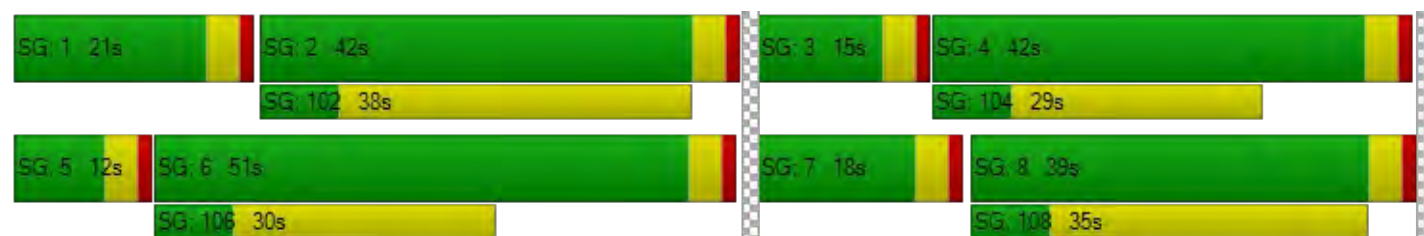
d_M, Delay for Movement [s/veh]	61.02	33.93	34.13	64.75	45.56	37.90	68.92	41.47	38.55	64.81	35.19	37.96
Movement LOS	E	C	C	E	D	D	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	42.47			45.88			42.42			39.04		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.17											
Intersection LOS	D											
Intersection V/C	0.881											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.926			2.786			3.191			3.088		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			633			633			783		
d_b, Bicycle Delay [s]	30.10			28.02			28.02			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.244			2.657			2.517			2.551		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:
Analysis Method:
Analysis Period:

Signalized
HCM 6th Edition
15 minutes

Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):

39.6
D
0.865

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	179	191	215	849	575	8	13	1279	206	463	1653	524
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	191	215	849	575	8	13	1279	206	463	1653	524
Peak Hour Factor	0.9130	0.9130	0.9130	0.9700	0.9700	0.9700	0.9540	0.9540	0.9540	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	52	59	219	148	2	3	335	54	121	433	137
Total Analysis Volume [veh/h]	196	209	235	875	593	8	14	1341	216	485	1733	549
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	17	0	40	44	0	11	39	0	24	52	52
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	13	13	13	35	39	39	2	37	37	20	54	93
g / C, Green / Cycle	0.08	0.11	0.11	0.11	0.29	0.32	0.32	0.02	0.31	0.31	0.16	0.45	0.77
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.09	0.09	0.27	0.17	0.17	0.00	0.24	0.24	0.15	0.36	0.36
s, saturation flow rate [veh/h]	3277	1772	1586	1506	3277	1772	1763	3277	4826	1614	3277	4826	1506
c, Capacity [veh/h]	248	194	173	164	947	571	569	64	1473	493	535	2167	1161
d1, Uniform Delay [s]	54.56	52.37	52.43	52.46	41.41	33.19	33.20	57.95	38.21	38.25	49.32	28.44	4.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.60	8.69	10.20	10.96	4.44	0.76	0.76	1.68	4.43	12.42	6.12	3.21	1.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.83	0.84	0.84	0.92	0.53	0.53	0.22	0.79	0.79	0.91	0.80	0.47
d, Delay for Lane Group [s/veh]	60.16	61.05	62.63	63.42	45.85	33.95	33.96	59.63	42.64	50.67	55.44	31.64	6.33
Lane Group LOS	E	E	E	E	D	C	C	E	D	D	E	C	A
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.11	5.19	4.78	4.60	13.02	7.27	7.24	0.22	10.99	12.17	7.58	14.58	4.53
50th-Percentile Queue Length [ft/ln]	77.65	129.7	119.4	114.8	325.40	181.63	181.07	5.62	274.68	304.15	189.40	364.52	113.13
95th-Percentile Queue Length [veh/ln]	5.59	8.93	8.36	8.11	18.93	11.69	11.66	0.40	16.42	17.89	12.09	20.84	8.01
95th-Percentile Queue Length [ft/ln]	139.7	223.2	209.0	202.7	473.32	292.14	291.41	10.11	410.59	447.15	302.24	521.07	200.35

Movement, Approach, & Intersection Results

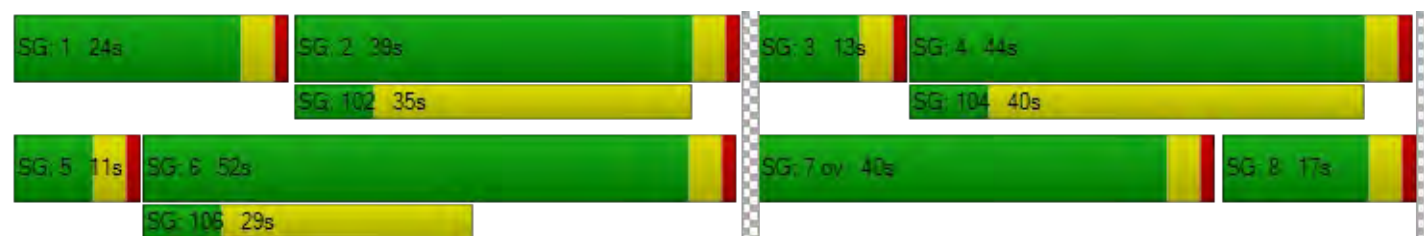
d_M, Delay for Movement [s/veh]	60.16	61.42	63.12	45.85	33.96	33.96	59.63	43.69	50.67	55.44	31.64	6.33
Movement LOS	E	E	E	D	C	C	E	D	D	E	C	A
d_A, Approach Delay [s/veh]	61.65			41.01			44.79			30.79		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	39.60											
Intersection LOS	D											
Intersection V/C	0.865											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.877			2.832			3.243			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	217			667			583			800		
d_b, Bicycle Delay [s]	47.70			26.67			30.10			21.60		
I_b,int, Bicycle LOS Score for Intersection	2.088			2.777			2.208			3.081		
Bicycle LOS	B			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	50.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.006

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				T T T			U U U			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1006	0	662	0	1770	577	213	2034	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1006	0	662	0	1770	577	213	2034	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8640	1.0000	0.8640	1.0000	0.9400	0.9400	0.9190	0.9190	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	291	0	192	0	471	153	58	553	0
Total Analysis Volume [veh/h]	0	0	0	1164	0	766	0	1883	614	232	2213	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	55	0	0	0	52	0	13	65	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		51	51	51	48	48	48	9	61
g / C, Green / Cycle		0.42	0.42	0.42	0.40	0.40	0.40	0.08	0.51
(v / s)_i Volume / Saturation Flow Rate		0.38	0.39	0.43	0.37	0.40	0.41	0.07	0.46
s, saturation flow rate [veh/h]		1687	1649	1506	3373	1568	1506	3277	4826
c, Capacity [veh/h]		715	699	638	1351	628	603	248	2460
d1, Uniform Delay [s]		32.20	32.66	34.56	34.31	35.93	35.94	55.13	26.63
k, delay calibration		0.39	0.41	0.47	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		13.66	16.66	36.82	12.52	35.80	41.19	14.93	5.82
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.90	0.92	1.01	0.93	1.00	1.02	0.94	0.90
d, Delay for Lane Group [s/veh]		45.86	49.32	71.38	46.84	71.73	77.14	70.06	32.44
Lane Group LOS		D	D	F	D	E	F	E	C
Critical Lane Group		No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		19.66	20.43	24.56	19.45	24.15	24.11	4.00	19.69
50th-Percentile Queue Length [ft/ln]		491.55	510.63	614.07	486.13	603.65	602.82	100.03	492.18
95th-Percentile Queue Length [veh/ln]		26.93	27.84	32.90	26.68	32.20	32.59	7.20	26.96
95th-Percentile Queue Length [ft/ln]		673.35	695.93	822.57	666.93	805.12	814.69	180.05	674.10

Movement, Approach, & Intersection Results

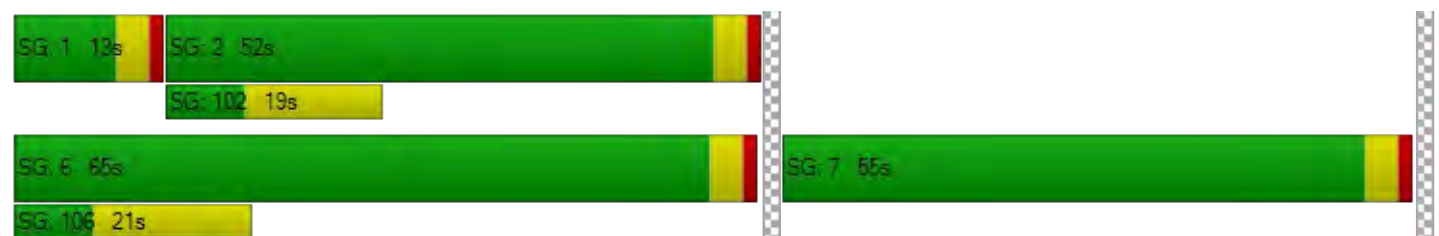
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	47.41	0.00	67.85	0.00	49.72	77.14	70.06	32.44	0.00
Movement LOS				D		E		D	E	E	C	
d_A, Approach Delay [s/veh]	0.00			55.52			60.54			36.01		
Approach LOS	A			E			E			D		
d_I, Intersection Delay [s/veh]	50.41											
Intersection LOS	D											
Intersection V/C	1.006											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.141	2.581	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	800	1017
d_b, Bicycle Delay [s]	60.00	60.00	21.60	14.50
I_b,int, Bicycle LOS Score for Intersection	4.132	7.317	2.933	2.904
Bicycle LOS	D	F	C	C

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	37.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.960

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	999	0	473	0	0	0	383	2384	0	0	1259	466
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	999	0	473	0	0	0	383	2384	0	0	1259	466
Peak Hour Factor	0.8940	1.0000	0.8940	1.0000	1.0000	1.0000	0.9710	0.9710	1.0000	1.0000	0.8830	0.8830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	279	0	132	0	0	0	99	614	0	0	356	132
Total Analysis Volume [veh/h]	1117	0	529	0	0	0	394	2455	0	0	1426	528
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	51	0	0	0	0	0	19	64	0	0	45	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	115	115		115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	44	44		15	63	44	44	44
g / C, Green / Cycle	0.38	0.38		0.13	0.55	0.38	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.34	0.35		0.12	0.51	0.29	0.32	0.32
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1550	1506
c, Capacity [veh/h]	1248	573		429	2652	1295	595	578
d1, Uniform Delay [s]	33.44	33.97		49.35	23.73	30.71	31.85	32.29
k, delay calibration	0.11	0.36		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.53	17.90		8.34	6.98	4.12	12.06	14.11
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.92		0.92	0.93	0.75	0.82	0.84
d, Delay for Lane Group [s/veh]	35.97	51.87		57.68	30.71	34.83	43.92	46.40
Lane Group LOS	D	D		E	C	C	D	D
Critical Lane Group	No	Yes		No	Yes	No	No	No
50th-Percentile Queue Length [veh/ln]	14.75	16.62		6.07	20.88	12.29	13.97	14.41
50th-Percentile Queue Length [ft/ln]	368.71	415.57		151.70	521.94	307.13	349.24	360.14
95th-Percentile Queue Length [veh/ln]	21.05	23.31		10.11	28.37	18.03	20.10	20.63
95th-Percentile Queue Length [ft/ln]	526.17	582.73		252.69	709.27	450.84	502.48	515.75

Movement, Approach, & Intersection Results

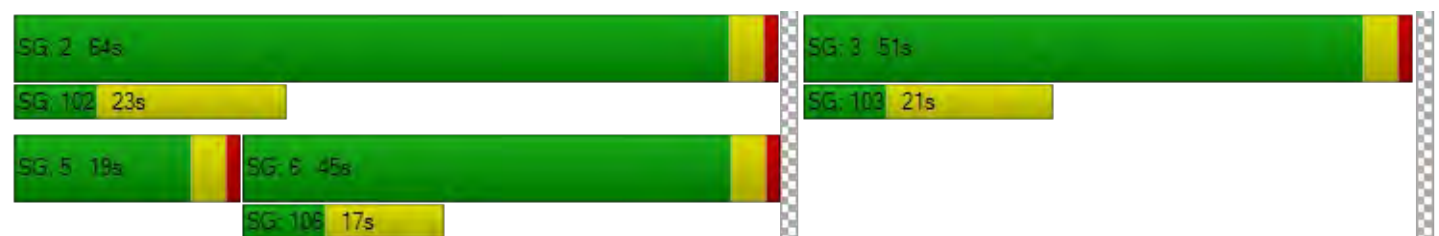
d_M, Delay for Movement [s/veh]	35.97	0.00	51.87	0.00	0.00	0.00	57.68	30.71	0.00	0.00	35.61	46.22
Movement LOS	D		D				E	C			D	D
d_A, Approach Delay [s/veh]	41.08			0.00			34.44			39.99		
Approach LOS	D			A			C			D		
d_I, Intersection Delay [s/veh]	37.82											
Intersection LOS	D											
Intersection V/C	0.960											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	0.00	47.03
I_p,int, Pedestrian LOS Score for Intersection	2.487	2.176	0.000	3.293
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	1043	713
d_b, Bicycle Delay [s]	57.50	57.50	13.15	23.81
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	3.127	2.634
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	34.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.907

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	280	108	37	19	206	311	93	648	1018	263	740	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	280	108	37	19	206	311	93	648	1018	263	740	12
Peak Hour Factor	0.7870	0.7870	0.7870	0.8900	0.8900	0.8900	0.9170	0.9170	0.9170	0.9370	0.9370	0.9370
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	34	12	5	58	87	25	177	278	70	197	3
Total Analysis Volume [veh/h]	356	137	47	21	231	349	101	707	1110	281	790	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	53	53	10	44	0	20	37	37	15	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	41	56	3	29	29	9	44	63	11	46	46
g / C, Green / Cycle	0.13	0.36	0.49	0.03	0.25	0.25	0.07	0.38	0.55	0.10	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.11	0.08	0.03	0.01	0.13	0.23	0.06	0.21	0.42	0.09	0.16	0.16
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1757
c, Capacity [veh/h]	429	635	737	45	450	383	126	1281	1453	315	1353	705
d1, Uniform Delay [s]	48.77	25.66	15.47	55.22	36.80	41.66	52.39	28.01	20.39	51.41	24.47	24.47
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.22	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.21	0.17	0.04	7.48	0.91	15.13	11.01	1.72	3.86	8.60	0.85	1.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.22	0.06	0.47	0.51	0.91	0.80	0.55	0.76	0.89	0.39	0.39
d, Delay for Lane Group [s/veh]	52.97	25.83	15.51	62.70	37.71	56.79	63.40	29.73	24.25	60.00	25.32	26.10
Lane Group LOS	D	C	B	E	D	E	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.22	2.64	0.66	0.69	5.68	11.13	3.25	7.87	11.84	4.37	5.24	5.61
50th-Percentile Queue Length [ft/ln]	130.56	66.11	16.48	17.33	141.98	278.20	81.34	196.82	296.11	109.32	130.97	140.33
95th-Percentile Queue Length [veh/ln]	8.97	4.76	1.19	1.25	9.59	16.60	5.86	12.47	17.49	7.80	8.99	9.50
95th-Percentile Queue Length [ft/ln]	224.26	118.99	29.66	31.20	239.69	414.97	146.40	311.86	437.22	195.06	224.82	237.47

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.97	25.83	15.51	62.70	37.71	56.79	63.40	29.73	24.25	60.00	25.58	26.10
Movement LOS	D	C	B	E	D	E	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	42.83			49.66			28.33			34.51		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	34.93											
Intersection LOS	C											
Intersection V/C	0.907											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.816			2.350			3.153			2.865		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	852			696			574			487		
d_b, Bicycle Delay [s]	18.94			24.46			29.23			32.91		
I_b,int, Bicycle LOS Score for Intersection	2.451			2.551			3.142			2.156		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	29.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.564

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	35	457	214	350	1008	59	47	68	11	317	70	231
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	35	457	214	350	1008	59	47	68	11	317	70	231
Peak Hour Factor	0.8300	0.8300	0.8300	0.9210	0.9210	0.9210	0.8710	0.8710	0.8710	0.7670	0.7670	0.7670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	138	64	95	274	16	13	20	3	103	23	75
Total Analysis Volume [veh/h]	42	551	258	380	1094	64	54	78	13	413	91	301
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	15	30	0	20	35	0	15	37	0	33	55	55
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	5	62	62	16	74	74	5	8	18	21	41
g / C, Green / Cycle	0.04	0.52	0.52	0.13	0.61	0.61	0.04	0.07	0.15	0.17	0.34
(v / s)_i Volume / Saturation Flow Rate	0.02	0.16	0.17	0.12	0.23	0.23	0.03	0.05	0.13	0.05	0.20
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1722	1687	1728	3277	1772	1506
c, Capacity [veh/h]	65	1745	779	438	2066	1055	72	116	486	307	512
d1, Uniform Delay [s]	56.91	16.71	16.87	50.96	11.66	11.66	56.85	55.12	49.83	43.28	32.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.25	0.48	1.14	5.33	0.51	1.00	14.50	10.82	4.27	0.53	1.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.32	0.33	0.87	0.37	0.37	0.75	0.78	0.85	0.30	0.59
d, Delay for Lane Group [s/veh]	67.16	17.18	18.01	56.29	12.17	12.66	71.35	65.95	54.10	43.81	33.76
Lane Group LOS	E	B	B	E	B	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.44	4.46	4.35	5.91	5.11	5.36	1.91	3.06	6.32	2.41	7.35
50th-Percentile Queue Length [ft/ln]	36.06	111.41	108.78	147.84	127.73	134.01	47.75	76.52	157.95	60.35	183.74
95th-Percentile Queue Length [veh/ln]	2.60	7.92	7.77	9.90	8.82	9.16	3.44	5.51	10.44	4.35	11.80
95th-Percentile Queue Length [ft/ln]	64.90	197.96	194.31	247.54	220.40	228.93	85.95	137.74	261.01	108.64	294.89

Movement, Approach, & Intersection Results

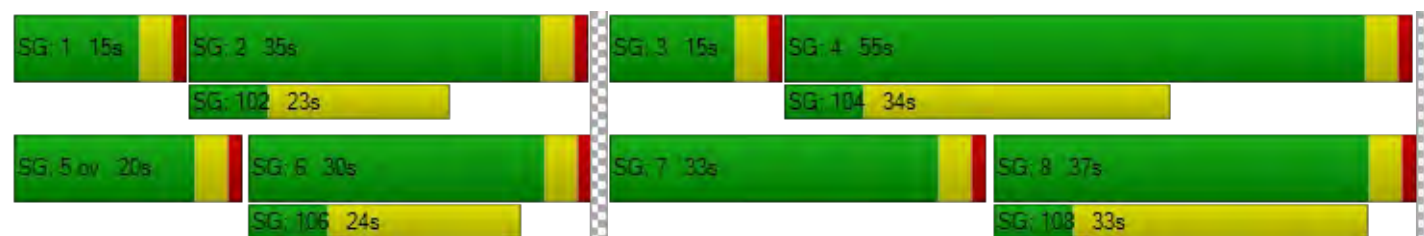
d_M, Delay for Movement [s/veh]	67.16	17.18	18.01	56.29	12.32	12.66	71.35	65.95	65.95	54.10	43.81	33.76
Movement LOS	E	B	B	E	B	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	19.90			23.20			67.96			45.33		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	29.64											
Intersection LOS	C											
Intersection V/C	0.564											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.938			3.037			2.065			2.714		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	433			517			550			850		
d_b, Bicycle Delay [s]	36.82			33.00			31.54			19.84		
I_b,int, Bicycle LOS Score for Intersection	2.028			2.406			1.799			2.888		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	15.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.401

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	33	41	85	36	35	25	38	575	98	70	525	42
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	33	41	85	36	35	25	38	575	98	70	525	42
Peak Hour Factor	0.8140	0.8140	0.8140	0.7190	0.7190	0.7190	0.8220	0.8220	0.8220	0.8940	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	10	13	26	13	12	9	12	175	30	20	147	12
Total Analysis Volume [veh/h]	41	50	104	50	49	35	46	700	119	78	587	47
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	12	30	0	32	50	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	12	12	4	70	70	6	71	71
g / C, Green / Cycle	0.12	0.12	0.12	0.12	0.12	0.04	0.70	0.70	0.06	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.07	0.04	0.05	0.03	0.24	0.24	0.05	0.17	0.03
s, saturation flow rate [veh/h]	1314	1772	1506	1355	1650	1687	1772	1683	1687	3373	1506
c, Capacity [veh/h]	142	220	187	173	205	73	1234	1172	100	2403	1073
d1, Uniform Delay [s]	46.28	39.49	41.22	44.45	40.43	47.02	6.03	6.03	46.38	5.00	4.27
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.11	0.52	2.59	0.91	1.32	8.45	0.75	0.79	12.15	0.24	0.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.29	0.23	0.56	0.29	0.41	0.63	0.34	0.34	0.78	0.24	0.04
d, Delay for Lane Group [s/veh]	47.39	40.01	43.80	45.36	41.75	55.47	6.78	6.82	58.54	5.25	4.34
Lane Group LOS	D	D	D	D	D	E	A	A	E	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.03	1.13	2.53	1.23	1.97	1.29	3.32	3.17	2.24	1.90	0.27
50th-Percentile Queue Length [ft/ln]	25.86	28.36	63.21	30.69	49.29	32.31	82.90	79.14	55.98	47.47	6.78
95th-Percentile Queue Length [veh/ln]	1.86	2.04	4.55	2.21	3.55	2.33	5.97	5.70	4.03	3.42	0.49
95th-Percentile Queue Length [ft/ln]	46.54	51.05	113.78	55.24	88.73	58.17	149.21	142.45	100.77	85.45	12.20

Movement, Approach, & Intersection Results

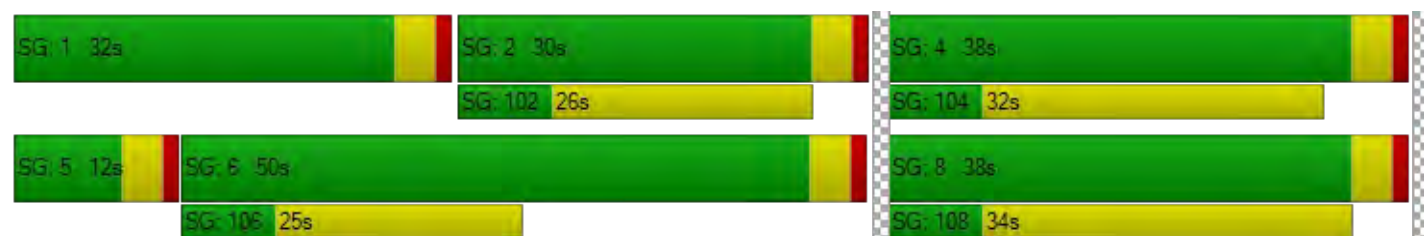
d_M, Delay for Movement [s/veh]	47.39	40.01	43.80	45.36	41.75	41.75	55.47	6.80	6.82	58.54	5.25	4.34
Movement LOS	D	D	D	D	D	D	E	A	A	E	A	A
d_A, Approach Delay [s/veh]	43.59			43.09			9.39			11.02		
Approach LOS	D			D			A			B		
d_I, Intersection Delay [s/veh]	15.87											
Intersection LOS	B											
Intersection V/C	0.401											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.243			2.035			2.661			2.783		
Crosswalk LOS	B			B			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			520			920		
d_b, Bicycle Delay [s]	21.78			21.78			27.38			14.58		
I_b,int, Bicycle LOS Score for Intersection	1.881			1.781			2.273			2.147		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	42.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	74	179	97	632	900	204	99	499	46	80	550	275
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	179	97	632	900	204	99	499	46	80	550	275
Peak Hour Factor	0.8430	0.8430	0.8430	0.8910	0.8910	0.8910	0.8600	0.8600	0.8600	0.7640	0.7640	0.7640
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	22	53	29	177	253	57	29	145	13	26	180	90
Total Analysis Volume [veh/h]	88	212	115	709	1010	229	115	580	53	105	720	360
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	39	0	32	53	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	26	26	28	48	48	6	45	45	6	44	44
g / C, Green / Cycle	0.05	0.22	0.22	0.23	0.40	0.40	0.05	0.37	0.37	0.05	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.03	0.06	0.08	0.22	0.35	0.37	0.04	0.17	0.04	0.03	0.21	0.24
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1663	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	156	727	324	756	706	662	165	1254	560	160	1249	558
d1, Uniform Delay [s]	55.92	39.42	40.00	45.34	33.41	34.62	56.09	28.61	24.55	56.09	30.26	31.28
k, delay calibration	0.11	0.11	0.11	0.11	0.27	0.31	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.15	0.22	0.66	6.36	8.61	15.69	5.22	1.23	0.34	4.49	1.94	5.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.56	0.29	0.35	0.94	0.88	0.94	0.70	0.46	0.09	0.66	0.58	0.65
d, Delay for Lane Group [s/veh]	59.07	39.64	40.65	51.70	42.02	50.31	61.31	29.84	24.89	60.58	32.20	36.96
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.37	2.65	2.96	10.97	18.04	19.83	1.83	6.54	1.04	1.66	8.63	9.45
50th-Percentile Queue Length [ft/ln]	34.34	66.34	73.89	274.19	450.92	495.76	45.87	163.48	26.11	41.59	215.65	236.20
95th-Percentile Queue Length [veh/ln]	2.47	4.78	5.32	16.40	25.00	27.13	3.30	10.73	1.88	2.99	13.44	14.49
95th-Percentile Queue Length [ft/ln]	61.81	119.41	133.00	409.97	625.05	678.33	82.56	268.32	47.00	74.86	336.06	362.22

Movement, Approach, & Intersection Results

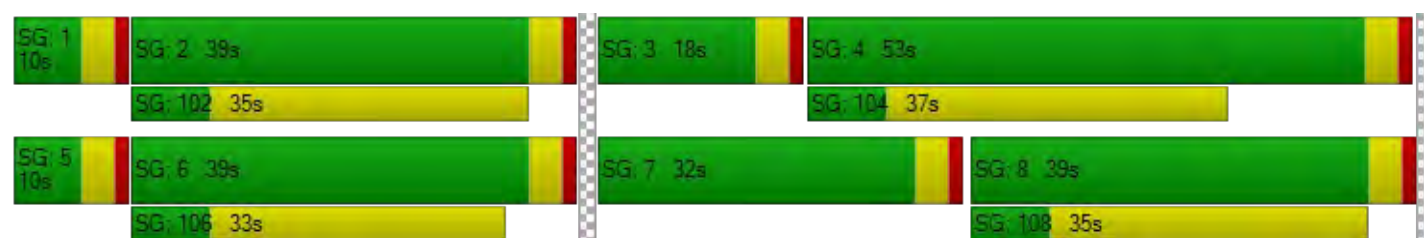
d_M, Delay for Movement [s/veh]	59.07	39.64	40.65	51.70	45.23	50.31	61.31	29.84	24.89	60.58	32.20	36.96
Movement LOS	E	D	D	D	D	D	E	C	C	E	C	D
d_A, Approach Delay [s/veh]	44.04			48.18			34.32			36.16		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	42.05											
Intersection LOS	D											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.828			2.895			2.856			2.968		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			817			583			583		
d_b, Bicycle Delay [s]	30.10			21.00			30.10			30.10		
I_b,int, Bicycle LOS Score for Intersection	1.902			3.167			2.177			2.537		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.863

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	230	6	309	54	28	8	2	919	297	342	748	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	230	6	309	54	28	8	2	919	297	342	748	10
Peak Hour Factor	0.8160	0.8160	0.8160	0.7410	0.7410	0.7410	0.8560	0.8560	0.8560	0.9140	0.9140	0.9140
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	2	95	18	9	3	1	268	87	94	205	3
Total Analysis Volume [veh/h]	282	7	379	73	38	11	2	1074	347	374	818	11
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	61	61	0	37	0	10	38	0	21	49	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	27	48	11	11	0	64	64	17	80	80
g / C, Green / Cycle	0.11	0.23	0.40	0.09	0.09	0.00	0.53	0.53	0.14	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.09	0.00	0.25	0.05	0.03	0.00	0.41	0.42	0.11	0.23	0.23
s, saturation flow rate [veh/h]	3277	1772	1506	1408	1704	1687	1772	1626	3277	1772	1763
c, Capacity [veh/h]	346	403	606	157	151	7	940	863	465	1185	1179
d1, Uniform Delay [s]	52.55	35.99	28.64	54.86	51.37	59.60	22.57	22.86	49.89	8.61	8.61
k, delay calibration	0.11	0.11	0.46	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.70	0.02	4.41	2.12	1.24	20.33	6.41	7.48	3.30	0.82	0.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.02	0.63	0.46	0.33	0.28	0.78	0.80	0.80	0.35	0.35
d, Delay for Lane Group [s/veh]	57.24	36.01	33.04	56.98	52.61	79.93	28.99	30.34	53.19	9.43	9.43
Lane Group LOS	E	D	C	E	D	E	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.38	0.16	9.37	2.26	1.44	0.10	17.68	16.94	5.64	4.69	4.67
50th-Percentile Queue Length [ft/ln]	109.57	4.07	234.35	56.49	35.99	2.52	441.97	423.51	141.12	117.27	116.79
95th-Percentile Queue Length [veh/ln]	7.82	0.29	14.40	4.07	2.59	0.18	24.57	23.69	9.54	8.24	8.22
95th-Percentile Queue Length [ft/ln]	195.40	7.32	359.88	101.69	64.78	4.53	614.36	592.26	238.53	206.07	205.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.24	36.01	33.04	56.98	52.61	52.61	79.93	29.42	30.34	53.19	9.43	9.43
Movement LOS	E	D	C	E	D	D	E	C	C	D	A	A
d_A, Approach Delay [s/veh]	43.29			55.23			29.71			23.04		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.93											
Intersection LOS	C											
Intersection V/C	0.863											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.699			2.000			2.808			3.014		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	950			550			567			750		
d_b, Bicycle Delay [s]	16.54			31.54			30.82			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.662			1.761			2.734			2.552		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.820

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	5	153	2	441	312	853	16	8	728	79
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	5	153	2	441	312	853	16	8	728	79
Peak Hour Factor	0.5500	0.5500	0.5500	0.8490	0.8490	0.8490	0.8890	0.8890	0.8890	0.8800	0.8800	0.8800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	2	45	1	130	88	240	4	2	207	22
Total Analysis Volume [veh/h]	5	5	9	180	2	519	351	960	18	9	827	90
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	44	36	0	40	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	3	3	29	29	70	30	71	71	2	42	42
g / C, Green / Cycle	0.02	0.02	0.02	0.24	0.24	0.58	0.25	0.59	0.59	0.01	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.01	0.05	0.05	0.34	0.21	0.28	0.28	0.01	0.25	0.06
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1689	1506	1687	1772	1760	1687	3373	1506
c, Capacity [veh/h]	75	43	37	404	404	879	427	1044	1037	23	1180	527
d1, Uniform Delay [s]	58.93	57.29	57.47	36.72	36.72	15.88	42.27	14.02	14.02	58.68	33.63	27.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.18	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.37	1.16	3.37	0.28	0.28	2.91	6.53	1.52	1.53	9.94	3.49	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.12	0.24	0.23	0.23	0.59	0.82	0.47	0.47	0.38	0.70	0.17
d, Delay for Lane Group [s/veh]	59.30	58.45	60.83	37.00	37.00	18.78	48.80	15.54	15.56	68.62	37.12	27.70
Lane Group LOS	E	E	E	D	D	B	D	B	B	E	D	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.16	0.16	0.30	2.19	2.19	9.42	10.53	7.76	7.72	0.34	10.87	1.90
50th-Percentile Queue Length [ft/ln]	3.97	4.07	7.58	54.80	54.85	235.55	263.23	193.96	193.02	8.41	271.70	47.55
95th-Percentile Queue Length [veh/ln]	0.29	0.29	0.55	3.95	3.95	14.46	15.85	12.33	12.28	0.61	16.27	3.42
95th-Percentile Queue Length [ft/ln]	7.14	7.32	13.64	98.64	98.73	361.40	396.27	308.17	306.94	15.14	406.86	85.59

Movement, Approach, & Intersection Results

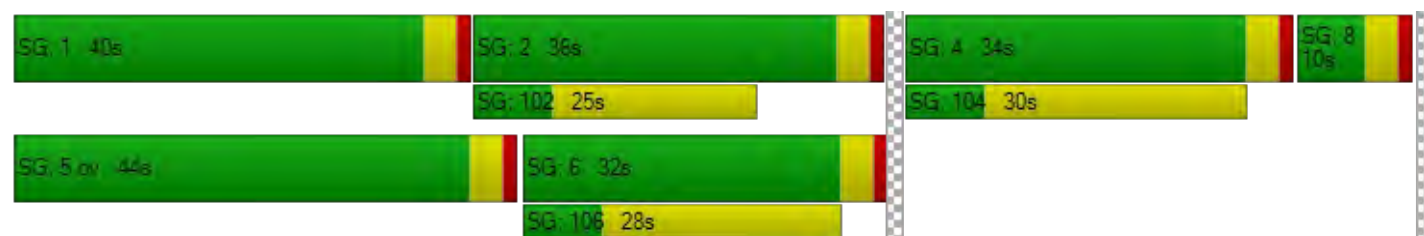
d_M, Delay for Movement [s/veh]	59.30	58.45	60.83	37.00	37.00	18.78	48.80	15.55	15.56	68.62	37.12	27.70
Movement LOS	E	E	E	D	D	B	D	B	B	E	D	C
d_A, Approach Delay [s/veh]	59.80			23.51			24.33			36.51		
Approach LOS	E			C			C			D		
d_I, Intersection Delay [s/veh]	28.16											
Intersection LOS	C											
Intersection V/C	0.820											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.157			2.424			2.843			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			500			533			467		
d_b, Bicycle Delay [s]	54.15			33.75			32.27			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.591			2.716			2.656			2.324		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	38.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	131	211	90	432	967	181	43	566	338	61	430	211
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	131	211	90	432	967	181	43	566	338	61	430	211
Peak Hour Factor	0.8520	0.8520	0.8520	0.8550	0.8550	0.8550	0.9040	0.9040	0.9040	0.7250	0.7250	0.7250
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	62	26	126	283	53	12	157	93	21	148	73
Total Analysis Volume [veh/h]	154	248	106	505	1131	212	48	626	374	84	593	291
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	37	0	26	52	0	11	46	0	11	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	43	43	21	57	57	5	33	33	7	35	35
g / C, Green / Cycle	0.06	0.36	0.36	0.17	0.47	0.47	0.04	0.28	0.28	0.06	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.08	0.15	0.27	0.27	0.03	0.19	0.25	0.05	0.18	0.19
s, saturation flow rate [veh/h]	3277	3373	1523	3277	3373	1633	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	193	1220	551	561	1598	774	69	927	414	100	989	441
d1, Uniform Delay [s]	55.77	26.32	26.45	48.76	22.70	22.75	56.85	38.76	42.00	55.94	36.39	37.18
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.25	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.26	0.36	0.86	5.60	1.45	3.02	12.01	0.87	15.10	16.92	0.59	1.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.20	0.21	0.90	0.57	0.57	0.70	0.68	0.90	0.84	0.60	0.66
d, Delay for Lane Group [s/veh]	63.04	26.68	27.31	54.36	24.16	25.77	68.86	39.63	57.09	72.86	36.98	38.92
Lane Group LOS	E	C	C	D	C	C	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.50	2.43	2.42	7.83	9.36	9.46	1.67	8.29	12.33	2.99	7.52	7.67
50th-Percentile Queue Length [ft/ln]	62.45	60.68	60.38	195.67	233.91	236.51	41.69	207.32	308.20	74.70	187.96	191.77
95th-Percentile Queue Length [veh/ln]	4.50	4.37	4.35	12.41	14.37	14.50	3.00	13.02	18.09	5.38	12.02	12.21
95th-Percentile Queue Length [ft/ln]	112.41	109.22	108.68	310.37	359.32	362.62	75.05	325.39	452.15	134.45	300.38	305.33

Movement, Approach, & Intersection Results

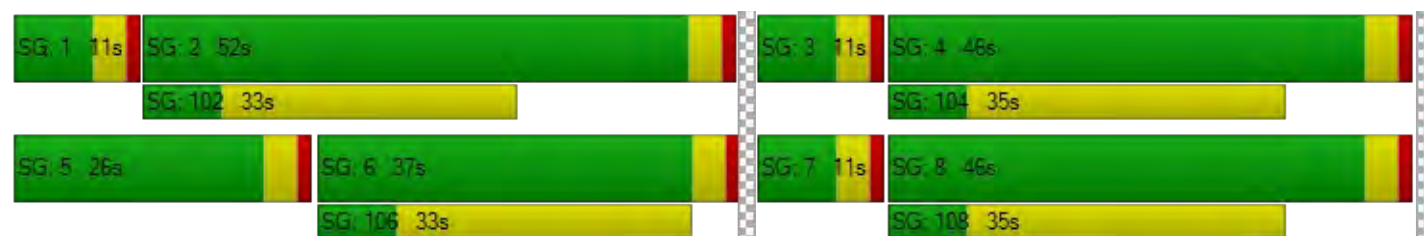
d_M, Delay for Movement [s/veh]	63.04	26.70	27.31	54.36	24.48	25.77	68.86	39.63	57.09	72.86	36.98	38.92
Movement LOS	E	C	C	D	C	C	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	37.84			32.79			47.20			40.68		
Approach LOS	D			C			D			D		
d_I, Intersection Delay [s/veh]	38.58											
Intersection LOS	D											
Intersection V/C	0.709											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.995			3.036			2.793			2.825		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			800			700			700		
d_b, Bicycle Delay [s]	31.54			21.60			25.35			25.35		
I_b,int, Bicycle LOS Score for Intersection	1.839			2.576			2.424			2.358		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 13: Randolph Avenue at Madison Way**

Control Type:	Signalized	Delay (sec / veh):	18.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.162

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	25	142	8	6	127	13	31	2	56	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	25	142	8	6	127	13	31	2	56	0	0	0
Peak Hour Factor	0.9010	0.9010	0.9010	0.6500	0.6500	0.6500	0.5970	0.5970	0.5970	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	39	2	2	49	5	13	1	23	0	0	0
Total Analysis Volume [veh/h]	28	158	9	9	195	20	52	3	94	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	26	0	10	26	0	0	64	0	0	64	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	78	78	1	76	76	9	9	9	9
g / C, Green / Cycle	0.03	0.78	0.78	0.01	0.76	0.76	0.09	0.09	0.09	0.09
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.05	0.01	0.06	0.06	0.04	0.06	0.00	0.00
s, saturation flow rate [veh/h]	1687	1772	1738	1687	1772	1715	1417	1513	1298	1772
c, Capacity [veh/h]	57	1382	1356	24	1348	1305	168	129	80	151
d1, Uniform Delay [s]	47.50	2.54	2.54	48.83	3.04	3.05	45.12	44.69	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.57	0.08	0.09	9.13	0.12	0.12	1.04	8.40	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.06	0.06	0.37	0.08	0.08	0.31	0.75	0.00	0.00
d, Delay for Lane Group [s/veh]	54.07	2.62	2.63	57.96	3.16	3.17	46.16	53.08	0.00	0.00
Lane Group LOS	D	A	A	E	A	A	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.79	0.31	0.31	0.28	0.47	0.47	1.29	2.64	0.00	0.00
50th-Percentile Queue Length [ft/ln]	19.65	7.84	7.81	7.08	11.85	11.74	32.28	65.91	0.00	0.00
95th-Percentile Queue Length [veh/ln]	1.41	0.56	0.56	0.51	0.85	0.85	2.32	4.75	0.00	0.00
95th-Percentile Queue Length [ft/ln]	35.36	14.12	14.06	12.75	21.32	21.13	58.10	118.64	0.00	0.00

Movement, Approach, & Intersection Results

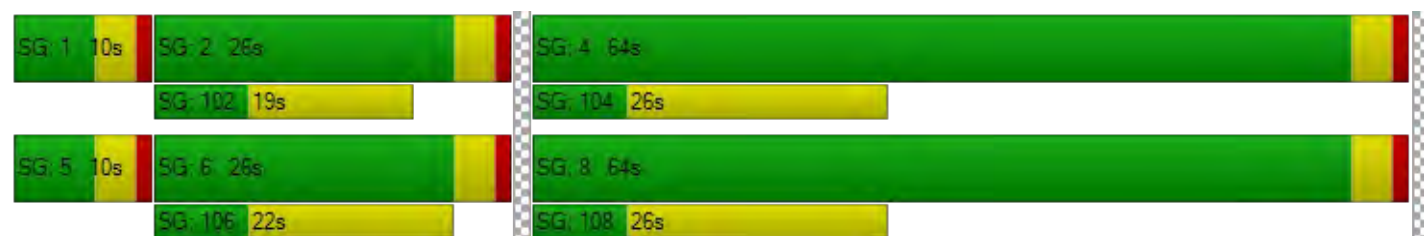
d_M, Delay for Movement [s/veh]	54.07	2.62	2.63	57.96	3.16	3.17	46.16	53.08	53.08	0.00	0.00	0.00
Movement LOS	D	A	A	E	A	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	10.01			5.36			50.67			0.00		
Approach LOS	B			A			D			A		
d_I, Intersection Delay [s/veh]	18.84											
Intersection LOS	B											
Intersection V/C	0.162											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.399			2.463			2.009			1.952		
Crosswalk LOS	B			B			B			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	440			440			1200			1200		
d_b, Bicycle Delay [s]	30.42			30.42			8.00			8.00		
I_b,int, Bicycle LOS Score for Intersection	1.720			1.744			1.805			1.560		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	17.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.202

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	12	160	126	25	138	6	1	0	1	104	0	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	160	126	25	138	6	1	0	1	104	0	19
Peak Hour Factor	0.8280	0.8280	0.8280	0.9050	0.9050	0.9050	0.2500	0.2500	0.2500	0.6000	0.6000	0.6000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	48	38	7	38	2	1	0	1	43	0	8
Total Analysis Volume [veh/h]	14	193	152	28	152	7	4	0	4	173	0	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	29	0	10	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	78	71	71	78	72	72	1	1	8	8
g / C, Green / Cycle	0.78	0.71	0.71	0.78	0.72	0.72	0.01	0.01	0.08	0.08
(v / s)_i Volume / Saturation Flow Rate	0.01	0.10	0.11	0.03	0.04	0.05	0.00	0.00	0.06	0.06
s, saturation flow rate [veh/h]	1251	1772	1523	1080	1772	1744	1687	1506	1687	1625
c, Capacity [veh/h]	1062	1257	1080	908	1280	1260	21	19	144	138
d1, Uniform Delay [s]	2.41	4.71	4.74	2.50	4.04	4.04	48.90	48.92	44.62	44.66
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.24	0.30	0.06	0.09	0.10	4.21	5.42	6.69	7.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.14	0.15	0.03	0.06	0.06	0.19	0.21	0.72	0.73
d, Delay for Lane Group [s/veh]	2.41	4.95	5.04	2.56	4.13	4.13	53.12	54.34	51.31	51.87
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.05	1.12	1.04	0.11	0.43	0.43	0.12	0.13	2.76	2.71
50th-Percentile Queue Length [ft/ln]	1.15	28.09	26.07	2.64	10.86	10.82	3.08	3.18	69.01	67.75
95th-Percentile Queue Length [veh/ln]	0.08	2.02	1.88	0.19	0.78	0.78	0.22	0.23	4.97	4.88
95th-Percentile Queue Length [ft/ln]	2.07	50.56	46.93	4.75	19.55	19.48	5.55	5.72	124.22	121.96

Movement, Approach, & Intersection Results

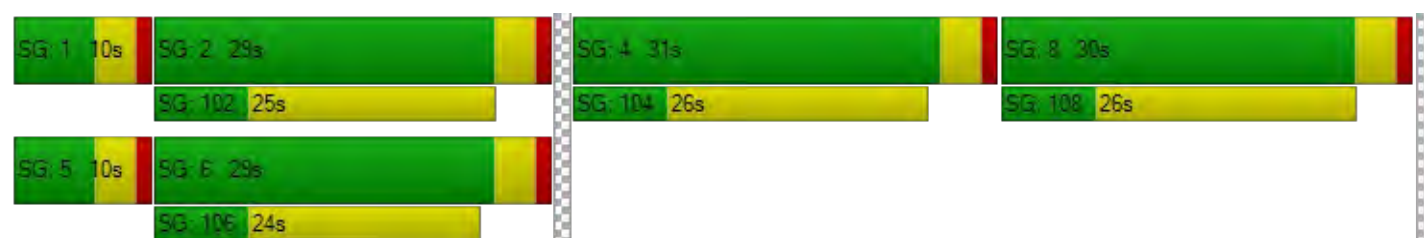
d_M, Delay for Movement [s/veh]	2.41	4.95	5.04	2.56	4.13	4.13	53.12	53.12	54.34	51.54	51.87	51.87
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	4.89			3.90			53.73			51.59		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	17.77											
Intersection LOS	B											
Intersection V/C	0.202											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.439			2.386			1.969			2.099		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			500			520			540		
d_b, Bicycle Delay [s]	28.13			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	1.856			1.714			1.573			1.898		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.350

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	31	5	14	16	2	71	152	286	14	27	437	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	31	5	14	16	2	71	152	286	14	27	437	26
Peak Hour Factor	0.5830	0.5830	0.5830	0.5500	0.5500	0.5500	0.8240	0.8240	0.8240	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	13	2	6	7	1	32	46	87	4	7	116	7
Total Analysis Volume [veh/h]	53	9	24	29	4	129	184	347	17	29	464	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	36	41	0	27	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	6	6	30	11	84	84	4	77	77
g / C, Green / Cycle	0.05	0.05	0.05	0.05	0.05	0.26	0.09	0.73	0.73	0.03	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.01	0.03	0.02	0.02	0.00	0.09	0.06	0.10	0.10	0.02	0.14	0.14
s, saturation flow rate [veh/h]	1417	1553	1506	1687	1612	1506	3277	1772	1743	1687	1772	1736
c, Capacity [veh/h]	110	133	74	89	85	398	305	1288	1267	54	1180	1156
d1, Uniform Delay [s]	52.68	53.41	52.84	52.54	51.76	34.03	50.12	4.78	4.78	54.84	7.46	7.47
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.67	1.47	2.49	2.12	0.23	0.47	1.91	0.23	0.24	8.04	0.41	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.34	0.32	0.33	0.05	0.32	0.60	0.14	0.14	0.54	0.21	0.21
d, Delay for Lane Group [s/veh]	53.35	54.88	55.32	54.65	51.99	34.50	52.03	5.01	5.02	62.88	7.87	7.88
Lane Group LOS	D	D	E	D	D	C	D	A	A	E	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.51	1.31	0.72	0.86	0.12	2.96	2.62	1.27	1.26	0.95	2.38	2.34
50th-Percentile Queue Length [ft/ln]	12.72	32.79	18.05	21.51	2.88	74.04	65.60	31.78	31.40	23.71	59.39	58.57
95th-Percentile Queue Length [veh/ln]	0.92	2.36	1.30	1.55	0.21	5.33	4.72	2.29	2.26	1.71	4.28	4.22
95th-Percentile Queue Length [ft/ln]	22.89	59.02	32.49	38.72	5.18	133.27	118.08	57.20	56.53	42.68	106.90	105.42

Movement, Approach, & Intersection Results

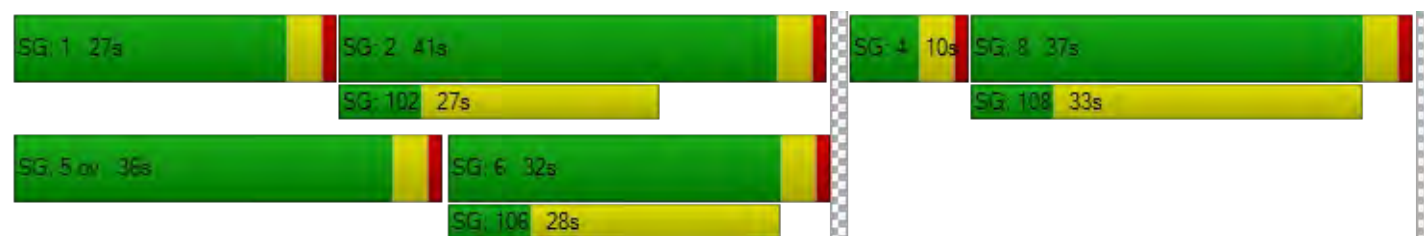
d_M, Delay for Movement [s/veh]	54.33	54.88	55.32	54.65	51.99	34.50	52.03	5.01	5.02	62.88	7.88	7.88
Movement LOS	D	D	E	D	D	C	D	A	A	E	A	A
d_A, Approach Delay [s/veh]	54.69			38.54			20.80			10.94		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	21.29											
Intersection LOS	C											
Intersection V/C	0.350											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			0.00			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.338			2.386			0.000			2.491		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	574			104			643			487		
d_b, Bicycle Delay [s]	29.23			51.66			26.45			32.91		
I_b,int, Bicycle LOS Score for Intersection	1.702			1.693			2.012			1.989		
Bicycle LOS	A			A			B			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	51.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.994

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	297	687	254	159	1238	299	293	1314	354	277	1183	166
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	297	687	254	159	1238	299	293	1314	354	277	1183	166
Peak Hour Factor	0.8230	0.8230	0.8230	0.9630	0.9630	0.9630	0.8630	0.8630	0.8630	0.9800	0.9800	0.9800
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	209	77	41	321	78	85	381	103	71	302	42
Total Analysis Volume [veh/h]	361	835	309	165	1286	310	340	1523	410	283	1207	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	44	0	12	39	0	19	50	0	14	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	39	39	8	34	34	14	47	47	10	42	42
g / C, Green / Cycle	0.11	0.33	0.33	0.07	0.29	0.29	0.12	0.39	0.39	0.08	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.11	0.17	0.21	0.05	0.27	0.21	0.10	0.39	0.40	0.09	0.25	0.11
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1590	3277	4826	1506
c, Capacity [veh/h]	356	1578	492	217	1374	429	392	1315	620	274	1707	533
d1, Uniform Delay [s]	53.50	32.87	34.20	55.10	41.86	38.67	51.90	36.36	36.62	55.00	33.42	28.23
k, delay calibration	0.11	0.11	0.18	0.11	0.11	0.24	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	25.89	0.28	2.14	5.40	3.67	5.07	5.91	22.29	41.66	34.07	2.50	1.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.53	0.63	0.76	0.94	0.72	0.87	0.99	1.02	1.03	0.71	0.32
d, Delay for Lane Group [s/veh]	79.39	33.15	36.34	60.50	45.54	43.74	57.81	58.66	78.28	89.07	35.92	29.79
Lane Group LOS	F	C	D	E	D	D	E	E	F	F	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.63	6.61	7.88	2.62	12.70	8.78	5.34	22.56	24.92	5.43	10.42	3.79
50th-Percentile Queue Length [ft/ln]	165.87	165.28	197.06	65.43	317.54	219.39	133.56	563.93	623.03	135.85	260.41	94.67
95th-Percentile Queue Length [veh/ln]	10.92	10.83	12.49	4.71	18.55	13.63	9.13	30.35	33.62	9.36	15.71	6.82
95th-Percentile Queue Length [ft/ln]	273.04	270.70	312.17	117.77	463.66	340.85	228.33	758.66	840.60	233.99	392.73	170.41

Movement, Approach, & Intersection Results

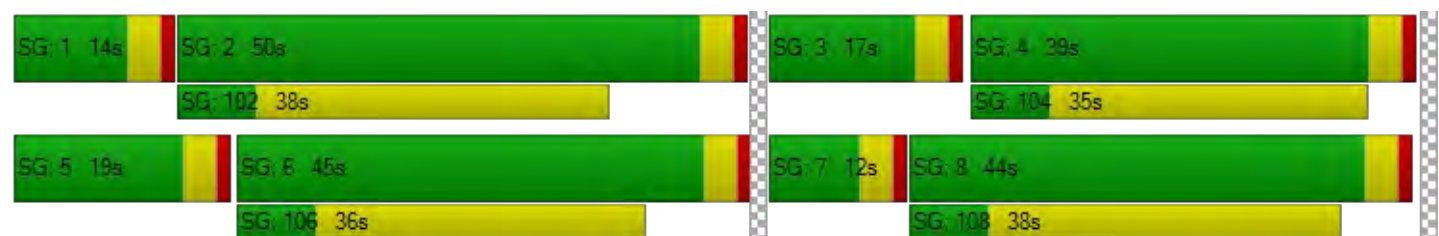
d_M, Delay for Movement [s/veh]	79.39	33.15	36.34	60.50	45.54	43.74	57.81	61.53	78.28	89.07	35.92	29.79
Movement LOS	F	C	D	E	D	D	E	E	E	F	D	C
d_A, Approach Delay [s/veh]	44.89			46.62			64.00			44.36		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	51.23											
Intersection LOS	D											
Intersection V/C	0.994											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.240			3.199			3.245			3.259		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			583			767			683		
d_b, Bicycle Delay [s]	26.67			30.10			22.82			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.387			2.528			2.810			2.472		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	58	111	159	122	82	131	214	1351	76	56	1435	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	58	111	159	122	82	131	214	1351	76	56	1435	156
Peak Hour Factor	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510	0.8710	0.8710	0.8710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	16	31	44	36	24	38	61	388	22	14	371	40
Total Analysis Volume [veh/h]	65	124	178	143	96	154	246	1551	87	58	1484	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	28	36	0	26	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	22	22	22	22	17	62	62	5	50	50
g / C, Green / Cycle	0.22	0.22	0.22	0.22	0.22	0.22	0.17	0.62	0.62	0.05	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.12	0.11	0.03	0.10	0.15	0.32	0.32	0.03	0.31	0.11
s, saturation flow rate [veh/h]	1299	1772	1506	1267	3373	1506	1687	3373	1724	1687	4826	1506
c, Capacity [veh/h]	299	384	326	248	731	326	280	2075	1061	81	2401	749
d1, Uniform Delay [s]	35.83	32.99	34.79	41.78	31.58	34.18	40.74	10.90	10.91	46.92	18.22	14.13
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.36	0.48	1.42	2.11	0.08	1.06	8.76	0.94	1.85	11.10	1.20	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.22	0.32	0.55	0.58	0.13	0.47	0.88	0.52	0.52	0.72	0.62	0.21
d, Delay for Lane Group [s/veh]	36.19	33.47	36.22	43.89	31.66	35.24	49.50	11.84	12.76	58.02	19.43	14.79
Lane Group LOS	D	C	D	D	C	D	D	B	B	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.40	2.57	3.94	3.54	0.94	3.34	6.52	6.48	6.91	1.67	8.17	2.13
50th-Percentile Queue Length [ft/ln]	35.04	64.25	98.55	88.45	23.54	83.42	163.10	162.09	172.86	41.63	204.13	53.24
95th-Percentile Queue Length [veh/ln]	2.52	4.63	7.10	6.37	1.69	6.01	10.71	10.66	11.23	3.00	12.85	3.83
95th-Percentile Queue Length [ft/ln]	63.08	115.66	177.39	159.20	42.37	150.15	267.82	266.49	280.67	74.93	321.29	95.83

Movement, Approach, & Intersection Results

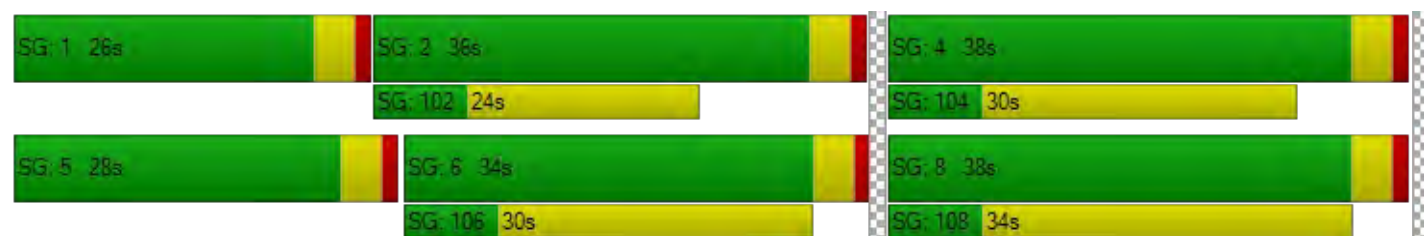
d_M, Delay for Movement [s/veh]	36.19	33.47	36.22	43.89	31.66	35.24	49.50	12.12	12.76	58.02	19.43	14.79
Movement LOS	D	C	D	D	C	D	D	B	B	E	B	B
d_A, Approach Delay [s/veh]	35.28			37.51			17.03			20.30		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	21.70											
Intersection LOS	C											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.423			2.485			3.191			3.369		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			640			600		
d_b, Bicycle Delay [s]	21.78			21.78			23.12			24.50		
I_b,int, Bicycle LOS Score for Intersection	2.165			1.884			2.596			2.496		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	58.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.040

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	419	473	155	141	970	200	157	1510	342	166	1618	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	419	473	155	141	970	200	157	1510	342	166	1618	73
Peak Hour Factor	0.7960	0.7960	0.7960	0.9500	0.9500	0.9500	0.9210	0.9210	0.9210	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	149	49	37	255	53	43	410	93	48	465	21
Total Analysis Volume [veh/h]	526	594	195	148	1021	211	170	1640	371	191	1862	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	43	0	19	39	0	10	47	0	11	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	46	46	7	35	35	6	43	43	7	44	44
g / C, Green / Cycle	0.16	0.39	0.39	0.06	0.29	0.29	0.05	0.36	0.36	0.06	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.16	0.12	0.13	0.05	0.30	0.14	0.05	0.34	0.25	0.06	0.39	0.06
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	519	1865	582	205	980	437	164	1734	541	192	1774	554
d1, Uniform Delay [s]	50.50	25.76	25.95	55.24	42.58	35.13	57.00	37.32	32.69	56.48	37.95	25.42
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	21.76	0.10	0.34	4.79	26.06	0.83	41.63	12.12	6.92	29.32	35.74	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.32	0.34	0.72	1.04	0.48	1.03	0.95	0.69	1.00	1.05	0.15
d, Delay for Lane Group [s/veh]	72.26	25.86	26.29	60.03	68.63	35.96	98.62	49.43	39.61	85.81	73.69	26.00
Lane Group LOS	F	C	C	E	F	D	F	D	D	F	F	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.33	3.98	3.99	2.33	17.87	5.19	3.44	17.26	10.14	3.67	22.90	1.71
50th-Percentile Queue Length [ft/ln]	233.26	99.48	99.64	58.37	446.83	129.80	86.06	431.39	253.55	91.79	572.47	42.74
95th-Percentile Queue Length [veh/ln]	14.43	7.16	7.17	4.20	25.45	8.93	6.20	24.07	15.36	6.61	31.80	3.08
95th-Percentile Queue Length [ft/ln]	360.78	179.07	179.35	105.07	636.36	223.22	154.90	601.71	384.12	165.21	794.92	76.92

Movement, Approach, & Intersection Results

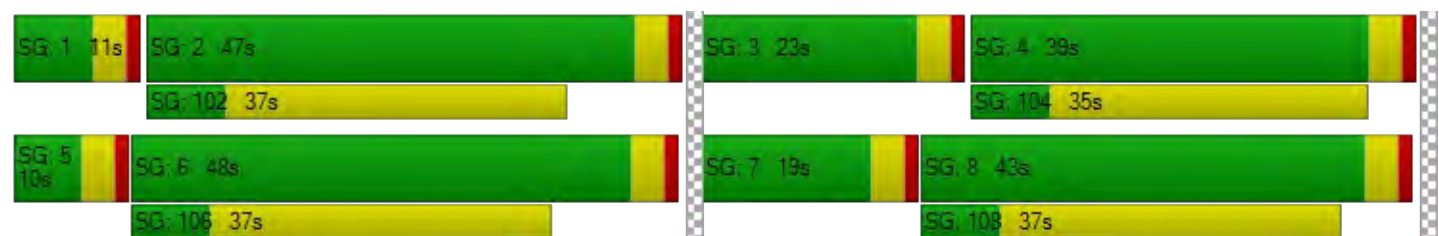
d_M, Delay for Movement [s/veh]	72.26	25.86	26.29	60.03	68.63	35.96	98.62	49.43	39.61	85.81	73.69	26.00
Movement LOS	F	C	C	E	F	D	F	D	D	F	F	C
d_A, Approach Delay [s/veh]	44.48			62.71			51.60			72.90		
Approach LOS	D			E			D			E		
d_I, Intersection Delay [s/veh]	58.94											
Intersection LOS	E											
Intersection V/C	1.040											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.092			3.011			3.381			3.309		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			583			717			733		
d_b, Bicycle Delay [s]	27.34			30.10			24.70			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.283			2.698			2.759			2.735		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	16.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.660

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	52	165	13	65	104	1538	9	24	1671	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	52	165	13	65	104	1538	9	24	1671	154
Peak Hour Factor	0.7700	0.7700	0.7700	0.8070	0.8070	0.8070	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	17	51	4	20	29	430	3	7	491	45
Total Analysis Volume [veh/h]	18	17	68	204	16	81	116	1718	10	28	1964	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	40	0	10	40	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	9	9	6	65	65	3	63	63
g / C, Green / Cycle	0.07	0.07	0.07	0.09	0.09	0.06	0.65	0.65	0.03	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.05	0.06	0.06	0.04	0.34	0.34	0.02	0.41	0.12
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1544	3277	3373	1766	1687	4826	1506
c, Capacity [veh/h]	115	120	93	295	139	192	2188	1146	57	3010	939
d1, Uniform Delay [s]	43.97	43.92	45.77	44.21	44.23	46.01	9.31	9.32	47.55	11.96	8.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.53	10.45	2.89	6.16	3.05	0.88	1.68	6.49	1.12	0.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.14	0.73	0.69	0.70	0.60	0.52	0.52	0.49	0.65	0.19
d, Delay for Lane Group [s/veh]	44.60	44.46	56.23	47.09	50.39	49.06	10.20	10.99	54.03	13.07	8.52
Lane Group LOS	D	D	E	D	D	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	0.41	1.92	2.56	2.56	1.48	6.11	6.66	0.79	8.64	1.67
50th-Percentile Queue Length [ft/ln]	10.98	10.33	47.97	63.93	63.97	37.05	152.87	166.49	19.64	215.89	41.76
95th-Percentile Queue Length [veh/ln]	0.79	0.74	3.45	4.60	4.61	2.67	10.17	10.89	1.41	13.45	3.01
95th-Percentile Queue Length [ft/ln]	19.77	18.60	86.34	115.07	115.14	66.70	254.26	272.30	35.35	336.37	75.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.60	44.46	56.23	47.09	50.39	50.39	49.06	10.47	10.99	54.03	13.07	8.52
Movement LOS	D	D	E	D	D	D	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	52.25			48.16			12.90			13.22		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	16.37											
Intersection LOS	B											
Intersection V/C	0.660											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.174			2.425			3.206			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	120			720			720			720		
d_b, Bicycle Delay [s]	44.18			20.48			20.48			20.48		
I_b,int, Bicycle LOS Score for Intersection	1.645			2.056			2.574			2.755		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.944

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Peak Hour Factor	0.9050	0.9050	0.9050	0.9420	0.9420	0.9420	0.9090	0.9090	0.9090	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	46	107	54	101	7	9	431	51	117	479	64
Total Analysis Volume [veh/h]	118	185	430	217	406	28	35	1724	204	469	1914	254
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	15	42	0	16	43	0	10	40	0	22	52	52
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	36	36	12	42	42	4	38	38	18	52	68
g / C, Green / Cycle	0.05	0.30	0.30	0.10	0.35	0.35	0.03	0.32	0.32	0.15	0.43	0.57
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.29	0.09	0.12	0.12	0.01	0.30	0.30	0.14	0.40	0.17
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1732	3277	4826	1651	3277	4826	1506
c, Capacity [veh/h]	170	1012	452	237	617	603	113	1527	522	492	2084	851
d1, Uniform Delay [s]	55.94	31.09	41.14	53.50	29.09	29.10	56.53	39.92	39.92	50.59	32.09	13.64
k, delay calibration	0.11	0.11	0.39	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.97	0.09	27.04	13.30	0.35	0.36	1.53	12.70	27.14	10.79	7.98	0.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.18	0.95	0.92	0.36	0.36	0.31	0.94	0.94	0.95	0.92	0.30
d, Delay for Lane Group [s/veh]	60.91	31.18	68.18	66.80	29.44	29.45	58.06	52.62	67.07	61.38	40.07	14.54
Lane Group LOS	E	C	E	E	C	C	E	D	E	E	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.88	2.01	15.69	3.68	4.77	4.68	0.54	15.37	17.87	7.70	18.52	3.76
50th-Percentile Queue Length [ft/ln]	46.88	50.30	392.35	91.91	119.26	116.94	13.56	384.28	446.73	192.53	463.01	94.01
95th-Percentile Queue Length [veh/ln]	3.38	3.62	22.19	6.62	8.35	8.22	0.98	21.80	24.80	12.25	25.58	6.77
95th-Percentile Queue Length [ft/ln]	84.39	90.54	554.78	165.44	208.81	205.61	24.41	545.02	620.04	306.31	639.46	169.22

Movement, Approach, & Intersection Results

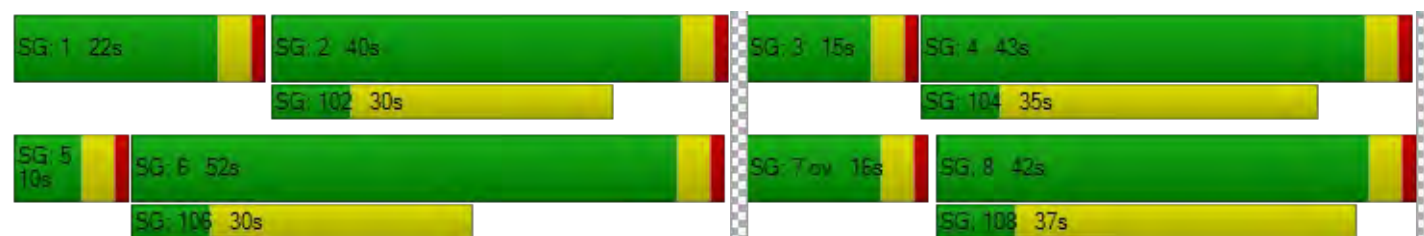
d_M, Delay for Movement [s/veh]	60.91	31.18	68.18	66.80	29.44	29.45	58.06	55.03	67.07	61.38	40.07	14.54
Movement LOS	E	C	E	E	C	C	E	E	E	E	D	B
d_A, Approach Delay [s/veh]	57.67			41.90			56.33			41.40		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	48.35											
Intersection LOS	D											
Intersection V/C	0.944											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.860			2.649			3.299			3.469		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			650			600			800		
d_b, Bicycle Delay [s]	28.02			27.34			29.40			21.60		
I_b,int, Bicycle LOS Score for Intersection	2.164			2.097			2.369			3.010		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.756

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↰↱↲			↲			↲		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	577	0	493	0	1440	768	0	1903	195
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	577	0	493	0	1440	768	0	1903	195
Peak Hour Factor	1.0000	1.0000	1.0000	0.8810	1.0000	0.8810	1.0000	0.9270	0.9270	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	164	0	140	0	388	207	0	506	52
Total Analysis Volume [veh/h]	0	0	0	655	0	560	0	1553	828	0	2024	207
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		28	28	28	54	54
g / C, Green / Cycle		0.31	0.31	0.31	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate		0.24	0.25	0.27	0.32	0.42
s, saturation flow rate [veh/h]		1687	1613	1506	4826	4826
c, Capacity [veh/h]		528	505	472	2884	2884
d1, Uniform Delay [s]		27.88	28.29	28.98	10.72	12.52
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.36	3.01	4.67	0.73	1.45
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.80	0.86	0.54	0.70
d, Delay for Lane Group [s/veh]		30.24	31.30	33.65	11.44	13.97
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		7.94	8.13	8.51	5.67	8.73
50th-Percentile Queue Length [ft/ln]		198.57	203.27	212.70	141.79	218.18
95th-Percentile Queue Length [veh/ln]		12.56	12.81	13.29	9.58	13.57
95th-Percentile Queue Length [ft/ln]		314.12	320.18	332.29	239.43	339.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	30.64	0.00	33.00	0.00	11.44	0.00	0.00	13.97	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			31.73			11.44			13.97		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	17.65											
Intersection LOS	B											
Intersection V/C	0.756											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.427			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.137			2.414			2.673		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1029	189	768	0	0	136	180	1297	529	0	1440	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1029	189	768	0	0	136	180	1297	529	0	1440	20
Peak Hour Factor	0.9080	0.9080	0.9080	1.0000	1.0000	0.6820	0.8790	0.8790	0.8790	1.0000	0.8940	0.8940
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	283	52	211	0	0	50	51	369	150	0	403	6
Total Analysis Volume [veh/h]	1133	208	846	0	0	199	205	1476	602	0	1611	22
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	62	0	0	0	19	19	53	0	0	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	48	48	48	15	15	59	40	40
g / C, Green / Cycle	0.42	0.42	0.42	0.13	0.13	0.51	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.33	0.34	0.37	0.07	0.12	0.31	0.25	0.23
s, saturation flow rate [veh/h]	3277	1614	1506	2665	1687	4826	4826	1755
c, Capacity [veh/h]	1375	677	632	349	221	2465	1665	606
d1, Uniform Delay [s]	28.85	29.51	30.66	46.91	49.41	19.81	33.03	32.12
k, delay calibration	0.11	0.23	0.27	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.01	5.26	9.44	1.47	15.39	1.08	2.93	5.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.82	0.88	0.57	0.93	0.60	0.74	0.67
d, Delay for Lane Group [s/veh]	29.86	34.76	40.10	48.38	64.81	20.90	35.96	38.03
Lane Group LOS	C	C	D	D	E	C	D	D
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.75	14.22	15.40	2.75	6.75	9.28	10.31	10.58
50th-Percentile Queue Length [ft/ln]	318.85	355.47	385.07	68.66	168.75	231.97	257.87	264.62
95th-Percentile Queue Length [veh/ln]	18.61	20.40	21.84	4.94	11.01	14.27	15.58	15.92
95th-Percentile Queue Length [ft/ln]	465.27	510.07	545.98	123.59	275.28	356.86	389.54	398.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	30.04	34.76	38.21	0.00	0.00	48.38	64.81	20.90	0.00	0.00	36.46	38.03
Movement LOS	C	C	D			D	E	C			D	D
d_A, Approach Delay [s/veh]	33.70			48.38			26.25			36.48		
Approach LOS	C			D			C			D		
d_I, Intersection Delay [s/veh]	32.81											
Intersection LOS	C											
Intersection V/C	0.830											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.738	2.158	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1009	0	852	522
d_b, Bicycle Delay [s]	14.13	57.50	18.94	31.41
I_b,int, Bicycle LOS Score for Intersection	5.168	4.132	2.484	2.233
Bicycle LOS	F	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	32.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.830

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	145	208	68	157	325	143	143	1795	98	88	1584	80
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	145	208	68	157	325	143	143	1795	98	88	1584	80
Peak Hour Factor	0.8870	0.8870	0.8870	0.9320	0.9320	0.9320	0.9120	0.9120	0.9120	0.9620	0.9620	0.9620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	59	19	42	87	38	39	492	27	23	412	21
Total Analysis Volume [veh/h]	163	234	77	168	349	153	157	1968	107	91	1647	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	39	0	19	47	0	16	41	0	11	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	24	24	8	24	24	12	56	56	7	51	51
g / C, Green / Cycle	0.06	0.21	0.21	0.07	0.22	0.22	0.11	0.51	0.51	0.06	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.05	0.09	0.09	0.05	0.20	0.10	0.09	0.41	0.41	0.05	0.26	0.26
s, saturation flow rate [veh/h]	3277	1772	1625	3277	1772	1506	1687	3373	1725	1687	4826	1716
c, Capacity [veh/h]	211	379	348	233	391	332	185	1704	872	109	2221	790
d1, Uniform Delay [s]	50.71	37.39	37.47	50.08	41.63	37.21	48.15	22.69	22.81	50.94	21.81	21.81
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.92	0.75	0.85	4.21	7.19	0.99	10.40	4.13	8.03	15.27	1.09	3.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.42	0.43	0.72	0.89	0.46	0.85	0.80	0.81	0.84	0.57	0.57
d, Delay for Lane Group [s/veh]	56.63	38.14	38.32	54.29	48.83	38.21	58.55	26.82	30.83	66.21	22.90	24.84
Lane Group LOS	E	D	D	D	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.38	3.81	3.59	2.40	9.88	3.66	4.75	15.05	16.52	2.94	8.08	9.05
50th-Percentile Queue Length [ft/ln]	59.50	95.29	89.74	59.91	247.12	91.48	118.71	376.37	413.11	73.39	202.08	226.29
95th-Percentile Queue Length [veh/ln]	4.28	6.86	6.46	4.31	15.04	6.59	8.32	21.42	23.19	5.28	12.75	13.99
95th-Percentile Queue Length [ft/ln]	107.10	171.52	161.52	107.83	376.03	164.66	208.06	535.45	579.77	132.10	318.65	349.64

Movement, Approach, & Intersection Results

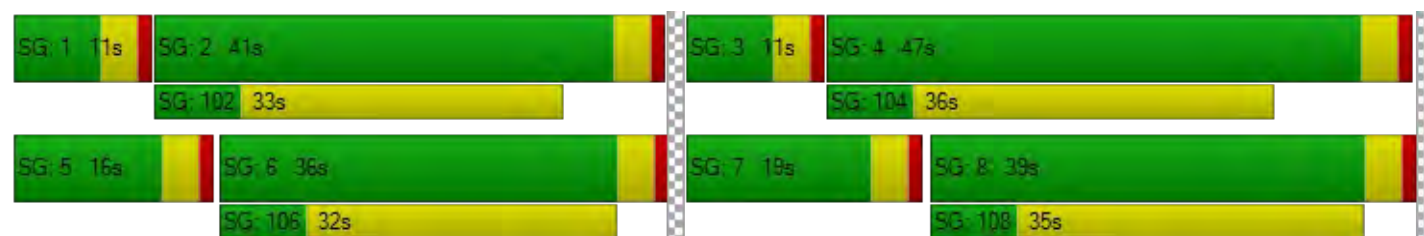
d_M, Delay for Movement [s/veh]	56.63	38.19	38.32	54.29	48.83	38.21	58.55	28.04	30.83	66.21	23.34	24.84
Movement LOS	E	D	D	D	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	44.55			47.77			30.32			25.55		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	32.20											
Intersection LOS	C											
Intersection V/C	0.830											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.509			2.648			3.246			3.227		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			782			673			582		
d_b, Bicycle Delay [s]	25.57			20.40			24.22			27.65		
I_b,int, Bicycle LOS Score for Intersection	1.951			2.665			2.787			2.311		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	21.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	179	11	138	24	27	13	12	1759	353	167	1438	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	179	11	138	24	27	13	12	1759	353	167	1438	31
Peak Hour Factor	0.8320	0.8320	0.8320	0.6740	0.6740	0.6740	0.9510	0.9510	0.9510	0.8930	0.8930	0.8930
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	54	3	41	9	10	5	3	462	93	47	403	9
Total Analysis Volume [veh/h]	215	13	166	36	40	19	13	1850	371	187	1610	35
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	22	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	5	5	2	44	44	12	54	54
g / C, Green / Cycle	0.14	0.14	0.14	0.06	0.06	0.02	0.49	0.49	0.13	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.07	0.07	0.11	0.02	0.04	0.01	0.38	0.25	0.11	0.32	0.32
s, saturation flow rate [veh/h]	1687	1696	1506	1687	1676	1687	4826	1506	1687	3373	1752
c, Capacity [veh/h]	233	235	208	104	103	34	2364	738	224	2033	1056
d1, Uniform Delay [s]	35.90	35.90	37.63	40.57	41.15	43.65	19.03	15.57	38.13	10.47	10.48
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.57	1.57	6.83	1.97	4.90	7.13	2.67	2.44	7.91	1.00	1.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.49	0.80	0.35	0.57	0.39	0.78	0.50	0.83	0.53	0.53
d, Delay for Lane Group [s/veh]	37.48	37.47	44.47	42.54	46.05	50.78	21.69	18.01	46.05	11.48	12.40
Lane Group LOS	D	D	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.38	2.39	3.88	0.82	1.40	0.35	10.43	5.35	4.45	5.88	6.38
50th-Percentile Queue Length [ft/ln]	59.51	59.81	97.04	20.38	35.02	8.76	260.86	133.74	111.33	146.97	159.62
95th-Percentile Queue Length [veh/ln]	4.28	4.31	6.99	1.47	2.52	0.63	15.73	9.14	7.91	9.86	10.53
95th-Percentile Queue Length [ft/ln]	107.11	107.65	174.68	36.68	63.04	15.76	393.29	228.56	197.85	246.39	263.22

Movement, Approach, & Intersection Results

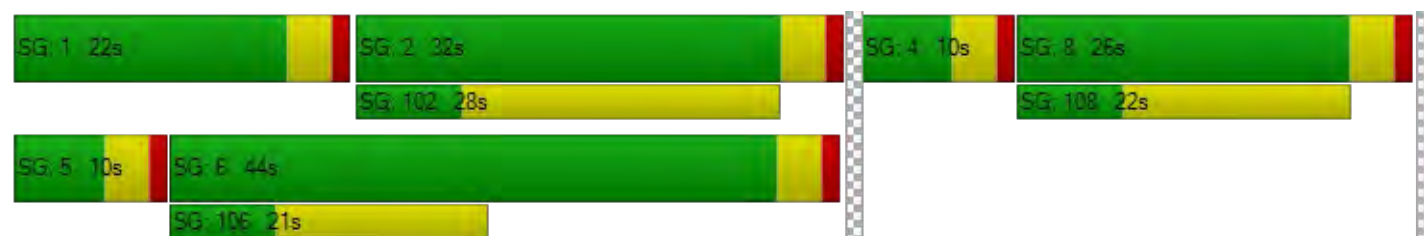
d_M, Delay for Movement [s/veh]	37.47	37.47	44.47	42.54	46.05	46.05	50.78	21.69	18.01	46.05	11.78	12.40
Movement LOS	D	D	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	40.42			44.72			21.25			15.29		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	21.00											
Intersection LOS	C											
Intersection V/C	0.778											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			0.00			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.372			1.990			0.000			3.134		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	489			133			622			889		
d_b, Bicycle Delay [s]	25.69			39.20			21.36			13.89		
I_b,int, Bicycle LOS Score for Intersection	2.210			1.716			2.788			2.567		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.732

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TLO			TLO			TLO			TLO		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	168	233	81	311	614	106	129	1231	234	68	1049	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	168	233	81	311	614	106	129	1231	234	68	1049	84
Peak Hour Factor	0.8020	0.8020	0.8020	0.9340	0.9340	0.9340	0.8920	0.8920	0.8920	0.9780	0.9780	0.9780
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	73	25	83	164	28	36	345	66	17	268	21
Total Analysis Volume [veh/h]	209	291	101	333	657	113	145	1380	262	70	1073	86
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	30	0	16	35	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	17	17	12	21	21	6	45	45	5	45	45
g / C, Green / Cycle	0.07	0.18	0.18	0.12	0.23	0.23	0.06	0.48	0.48	0.05	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.06	0.11	0.12	0.10	0.19	0.08	0.04	0.33	0.33	0.02	0.23	0.23
s, saturation flow rate [veh/h]	3277	1772	1618	3277	3373	1506	3277	3373	1631	3277	3373	1705
c, Capacity [veh/h]	244	317	289	400	763	341	210	1608	778	178	1575	796
d1, Uniform Delay [s]	43.53	36.26	36.33	40.81	35.37	30.79	43.61	19.38	19.42	43.48	17.51	17.52
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.39	2.19	2.48	4.54	3.00	0.57	4.04	2.42	4.98	1.41	1.09	2.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.64	0.65	0.83	0.86	0.33	0.69	0.69	0.69	0.39	0.49	0.49
d, Delay for Lane Group [s/veh]	51.92	38.45	38.80	45.35	38.37	31.36	47.65	21.80	24.40	44.89	18.60	19.66
Lane Group LOS	D	D	D	D	D	C	D	C	C	D	B	B
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.69	4.52	4.21	4.02	7.48	2.20	1.77	9.51	9.80	0.83	5.80	6.11
50th-Percentile Queue Length [ft/ln]	67.31	113.01	105.26	100.43	187.03	54.96	44.37	237.67	244.97	20.64	145.09	152.71
95th-Percentile Queue Length [veh/ln]	4.85	8.01	7.58	7.23	11.97	3.96	3.19	14.56	14.93	1.49	9.75	10.16
95th-Percentile Queue Length [ft/ln]	121.15	200.18	189.38	180.77	299.17	98.93	79.87	364.09	373.31	37.14	243.87	254.04

Movement, Approach, & Intersection Results

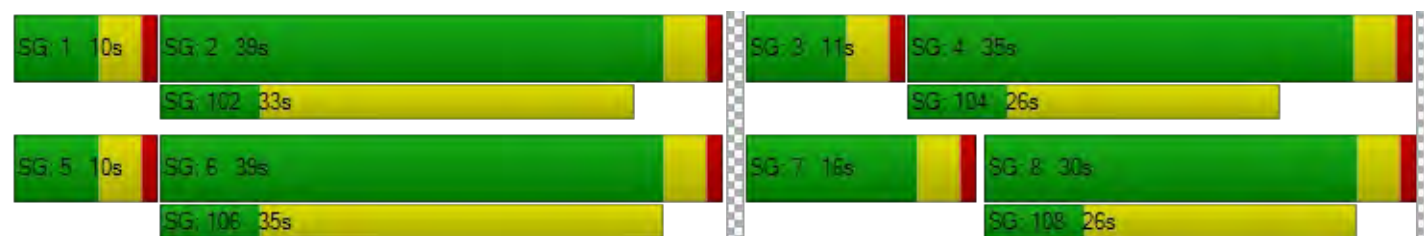
d_M, Delay for Movement [s/veh]	51.92	38.56	38.80	45.35	38.37	31.36	47.65	22.32	24.40	44.89	18.90	19.66
Movement LOS	D	D	D	D	D	C	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	43.25			39.76			24.68			20.43		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.46											
Intersection LOS	C											
Intersection V/C	0.732											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.713			2.823			3.116			3.099		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	547			653			737			737		
d_b, Bicycle Delay [s]	25.06			21.56			18.95			18.95		
I_b,int, Bicycle LOS Score for Intersection	2.055			2.470			2.542			2.236		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	47.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.890

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	142	583	245	232	981	396	250	1099	148	296	1112	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	583	245	232	981	396	250	1099	148	296	1112	138
Peak Hour Factor	0.8190	0.8190	0.8190	0.9240	0.9240	0.9240	0.8870	0.8870	0.8870	0.9290	0.9290	0.9290
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	178	75	63	265	107	70	310	42	80	299	37
Total Analysis Volume [veh/h]	173	712	299	251	1062	429	282	1239	167	319	1197	149
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	47	47	13	45	45	15	46	0	14	45	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	42	56	9	40	55	11	43	43	10	42	42
g / C, Green / Cycle	0.09	0.35	0.47	0.08	0.33	0.46	0.09	0.36	0.36	0.08	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.10	0.21	0.20	0.08	0.31	0.28	0.09	0.26	0.11	0.10	0.27	0.27
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1673
c, Capacity [veh/h]	155	1178	702	246	1122	689	301	1731	540	274	1182	586
d1, Uniform Delay [s]	54.50	32.21	21.34	55.50	39.00	24.67	54.16	33.20	27.75	55.00	34.53	34.54
k, delay calibration	0.11	0.11	0.30	0.11	0.11	0.34	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	70.48	0.50	1.14	31.58	5.06	2.88	13.19	2.57	1.48	83.70	4.65	9.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.12	0.60	0.43	1.02	0.95	0.62	0.94	0.72	0.31	1.17	0.76	0.76
d, Delay for Lane Group [s/veh]	124.98	32.71	22.48	87.08	44.07	27.55	67.35	35.77	29.24	138.69	39.18	43.60
Lane Group LOS	F	C	C	F	D	C	E	D	C	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.70	8.56	5.78	4.80	15.78	9.65	4.78	10.69	3.70	7.31	12.28	12.92
50th-Percentile Queue Length [ft/ln]	192.62	214.02	144.48	120.03	394.52	241.36	119.43	267.37	92.47	182.73	307.03	322.95
95th-Percentile Queue Length [veh/ln]	12.75	13.36	9.72	8.45	22.30	14.75	8.36	16.06	6.66	12.36	18.03	18.81
95th-Percentile Queue Length [ft/ln]	318.76	333.98	243.05	211.17	557.39	368.75	209.05	401.45	166.44	308.95	450.72	470.31

Movement, Approach, & Intersection Results

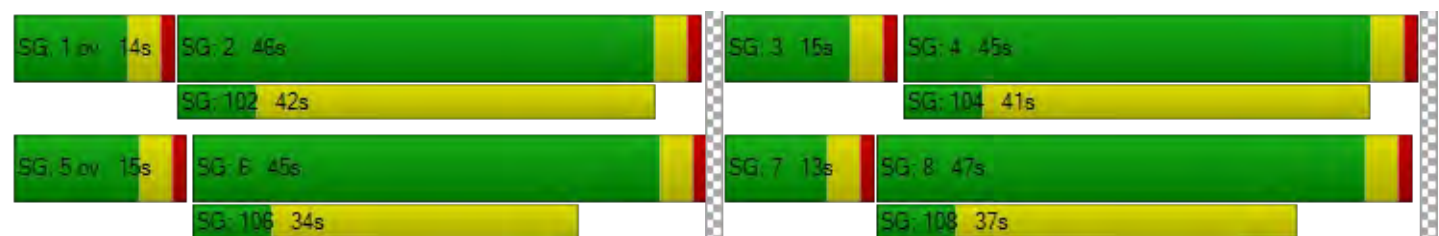
d_M, Delay for Movement [s/veh]	124.98	32.71	22.48	87.08	44.07	27.55	67.35	35.77	29.24	138.69	40.27	43.60
Movement LOS	F	C	C	F	D	C	E	D	C	F	D	D
d_A, Approach Delay [s/veh]	43.61			46.20			40.40			59.43		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	47.66											
Intersection LOS	D											
Intersection V/C	0.890											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.911			3.010			3.241			3.160		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	717			683			700			683		
d_b, Bicycle Delay [s]	24.70			26.00			25.35			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.536			2.997			2.488			2.475		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	34.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.739

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	265	280	14	154	942	215	251	852	522	24	988	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	265	280	14	154	942	215	251	852	522	24	988	112
Peak Hour Factor	0.9290	0.9290	0.9290	0.9170	0.9170	0.9170	0.9110	0.9110	0.9110	0.9320	0.9320	0.9320
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	75	4	42	257	59	69	234	143	6	265	30
Total Analysis Volume [veh/h]	285	301	15	168	1027	234	276	935	573	26	1060	120
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	49	0	12	44	44	16	49	49	10	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	35	8	30	46	12	57	74	4	49	49
g / C, Green / Cycle	0.11	0.29	0.07	0.25	0.38	0.10	0.48	0.62	0.03	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.09	0.09	0.05	0.21	0.16	0.08	0.28	0.38	0.01	0.23	0.23
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1681
c, Capacity [veh/h]	357	986	221	1210	579	329	1610	933	98	1371	683
d1, Uniform Delay [s]	52.22	33.01	55.04	42.80	26.91	53.04	22.70	14.04	56.95	27.58	27.59
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.15	0.17	5.36	1.75	0.45	5.66	1.54	3.02	1.43	1.75	3.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.31	0.76	0.85	0.40	0.84	0.58	0.61	0.27	0.57	0.57
d, Delay for Lane Group [s/veh]	56.37	33.18	60.40	44.56	27.37	58.70	24.24	17.07	58.38	29.33	31.09
Lane Group LOS	E	C	E	D	C	E	C	B	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.39	3.45	2.66	9.81	4.96	4.35	9.74	9.84	0.41	9.00	9.32
50th-Percentile Queue Length [ft/ln]	109.86	86.14	66.58	245.13	124.01	108.63	243.46	246.05	10.14	225.07	233.04
95th-Percentile Queue Length [veh/ln]	7.83	6.20	4.79	14.94	8.61	7.76	14.86	14.99	0.73	13.92	14.33
95th-Percentile Queue Length [ft/ln]	195.80	155.06	119.84	373.52	215.33	194.09	371.41	374.68	18.26	348.09	358.22

Movement, Approach, & Intersection Results

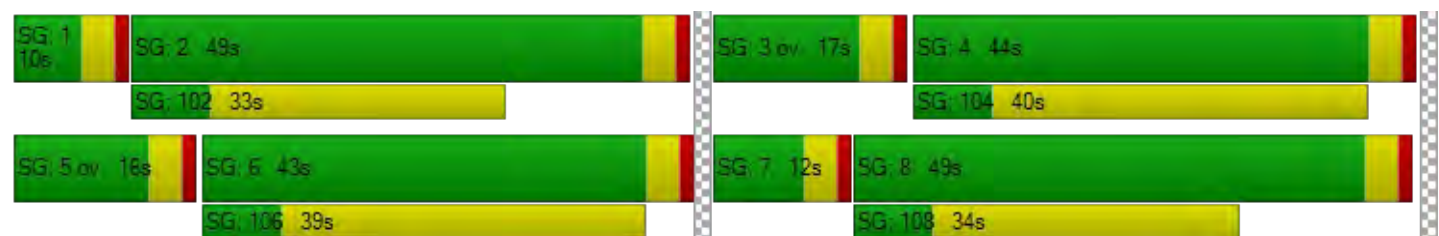
d_M, Delay for Movement [s/veh]	56.37	33.18	0.00	60.40	44.56	27.37	58.70	24.24	17.07	58.38	29.78	31.09
Movement LOS	E	C		E	D	C	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	44.46			43.60			27.27			30.53		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	34.73											
Intersection LOS	C											
Intersection V/C	0.739											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.009			2.998			3.149			2.929		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	750			667			750			650		
d_b, Bicycle Delay [s]	23.44			26.67			23.44			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.043			2.346			3.031			2.223		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	29.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.788

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	115	375	133	94	159	127	82	1377	73	78	1517	138
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	115	375	133	94	159	127	82	1377	73	78	1517	138
Peak Hour Factor	0.8320	0.8320	0.8320	0.8070	0.8070	0.8070	0.8830	0.8830	0.8830	0.9520	0.9520	0.9520
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	113	40	29	49	39	23	390	21	20	398	36
Total Analysis Volume [veh/h]	138	451	160	116	197	157	93	1559	83	82	1593	145
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	34	0	12	33	0	10	34	0	10	34	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	19	19	8	18	18	6	42	42	6	41	41
g / C, Green / Cycle	0.10	0.21	0.21	0.09	0.20	0.20	0.07	0.46	0.46	0.06	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.08	0.18	0.18	0.07	0.11	0.11	0.06	0.32	0.32	0.05	0.34	0.34
s, saturation flow rate [veh/h]	1687	1772	1615	1687	1772	1519	1687	3373	1726	1687	3373	1697
c, Capacity [veh/h]	169	375	342	145	350	300	114	1559	798	106	1542	776
d1, Uniform Delay [s]	39.75	34.16	34.19	40.44	32.45	32.61	41.49	19.24	19.25	41.65	20.22	20.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.15	5.62	6.39	9.57	1.27	1.61	13.05	2.60	5.01	11.53	3.39	6.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.85	0.85	0.80	0.53	0.56	0.82	0.70	0.70	0.78	0.75	0.75
d, Delay for Lane Group [s/veh]	48.90	39.78	40.58	50.01	33.72	34.21	54.54	21.84	24.26	53.18	23.61	26.86
Lane Group LOS	D	D	D	D	C	C	D	C	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.38	7.14	6.62	2.88	3.72	3.36	2.43	9.00	9.76	2.11	10.10	10.90
50th-Percentile Queue Length [ft/ln]	84.55	178.47	165.42	71.94	93.10	83.98	60.68	225.04	243.97	52.82	252.50	272.40
95th-Percentile Queue Length [veh/ln]	6.09	11.52	10.84	5.18	6.70	6.05	4.37	13.92	14.88	3.80	15.31	16.31
95th-Percentile Queue Length [ft/ln]	152.20	288.02	270.88	129.50	167.59	151.17	109.22	348.05	372.05	95.08	382.80	407.74

Movement, Approach, & Intersection Results

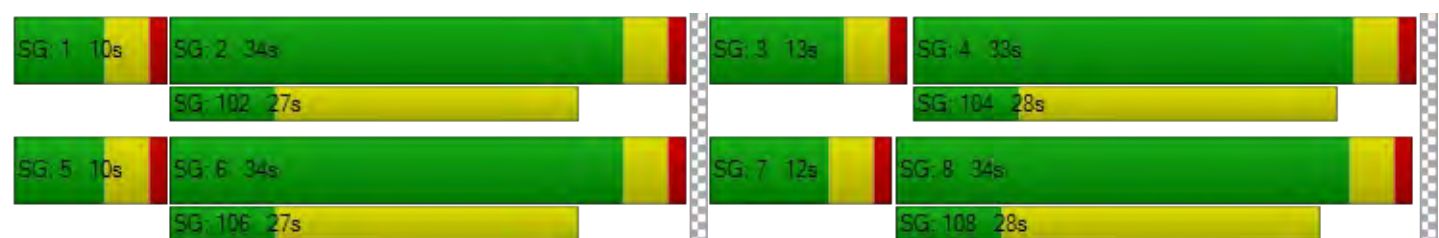
d_M, Delay for Movement [s/veh]	48.90	40.02	40.58	50.01	33.75	34.21	54.54	22.58	24.26	53.18	24.50	26.86
Movement LOS	D	D	D	D	C	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	41.77			37.92			24.37			25.98		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.05											
Intersection LOS	C											
Intersection V/C	0.788											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.516			2.525			3.098			3.102		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			644			667			667		
d_b, Bicycle Delay [s]	20.00			20.67			20.00			20.00		
I_b,int, Bicycle LOS Score for Intersection	2.178			1.947			2.514			2.561		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	42.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.878

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	435	684	186	80	314	94	155	1455	370	225	1281	76
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	435	684	186	80	314	94	155	1455	370	225	1281	76
Peak Hour Factor	0.9000	0.9000	0.9000	0.9430	0.9430	0.9430	0.9070	0.9070	0.9070	0.8720	0.8720	0.8720
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	121	190	52	21	83	25	43	401	102	65	367	22
Total Analysis Volume [veh/h]	483	760	207	85	333	100	171	1604	408	258	1469	87
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	45	0	11	33	0	17	42	0	22	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	30	30	7	18	18	13	49	49	18	54	54
g / C, Green / Cycle	0.16	0.25	0.25	0.06	0.15	0.15	0.11	0.40	0.40	0.15	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.15	0.23	0.14	0.05	0.10	0.07	0.10	0.33	0.27	0.15	0.31	0.31
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1721
c, Capacity [veh/h]	520	854	381	100	519	231	184	1950	608	254	1503	767
d1, Uniform Delay [s]	49.85	43.21	38.81	55.97	47.70	46.05	53.05	31.93	29.24	51.01	26.56	26.58
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.17	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.89	3.43	1.20	17.85	1.33	1.27	18.10	4.07	5.79	36.96	2.56	4.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.89	0.54	0.85	0.64	0.43	0.93	0.82	0.67	1.02	0.69	0.69
d, Delay for Lane Group [s/veh]	57.74	46.64	40.01	73.82	49.04	47.32	71.16	36.00	35.03	87.96	29.12	31.54
Lane Group LOS	E	D	D	E	D	D	E	D	D	F	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.70	11.21	5.41	3.05	4.78	2.80	6.03	14.32	10.47	10.20	12.08	12.87
50th-Percentile Queue Length [ft/ln]	192.51	280.14	135.27	76.13	119.44	69.90	150.76	358.09	261.87	255.00	302.01	321.74
95th-Percentile Queue Length [veh/ln]	12.25	16.70	9.23	5.48	8.36	5.03	10.06	20.53	15.78	15.56	17.78	18.75
95th-Percentile Queue Length [ft/ln]	306.28	417.38	230.64	137.03	209.06	125.82	251.44	513.26	394.56	389.08	444.52	468.83

Movement, Approach, & Intersection Results

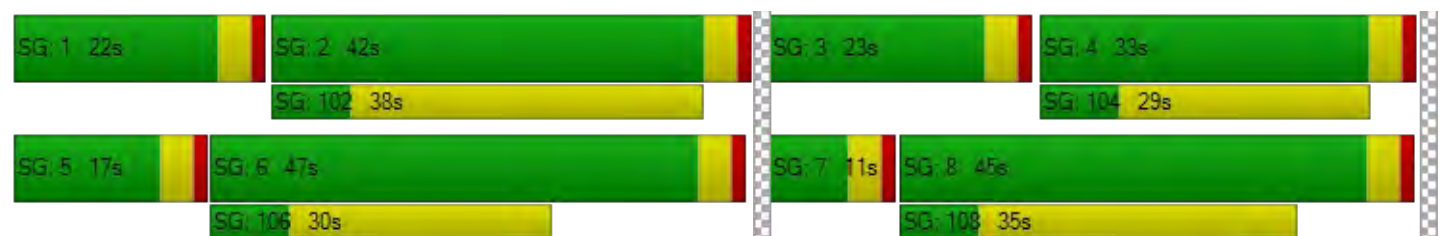
d_M, Delay for Movement [s/veh]	57.74	46.64	40.01	73.82	49.04	47.32	71.16	36.00	35.03	87.96	29.84	31.54
Movement LOS	E	D	D	E	D	D	E	D	D	F	C	C
d_A, Approach Delay [s/veh]	49.39			52.77			38.58			38.19		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.32											
Intersection LOS	D											
Intersection V/C	0.878											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.949			2.716			3.255			3.124		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			483			633			717		
d_b, Bicycle Delay [s]	26.00			34.50			28.02			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.756			1.987			2.760			2.557		
Bicycle LOS	C			A			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	45.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.922

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	318	568	308	535	371	14	37	1381	273	405	1056	673
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	318	568	308	535	371	14	37	1381	273	405	1056	673
Peak Hour Factor	0.9470	0.9470	0.9470	0.9220	0.9220	0.9220	0.8360	0.8360	0.8360	0.9740	0.9740	0.9740
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	150	81	145	101	4	11	413	82	104	271	173
Total Analysis Volume [veh/h]	336	600	325	580	402	15	44	1652	327	416	1084	691
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	36	0	25	44	0	10	40	0	19	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	25	25	25	21	33	33	5	43	43	15	53	78
g / C, Green / Cycle	0.11	0.21	0.21	0.21	0.18	0.28	0.28	0.04	0.35	0.35	0.13	0.44	0.65
(v / s)_i Volume / Saturation Flow Rate	0.10	0.18	0.18	0.19	0.18	0.12	0.12	0.01	0.31	0.31	0.13	0.22	0.46
s, saturation flow rate [veh/h]	3277	1772	1729	1506	3277	1772	1749	3277	4826	1585	3277	4826	1506
c, Capacity [veh/h]	357	376	367	319	574	493	487	129	1708	561	411	2124	977
d1, Uniform Delay [s]	53.12	45.67	45.69	45.80	49.51	35.45	35.45	56.16	36.24	36.24	52.50	24.27	13.70
k, delay calibration	0.11	0.23	0.23	0.23	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.13	11.81	12.25	14.93	20.03	0.58	0.59	1.56	6.45	16.91	23.71	0.88	4.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.87	0.87	0.88	1.01	0.43	0.43	0.34	0.87	0.87	1.01	0.51	0.71
d, Delay for Lane Group [s/veh]	65.26	57.47	57.93	60.74	69.55	36.04	36.04	57.71	42.69	53.15	76.21	25.15	18.01
Lane Group LOS	E	E	E	E	F	D	D	E	D	D	F	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.62	10.57	10.38	9.39	10.16	5.12	5.06	0.68	14.41	15.83	7.53	7.52	12.43
50th-Percentile Queue Length [ft/ln]	140.6	264.2	259.5	234.7	254.12	127.97	126.38	16.95	360.29	395.75	188.21	187.98	310.67
95th-Percentile Queue Length [veh/ln]	9.51	15.90	15.67	14.42	15.47	8.83	8.74	1.22	20.64	22.36	12.09	12.02	18.21
95th-Percentile Queue Length [ft/ln]	237.8	397.5	391.7	360.4	386.82	220.74	218.57	30.52	515.93	558.88	302.25	300.41	455.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.26	57.68	60.57	69.55	36.04	36.04	57.71	43.72	53.15	76.21	25.15	18.01
Movement LOS	E	E	E	F	D	D	E	D	D	F	C	B
d_A, Approach Delay [s/veh]	60.39			55.53			45.55			32.59		
Approach LOS	E			E			D			C		
d_I, Intersection Delay [s/veh]	45.59											
Intersection LOS	D											
Intersection V/C	0.922											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.943			2.846			3.238			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	533			667			600			750		
d_b, Bicycle Delay [s]	32.27			26.67			29.40			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.600			2.382			2.394			2.765		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	30.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.855

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9480	1.0000	0.9480	1.0000	0.8820	0.8820	0.9530	0.9530	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	115	0	213	0	380	229	58	424	0
Total Analysis Volume [veh/h]	0	0	0	459	0	853	0	1518	916	232	1695	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	78	0	0	0	23	0	14	37	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		38	38	38	55	55	55	10	69
g / C, Green / Cycle		0.33	0.33	0.33	0.48	0.48	0.48	0.09	0.60
(v / s)_i Volume / Saturation Flow Rate		0.26	0.29	0.29	0.36	0.40	0.40	0.07	0.35
s, saturation flow rate [veh/h]		1687	1514	1506	3373	1506	1506	3277	4826
c, Capacity [veh/h]		554	497	494	1620	723	723	286	2907
d1, Uniform Delay [s]		35.03	36.49	36.57	24.28	26.05	26.05	51.54	14.01
k, delay calibration		0.11	0.11	0.11	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.57	5.26	5.49	3.26	11.38	11.38	5.53	0.86
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.79	0.88	0.89	0.75	0.84	0.84	0.81	0.58
d, Delay for Lane Group [s/veh]		37.60	41.75	42.06	27.54	37.42	37.42	57.06	14.87
Lane Group LOS		D	D	D	C	D	D	E	B
Critical Lane Group		No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		11.36	12.14	12.20	13.79	16.29	16.29	3.50	8.79
50th-Percentile Queue Length [ft/ln]		283.95	303.62	304.94	344.70	407.23	407.23	87.48	219.67
95th-Percentile Queue Length [veh/ln]		16.88	17.86	17.93	19.88	22.91	22.91	6.30	13.65
95th-Percentile Queue Length [ft/ln]		422.12	446.50	448.13	496.94	572.70	572.70	157.46	341.20

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	37.80	0.00	41.91	0.00	27.54	37.42	57.06	14.87	0.00
Movement LOS				D		D		C	D	E	B	
d_A, Approach Delay [s/veh]	0.00			40.47			32.48			19.95		
Approach LOS	A			D			C			B		
d_I, Intersection Delay [s/veh]	30.07											
Intersection LOS	C											
Intersection V/C	0.855											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.286	2.378	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	330	574
d_b, Bicycle Delay [s]	57.50	57.50	40.07	29.23
I_b,int, Bicycle LOS Score for Intersection	4.132	6.297	2.898	2.619
Bicycle LOS	D	F	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	24.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.799

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	624	0	255	0	0	0	544	1430	0	0	1040	502
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	624	0	255	0	0	0	544	1430	0	0	1040	502
Peak Hour Factor	0.8400	1.0000	0.8400	1.0000	1.0000	1.0000	0.8440	0.8440	1.0000	1.0000	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	0	76	0	0	0	161	424	0	0	273	132
Total Analysis Volume [veh/h]	743	0	304	0	0	0	645	1694	0	0	1091	527
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	34	0	0	0	0	0	35	56	0	0	21	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	90	90		90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24		21	58	33	33	33
g / C, Green / Cycle	0.26	0.26		0.23	0.65	0.37	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.23	0.20		0.20	0.35	0.24	0.27	0.27
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1511	1506
c, Capacity [veh/h]	868	399		754	3118	1254	562	560
d1, Uniform Delay [s]	31.45	30.47		33.23	8.69	23.38	24.27	24.30
k, delay calibration	0.11	0.16		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	4.47		2.93	0.68	2.57	7.77	7.89
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.76		0.86	0.54	0.65	0.72	0.72
d, Delay for Lane Group [s/veh]	34.01	34.94		36.16	9.37	25.96	32.05	32.19
Lane Group LOS	C	C		D	A	C	C	C
Critical Lane Group	Yes	No		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.75	6.40		6.88	5.38	7.27	8.29	8.32
50th-Percentile Queue Length [ft/ln]	193.86	159.97		172.03	134.61	181.75	207.36	207.92
95th-Percentile Queue Length [veh/ln]	12.32	10.55		11.18	9.19	11.69	13.02	13.05
95th-Percentile Queue Length [ft/ln]	308.04	263.69		279.59	229.75	292.29	325.44	326.16

Movement, Approach, & Intersection Results

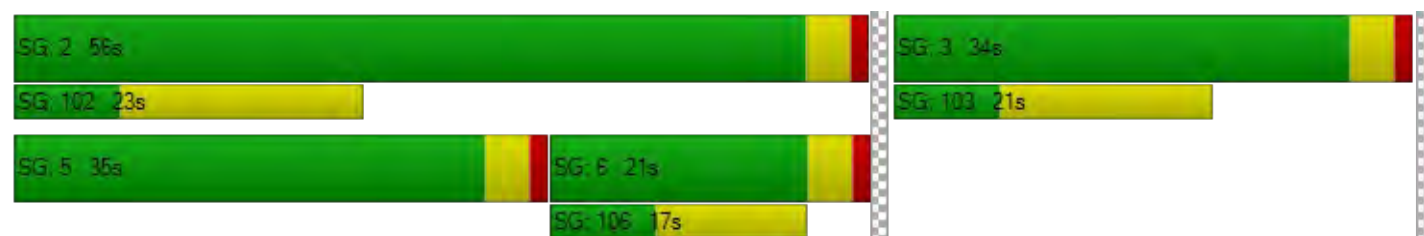
d_M, Delay for Movement [s/veh]	34.01	0.00	34.94	0.00	0.00	0.00	36.16	9.37	0.00	0.00	26.02	32.16
Movement LOS	C		C				D	A			C	C
d_A, Approach Delay [s/veh]	34.28			0.00			16.76			29.04		
Approach LOS	C			A			B			C		
d_I, Intersection Delay [s/veh]	24.39											
Intersection LOS	C											
Intersection V/C	0.799											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.280	2.286	0.000	3.097
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	1156	378
d_b, Bicycle Delay [s]	45.00	45.00	8.02	29.61
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.846	2.450
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	479	282	217	4	95	109	174	843	451	86	346	26
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	479	282	217	4	95	109	174	843	451	86	346	26
Peak Hour Factor	0.9310	0.9310	0.9310	0.9020	0.9020	0.9020	0.7940	0.7940	0.7940	0.8150	0.8150	0.8150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	129	76	58	1	26	30	55	265	142	26	106	8
Total Analysis Volume [veh/h]	515	303	233	4	105	121	219	1062	568	106	425	32
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	25	57	57	10	42	0	21	43	43	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	32	42	1	12	12	17	65	90	6	54	54
g / C, Green / Cycle	0.17	0.27	0.35	0.01	0.10	0.10	0.14	0.54	0.75	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.16	0.17	0.15	0.00	0.06	0.08	0.13	0.31	0.21	0.03	0.09	0.09
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1709
c, Capacity [veh/h]	567	471	527	12	177	151	240	1830	1997	166	1523	772
d1, Uniform Delay [s]	48.69	39.00	29.99	59.31	51.68	52.86	50.78	18.33	4.80	55.90	19.84	19.87
k, delay calibration	0.11	0.11	0.17	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.89	1.47	0.92	14.92	3.13	9.48	12.93	1.35	0.36	4.01	0.29	0.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.64	0.44	0.33	0.59	0.80	0.91	0.58	0.28	0.64	0.20	0.20
d, Delay for Lane Group [s/veh]	54.58	40.48	30.91	74.23	54.80	62.34	63.71	19.67	5.16	59.91	20.13	20.45
Lane Group LOS	D	D	C	E	D	E	E	B	A	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.01	8.08	5.31	0.17	3.18	3.97	7.34	9.91	2.07	1.67	2.61	2.75
50th-Percentile Queue Length [ft/ln]	200.18	202.03	132.87	4.29	79.55	99.15	183.39	247.66	51.74	41.72	65.34	68.75
95th-Percentile Queue Length [veh/ln]	12.65	12.74	9.10	0.31	5.73	7.14	11.78	15.07	3.73	3.00	4.70	4.95
95th-Percentile Queue Length [ft/ln]	316.20	318.58	227.39	7.72	143.19	178.47	294.43	376.71	93.13	75.10	117.61	123.75

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.58	40.48	30.91	74.23	54.80	62.34	63.71	19.67	5.16	59.91	20.23	20.45
Movement LOS	D	D	C	E	D	E	E	B	A	E	C	C
d_A, Approach Delay [s/veh]	45.27			59.10			20.43			27.71		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	31.02											
Intersection LOS	C											
Intersection V/C	0.675											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.764			2.336			3.094			2.867		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	883			633			650			467		
d_b, Bicycle Delay [s]	18.70			28.02			27.34			35.27		
I_b,int, Bicycle LOS Score for Intersection	3.294			1.939			3.085			1.869		
Bicycle LOS	C			A			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.541

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	73	806	355	404	660	55	65	89	31	380	145	561
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	73	806	355	404	660	55	65	89	31	380	145	561
Peak Hour Factor	0.9480	0.9480	0.9480	0.9200	0.9200	0.9200	0.9080	0.9080	0.9080	0.9330	0.9330	0.9330
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	213	94	110	179	15	18	25	9	102	39	150
Total Analysis Volume [veh/h]	77	850	374	439	717	60	72	98	34	407	155	601
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	34	28	0	33	27	0	10	37	0	22	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	47	47	28	68	68	6	12	17	23	55
g / C, Green / Cycle	0.06	0.39	0.39	0.23	0.57	0.57	0.05	0.10	0.14	0.19	0.46
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.25	0.13	0.15	0.15	0.04	0.08	0.12	0.09	0.40
s, saturation flow rate [veh/h]	1687	3373	1509	3277	3373	1702	1687	1695	3277	1772	1506
c, Capacity [veh/h]	99	1329	594	759	1912	965	86	170	461	337	686
d1, Uniform Delay [s]	55.74	29.43	29.45	40.92	13.29	13.30	56.50	52.68	50.61	43.12	29.63
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.28	2.34	5.16	0.70	0.35	0.69	18.96	7.35	5.73	0.98	14.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.64	0.64	0.58	0.27	0.27	0.84	0.78	0.88	0.46	0.88
d, Delay for Lane Group [s/veh]	68.02	31.76	34.61	41.62	13.64	13.99	75.47	60.03	56.35	44.09	44.35
Lane Group LOS	E	C	C	D	B	B	E	E	E	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.64	10.19	9.60	5.84	3.61	3.74	2.62	4.23	6.36	4.19	18.08
50th-Percentile Queue Length [ft/ln]	65.95	254.82	240.11	145.93	90.18	93.43	65.39	105.72	158.90	104.66	452.10
95th-Percentile Queue Length [veh/ln]	4.75	15.43	14.69	9.80	6.49	6.73	4.71	7.60	10.49	7.54	25.06
95th-Percentile Queue Length [ft/ln]	118.71	385.71	367.17	244.99	162.32	168.18	117.70	190.03	262.26	188.39	626.46

Movement, Approach, & Intersection Results

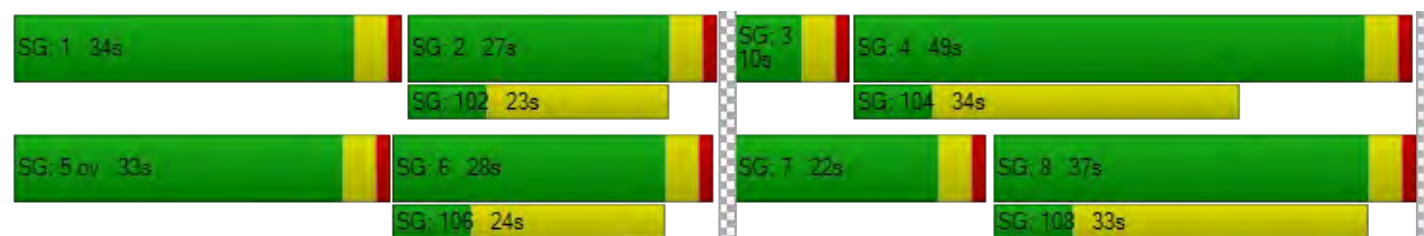
d_M, Delay for Movement [s/veh]	68.02	31.78	34.61	41.62	13.74	13.99	75.47	60.03	60.03	56.35	44.09	44.35
Movement LOS	E	C	C	D	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	34.74			23.82			65.48			48.51		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	37.06											
Intersection LOS	D											
Intersection V/C	0.541											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.950			3.073			2.115			2.804		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	400			383			550			750		
d_b, Bicycle Delay [s]	38.40			39.20			31.54			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.275			2.228			1.896			3.479		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.588

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	56	160	49	48	104	75	665	109	180	1063	37
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	56	160	49	48	104	75	665	109	180	1063	37
Peak Hour Factor	0.8740	0.8740	0.8740	0.7860	0.7860	0.7860	0.9250	0.9250	0.9250	0.9540	0.9540	0.9540
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	39	16	46	16	15	33	20	180	29	47	279	10
Total Analysis Volume [veh/h]	156	64	183	62	61	132	81	719	118	189	1114	39
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	11	30	0	22	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25	25	25	25	5	41	41	12	47	47
g / C, Green / Cycle	0.28	0.28	0.28	0.28	0.28	0.06	0.45	0.45	0.13	0.53	0.53
(v / s)_i Volume / Saturation Flow Rate	0.13	0.04	0.12	0.05	0.12	0.05	0.24	0.24	0.11	0.33	0.03
s, saturation flow rate [veh/h]	1190	1772	1506	1338	1581	1687	1772	1686	1687	3373	1506
c, Capacity [veh/h]	270	495	421	391	442	102	805	766	224	1776	793
d1, Uniform Delay [s]	36.60	24.23	26.58	27.82	26.60	41.72	17.68	17.68	38.11	15.06	10.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.96	0.12	0.71	0.19	0.68	12.81	2.52	2.65	8.37	1.69	0.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.58	0.13	0.43	0.16	0.44	0.79	0.53	0.53	0.84	0.63	0.05
d, Delay for Lane Group [s/veh]	38.57	24.35	27.29	28.01	27.28	54.53	20.20	20.33	46.49	16.75	10.47
Lane Group LOS	D	C	C	C	C	D	C	C	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.40	1.02	3.24	1.08	3.41	2.12	6.64	6.35	4.52	7.85	0.38
50th-Percentile Queue Length [ft/ln]	85.12	25.53	80.91	27.04	85.29	52.91	166.11	158.75	113.05	196.28	9.59
95th-Percentile Queue Length [veh/ln]	6.13	1.84	5.83	1.95	6.14	3.81	10.87	10.48	8.01	12.45	0.69
95th-Percentile Queue Length [ft/ln]	153.22	45.95	145.64	48.67	153.52	95.25	271.79	262.07	200.23	311.17	17.27

Movement, Approach, & Intersection Results

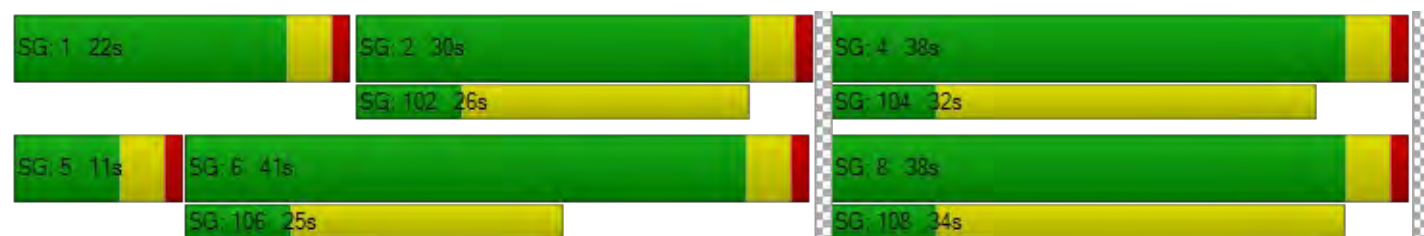
d_M, Delay for Movement [s/veh]	38.57	24.35	27.29	28.01	27.28	27.28	54.53	20.26	20.33	46.49	16.75	10.47
Movement LOS	D	C	C	C	C	C	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	31.19			27.46			23.29			20.76		
Approach LOS	C			C			C			C		
d_I, Intersection Delay [s/veh]	23.58											
Intersection LOS	C											
Intersection V/C	0.588											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.319			2.082			2.974			2.915		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			822		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			15.61		
I_b,int, Bicycle LOS Score for Intersection	2.225			1.980			2.317			2.667		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	40.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.905

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	486	156	315	423	295	256	732	151	144	937	606
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	486	156	315	423	295	256	732	151	144	937	606
Peak Hour Factor	0.9210	0.9210	0.9210	0.9620	0.9620	0.9620	0.9110	0.9110	0.9110	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	132	42	82	110	77	70	201	41	38	245	159
Total Analysis Volume [veh/h]	148	528	169	327	440	307	281	804	166	151	981	635
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	44	0	19	53	0	15	41	0	11	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	22	22	13	29	29	11	57	57	7	53	53
g / C, Green / Cycle	0.05	0.19	0.19	0.12	0.25	0.25	0.10	0.49	0.49	0.06	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.05	0.16	0.11	0.10	0.23	0.23	0.09	0.24	0.11	0.05	0.29	0.42
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1532	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	173	636	284	385	448	388	315	1664	743	202	1547	691
d1, Uniform Delay [s]	54.05	44.93	42.68	49.78	41.48	41.50	51.41	19.39	16.60	53.12	23.77	29.15
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.12	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.14	2.89	1.99	5.29	6.88	7.94	8.60	1.01	0.70	5.46	1.99	19.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.83	0.60	0.85	0.89	0.89	0.89	0.48	0.22	0.75	0.63	0.92
d, Delay for Lane Group [s/veh]	65.19	47.81	44.68	55.08	48.36	49.43	60.00	20.40	17.29	58.58	25.76	48.49
Lane Group LOS	E	D	D	E	D	D	E	C	B	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.39	7.47	4.55	4.88	11.71	10.26	4.37	7.24	2.62	2.30	10.38	19.51
50th-Percentile Queue Length [ft/ln]	59.78	186.80	113.67	122.07	292.81	256.53	109.32	181.00	65.51	57.48	259.44	487.70
95th-Percentile Queue Length [veh/ln]	4.30	11.95	8.04	8.51	17.33	15.51	7.80	11.65	4.72	4.14	15.66	26.75
95th-Percentile Queue Length [ft/ln]	107.61	298.87	201.09	212.67	433.13	387.87	195.06	291.32	117.92	103.46	391.51	668.79

Movement, Approach, & Intersection Results

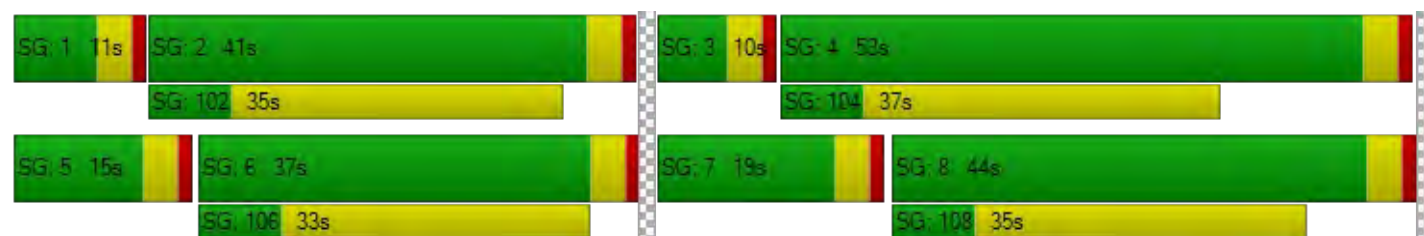
d_M, Delay for Movement [s/veh]	65.19	47.81	44.68	55.08	48.45	49.43	60.00	20.40	17.29	58.58	25.76	48.49
Movement LOS	E	D	D	E	D	D	E	C	B	E	C	D
d_A, Approach Delay [s/veh]	50.23			50.75			28.88			36.73		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	40.10											
Intersection LOS	D											
Intersection V/C	0.905											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.829			2.874			2.980			3.033		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	696			852			643			574		
d_b, Bicycle Delay [s]	24.46			18.94			26.45			29.23		
I_b,int, Bicycle LOS Score for Intersection	2.257			2.446			2.592			3.017		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	28.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.741

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	451	31	341	10	19	6	12	857	281	284	1219	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	451	31	341	10	19	6	12	857	281	284	1219	16
Peak Hour Factor	0.9370	0.9370	0.9370	0.8500	0.8500	0.8500	0.9910	0.9910	0.9910	0.9420	0.9420	0.9420
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	120	8	91	3	6	2	3	216	71	75	324	4
Total Analysis Volume [veh/h]	481	33	364	12	22	7	12	865	284	301	1294	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	65	65	0	37	0	10	38	0	17	45	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	29	46	5	5	2	66	66	13	77	77
g / C, Green / Cycle	0.17	0.24	0.38	0.04	0.04	0.02	0.55	0.55	0.11	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.15	0.02	0.24	0.01	0.02	0.01	0.34	0.34	0.09	0.37	0.37
s, saturation flow rate [veh/h]	3277	1772	1506	1376	1699	1687	1772	1624	3277	1772	1763
c, Capacity [veh/h]	544	427	576	74	71	28	975	894	355	1138	1133
d1, Uniform Delay [s]	48.90	35.22	30.15	59.33	56.07	58.44	18.31	18.34	52.53	12.19	12.21
k, delay calibration	0.11	0.11	0.43	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.96	0.08	4.45	1.02	3.77	10.01	2.88	3.17	5.62	2.13	2.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.08	0.63	0.16	0.41	0.43	0.61	0.62	0.85	0.58	0.58
d, Delay for Lane Group [s/veh]	53.86	35.29	34.59	60.35	59.84	68.45	21.19	21.50	58.15	14.32	14.36
Lane Group LOS	D	D	C	E	E	E	C	C	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.40	0.76	9.20	0.39	0.93	0.44	11.74	10.87	4.73	10.12	10.11
50th-Percentile Queue Length [ft/ln]	184.94	19.05	229.88	9.63	23.27	10.98	293.42	271.87	118.13	252.90	252.64
95th-Percentile Queue Length [veh/ln]	11.86	1.37	14.17	0.69	1.68	0.79	17.36	16.28	8.29	15.33	15.32
95th-Percentile Queue Length [ft/ln]	296.46	34.29	354.21	17.34	41.89	19.77	433.88	407.08	207.25	383.31	382.97

Movement, Approach, & Intersection Results

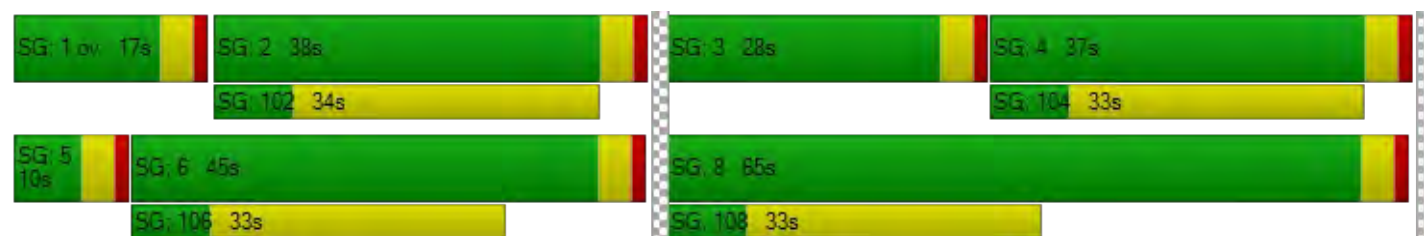
d_M, Delay for Movement [s/veh]	53.86	35.29	34.59	60.35	59.84	59.84	68.45	21.29	21.50	58.15	14.34	14.36
Movement LOS	D	D	C	E	E	E	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	45.18			59.99			21.83			22.52		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	28.11											
Intersection LOS	C											
Intersection V/C	0.741											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.708			1.987			2.888			2.947		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1017			550			567			683		
d_b, Bicycle Delay [s]	14.50			31.54			30.82			26.00		
I_b,int, Bicycle LOS Score for Intersection	3.008			1.627			2.517			2.890		
Bicycle LOS	C			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	30.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.896

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	97	3	278	268	898	11	5	1263	128
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	97	3	278	268	898	11	5	1263	128
Peak Hour Factor	0.7500	0.7500	0.7500	0.8100	0.8100	0.8100	0.9290	0.9290	0.9290	0.9040	0.9040	0.9040
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	3	30	1	86	72	242	3	1	349	35
Total Analysis Volume [veh/h]	16	3	13	120	4	343	288	967	12	6	1397	142
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	23	0	0	34	34	31	53	0	10	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	22	22	57	23	77	77	1	55	55
g / C, Green / Cycle	0.03	0.03	0.03	0.18	0.18	0.47	0.19	0.64	0.64	0.01	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.04	0.04	0.23	0.17	0.28	0.28	0.00	0.41	0.09
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1692	1506	1687	1772	1764	1687	3373	1506
c, Capacity [veh/h]	88	60	51	303	304	710	323	1139	1134	17	1558	696
d1, Uniform Delay [s]	58.34	56.15	56.54	41.92	41.92	21.72	47.35	10.57	10.57	59.04	29.67	19.19
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.39	0.22	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.98	0.34	2.62	0.33	0.33	1.82	15.34	1.19	1.19	12.12	8.47	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.05	0.26	0.20	0.20	0.48	0.89	0.43	0.43	0.35	0.90	0.20
d, Delay for Lane Group [s/veh]	59.32	56.49	59.16	42.24	42.24	23.53	62.69	11.76	11.77	71.16	38.14	19.85
Lane Group LOS	E	E	E	D	D	C	E	B	B	E	D	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.51	0.09	0.42	1.60	1.60	6.91	9.74	6.48	6.45	0.24	19.78	2.49
50th-Percentile Queue Length [ft/ln]	12.66	2.35	10.54	39.97	40.09	172.71	243.50	161.94	161.37	5.96	494.42	62.19
95th-Percentile Queue Length [veh/ln]	0.91	0.17	0.76	2.88	2.89	11.22	14.86	10.65	10.62	0.43	27.07	4.48
95th-Percentile Queue Length [ft/ln]	22.79	4.23	18.98	71.95	72.16	280.47	371.46	266.29	265.54	10.73	676.75	111.93

Movement, Approach, & Intersection Results

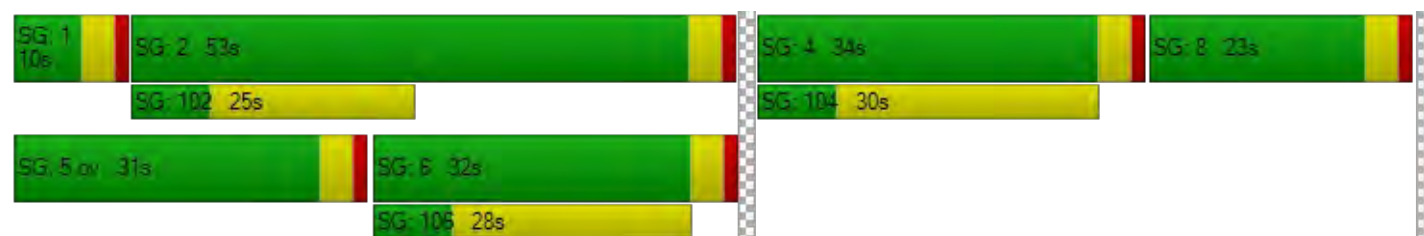
d_M, Delay for Movement [s/veh]	59.32	56.49	59.16	42.24	42.24	23.53	62.69	11.76	11.77	71.16	38.14	19.85
Movement LOS	E	E	E	D	D	C	E	B	B	E	D	B
d_A, Approach Delay [s/veh]	58.99			28.50			23.34			36.59		
Approach LOS	E			C			C			D		
d_I, Intersection Delay [s/veh]	30.59											
Intersection LOS	C											
Intersection V/C	0.896											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.158			2.364			2.926			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	317			500			817			467		
d_b, Bicycle Delay [s]	42.50			33.75			21.00			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.612			2.330			2.605			2.834		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	51.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.804

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	569	703	118	206	356	109	214	704	281	74	678	203
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	569	703	118	206	356	109	214	704	281	74	678	203
Peak Hour Factor	0.9100	0.9100	0.9100	0.8350	0.8350	0.8350	0.8890	0.8890	0.8890	0.8090	0.8090	0.8090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	156	193	32	62	107	33	60	198	79	23	210	63
Total Analysis Volume [veh/h]	625	773	130	247	426	131	241	792	316	91	838	251
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	25	38	0	24	37	0	19	46	0	12	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	45	45	11	36	36	15	39	39	8	32	32
g / C, Green / Cycle	0.18	0.38	0.38	0.09	0.30	0.30	0.13	0.33	0.33	0.07	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.19	0.18	0.18	0.08	0.11	0.11	0.14	0.23	0.21	0.05	0.25	0.17
s, saturation flow rate [veh/h]	3277	3373	1644	3277	3373	1570	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	574	1273	620	311	1002	466	212	1104	493	113	908	405
d1, Uniform Delay [s]	49.51	28.38	28.38	53.20	33.41	33.51	52.50	35.49	34.37	55.22	42.67	38.48
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.14	0.11	0.17	0.11	0.11	0.14
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	47.00	1.28	2.62	4.63	1.08	2.40	77.76	0.89	2.14	12.28	4.54	2.02
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.09	0.48	0.48	0.80	0.38	0.39	1.14	0.72	0.64	0.80	0.92	0.62
d, Delay for Lane Group [s/veh]	96.51	29.66	31.00	57.82	34.49	35.91	130.26	36.38	36.51	67.50	47.21	40.50
Lane Group LOS	F	C	C	E	C	D	F	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	12.31	6.84	6.90	3.85	4.52	4.48	10.93	10.24	8.10	3.10	12.54	6.69
50th-Percentile Queue Length [ft/ln]	307.87	171.11	172.59	96.17	112.96	112.11	273.26	255.96	202.50	77.55	313.52	167.33
95th-Percentile Queue Length [veh/ln]	18.83	11.14	11.21	6.92	8.00	7.96	17.25	15.49	12.77	5.58	18.35	10.94
95th-Percentile Queue Length [ft/ln]	470.78	278.38	280.32	173.10	200.11	198.93	431.36	387.15	319.19	139.59	458.71	273.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	96.51	29.95	31.00	57.82	34.65	35.91	130.26	36.38	36.51	67.50	47.21	40.50
Movement LOS	F	C	C	E	C	D	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	57.27			41.98			53.18			47.35		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	51.20											
Intersection LOS	D											
Intersection V/C	0.804											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.027			2.991			2.945			2.848		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	567			550			700			583		
d_b, Bicycle Delay [s]	30.82			31.54			25.35			30.10		
I_b,int, Bicycle LOS Score for Intersection	2.400			2.002			2.673			2.533		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.212

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	45	313	40	27	259	27	59	4	49	71	4	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	45	313	40	27	259	27	59	4	49	71	4	36
Peak Hour Factor	0.9560	0.9560	0.9560	0.9590	0.9590	0.9590	0.6990	0.6990	0.6990	0.8710	0.8710	0.8710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	82	10	7	68	7	21	1	18	20	1	10
Total Analysis Volume [veh/h]	47	327	42	28	270	28	84	6	70	82	5	41
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	21	50	0	12	41	0	0	33	0	0	33	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	66	66	3	65	65	14	14	14	14
g / C, Green / Cycle	0.05	0.69	0.69	0.03	0.68	0.68	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.03	0.11	0.11	0.02	0.08	0.09	0.06	0.05	0.06	0.03
s, saturation flow rate [veh/h]	1687	1772	1702	1687	1772	1714	1360	1524	1323	1531
c, Capacity [veh/h]	76	1224	1176	56	1203	1164	209	228	181	229
d1, Uniform Delay [s]	44.55	5.08	5.09	45.14	5.35	5.36	41.22	36.16	42.93	35.42
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.86	0.27	0.28	6.69	0.21	0.22	1.25	0.85	1.77	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.15	0.15	0.50	0.13	0.13	0.40	0.33	0.45	0.20
d, Delay for Lane Group [s/veh]	52.41	5.34	5.37	51.83	5.57	5.58	42.47	37.01	44.70	35.84
Lane Group LOS	D	A	A	D	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.25	1.19	1.16	0.75	0.99	0.97	1.95	1.62	1.96	0.95
50th-Percentile Queue Length [ft/ln]	31.13	29.78	29.12	18.72	24.71	24.35	48.66	40.47	49.03	23.87
95th-Percentile Queue Length [veh/ln]	2.24	2.14	2.10	1.35	1.78	1.75	3.50	2.91	3.53	1.72
95th-Percentile Queue Length [ft/ln]	56.04	53.61	52.42	33.69	44.48	43.84	87.59	72.84	88.26	42.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.41	5.35	5.37	51.83	5.57	5.58	42.47	37.01	37.01	44.70	35.84	35.84
Movement LOS	D	A	A	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	10.67			9.55			39.87			41.52		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	18.68											
Intersection LOS	B											
Intersection V/C	0.212											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.582			2.573			2.020			2.009		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	968			779			611			611		
d_b, Bicycle Delay [s]	12.64			17.71			22.93			22.93		
I_b,int, Bicycle LOS Score for Intersection	1.903			1.829			1.824			1.771		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.497

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	308	407	54	339	19	16	3	11	314	3	55
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	308	407	54	339	19	16	3	11	314	3	55
Peak Hour Factor	0.9560	0.9560	0.9560	0.9310	0.9310	0.9310	0.9380	0.9380	0.9380	0.8620	0.8620	0.8620
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	81	106	15	91	5	4	1	3	91	1	16
Total Analysis Volume [veh/h]	16	322	426	58	364	20	17	3	12	364	3	64
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	69	60	60	69	63	63	4	4	16	16
g / C, Green / Cycle	0.69	0.60	0.60	0.69	0.63	0.63	0.04	0.04	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.02	0.18	0.28	0.07	0.11	0.11	0.01	0.01	0.13	0.13
s, saturation flow rate [veh/h]	1041	1772	1506	810	1772	1739	1699	1506	1687	1629
c, Capacity [veh/h]	772	1063	904	545	1110	1090	61	54	262	253
d1, Uniform Delay [s]	5.03	9.78	11.16	6.52	7.83	7.84	47.06	46.88	41.01	41.02
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.73	1.76	0.39	0.34	0.35	3.07	2.03	6.89	7.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.30	0.47	0.11	0.17	0.18	0.33	0.22	0.84	0.84
d, Delay for Lane Group [s/veh]	5.04	10.51	12.92	6.91	8.18	8.19	50.12	48.91	47.91	48.15
Lane Group LOS	A	B	B	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.10	3.45	5.32	0.41	1.73	1.71	0.54	0.32	5.69	5.51
50th-Percentile Queue Length [ft/ln]	2.38	86.17	132.97	10.13	43.15	42.68	13.40	8.00	142.26	137.84
95th-Percentile Queue Length [veh/ln]	0.17	6.20	9.10	0.73	3.11	3.07	0.96	0.58	9.60	9.36
95th-Percentile Queue Length [ft/ln]	4.29	155.11	227.52	18.23	77.67	76.82	24.12	14.39	240.06	234.11

Movement, Approach, & Intersection Results

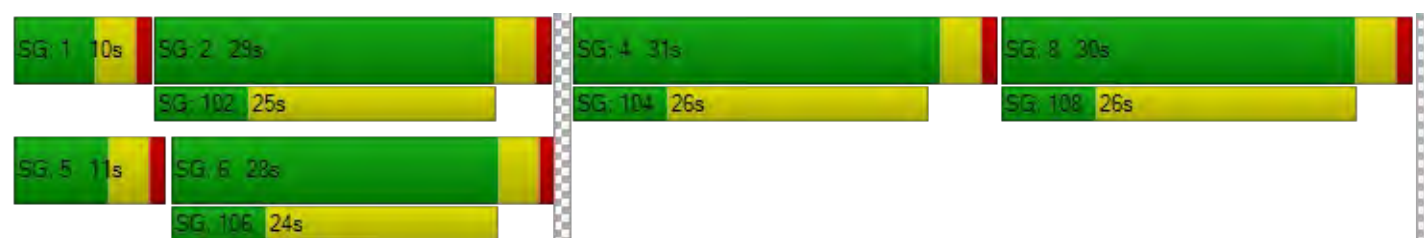
d_M, Delay for Movement [s/veh]	5.04	10.51	12.92	6.91	8.18	8.19	50.12	50.12	48.91	48.01	48.15	48.15
Movement LOS	A	B	B	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	11.74			8.02			49.67			48.03		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	20.85											
Intersection LOS	C											
Intersection V/C	0.497											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.598			2.469			1.983			2.295		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	480			500			520			540		
d_b, Bicycle Delay [s]	28.88			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.190			1.924			1.612			2.271		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.793

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	135	19	63	55	12	425	600	614	22	93	491	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	135	19	63	55	12	425	600	614	22	93	491	51
Peak Hour Factor	0.8330	0.8330	0.8330	0.9000	0.9000	0.9000	0.8700	0.8700	0.8700	0.9090	0.9090	0.9090
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	41	6	19	15	3	118	172	176	6	26	135	14
Total Analysis Volume [veh/h]	162	23	76	61	13	472	690	706	25	102	540	56
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	13	13	38	33	0	37	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	9	9	59	31	74	74	9	53	53
g / C, Green / Cycle	0.10	0.10	0.10	0.08	0.08	0.49	0.26	0.62	0.62	0.08	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.05	0.04	0.01	0.31	0.21	0.21	0.21	0.06	0.17	0.17
s, saturation flow rate [veh/h]	1417	1512	1506	1687	1612	1506	3277	1772	1750	1687	1772	1714
c, Capacity [veh/h]	174	199	145	128	122	746	842	1097	1084	128	776	751
d1, Uniform Delay [s]	51.59	53.02	51.65	53.22	51.71	22.27	41.99	10.98	10.99	54.58	22.86	22.88
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.42	2.73	2.93	2.76	0.38	4.06	2.05	0.82	0.84	10.75	1.47	1.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.39	0.59	0.52	0.48	0.11	0.63	0.82	0.33	0.34	0.80	0.39	0.39
d, Delay for Lane Group [s/veh]	53.01	55.74	54.58	55.97	52.09	26.33	44.04	11.81	11.83	65.33	24.34	24.41
Lane Group LOS	D	E	D	E	D	C	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.02	3.60	2.30	1.87	0.38	10.45	9.82	4.79	4.75	3.42	6.09	5.92
50th-Percentile Queue Length [ft/ln]	50.43	90.07	57.46	46.66	9.48	261.15	245.43	119.76	118.79	85.38	152.29	148.06
95th-Percentile Queue Length [veh/ln]	3.63	6.48	4.14	3.36	0.68	15.75	14.96	8.38	8.33	6.15	10.14	9.91
95th-Percentile Queue Length [ft/ln]	90.78	162.12	103.44	83.99	17.06	393.66	373.90	209.50	208.16	153.68	253.48	247.84

Movement, Approach, & Intersection Results

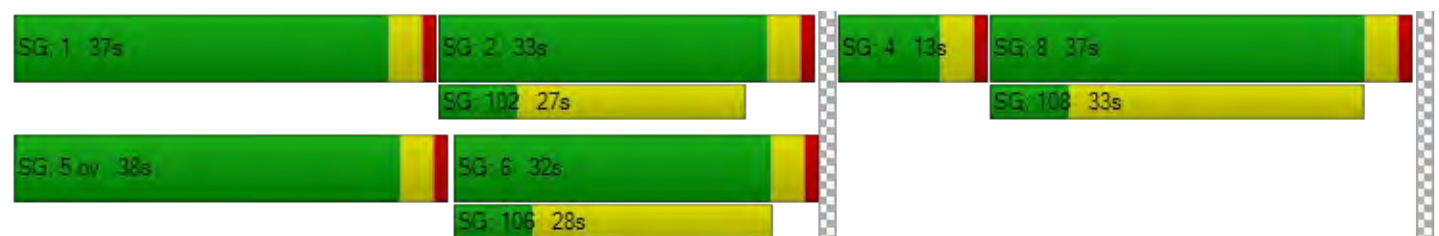
d_M, Delay for Movement [s/veh]	54.55	55.74	54.58	55.97	52.09	26.33	44.04	11.82	11.83	65.33	24.37	24.41
Movement LOS	D	E	D	E	D	C	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	54.69			30.25			27.46			30.36		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	31.10											
Intersection LOS	C											
Intersection V/C	0.793											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.392			2.570			0.000			2.614		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			150			483			467		
d_b, Bicycle Delay [s]	31.54			51.34			34.50			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.990			2.010			2.732			2.135		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	57.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.009

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	418	1099	207	263	923	401	296	1241	281	417	1517	239
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	418	1099	207	263	923	401	296	1241	281	417	1517	239
Peak Hour Factor	0.9550	0.9550	0.9550	0.9460	0.9460	0.9460	0.9460	0.9460	0.9460	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	109	288	54	70	244	106	78	328	74	110	401	63
Total Analysis Volume [veh/h]	438	1151	217	278	976	424	313	1312	297	441	1605	253
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	42	0	16	39	0	16	42	0	20	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	38	38	12	35	35	12	38	38	16	42	42
g / C, Green / Cycle	0.13	0.32	0.32	0.10	0.29	0.29	0.10	0.32	0.32	0.13	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.14	0.08	0.20	0.28	0.10	0.32	0.32	0.13	0.33	0.17
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1610	3277	4826	1506
c, Capacity [veh/h]	410	1520	474	328	1399	437	328	1073	512	437	1696	529
d1, Uniform Delay [s]	52.50	36.98	32.91	53.10	37.92	42.11	53.72	40.91	40.91	52.00	37.81	30.33
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.43	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	41.76	0.79	0.69	6.05	0.64	33.51	14.47	30.39	45.19	22.15	12.36	3.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.76	0.46	0.85	0.70	0.97	0.95	1.01	1.02	1.01	0.95	0.48
d, Delay for Lane Group [s/veh]	94.26	37.78	33.59	59.14	38.56	75.62	68.19	71.30	86.10	74.15	50.17	33.41
Lane Group LOS	F	D	C	E	D	E	E	F	F	F	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.53	10.15	5.14	4.39	8.55	16.32	5.35	20.17	21.36	7.90	16.98	6.16
50th-Percentile Queue Length [ft/ln]	213.36	253.78	128.57	109.85	213.71	407.90	133.78	504.19	534.04	197.62	424.42	153.89
95th-Percentile Queue Length [veh/ln]	13.70	15.38	8.86	7.83	13.34	22.94	9.14	27.75	29.35	12.56	23.73	10.22
95th-Percentile Queue Length [ft/ln]	342.43	384.41	221.55	195.80	333.59	573.51	228.62	693.71	733.72	314.08	593.36	255.62

Movement, Approach, & Intersection Results

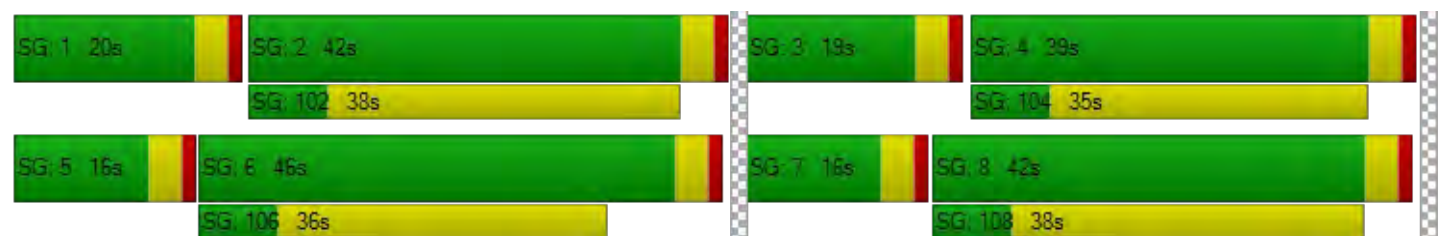
d_M, Delay for Movement [s/veh]	94.26	37.78	33.59	59.14	38.56	75.62	68.19	73.85	86.10	74.15	50.17	33.41
Movement LOS	F	D	C	E	D	E	E	E	F	F	D	C
d_A, Approach Delay [s/veh]	50.97			51.34			74.82			52.93		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	57.59											
Intersection LOS	E											
Intersection V/C	1.009											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.244			3.231			3.274			3.308		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			583			633			700		
d_b, Bicycle Delay [s]	28.02			30.10			28.02			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.553			2.483			2.617			2.824		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	23.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.753

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	34	46	91	169	102	200	123	1540	36	110	1719	252
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	46	91	169	102	200	123	1540	36	110	1719	252
Peak Hour Factor	0.7970	0.7970	0.7970	0.6700	0.6700	0.6700	0.9700	0.9700	0.9700	0.9160	0.9160	0.9160
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	14	29	63	38	75	32	397	9	30	469	69
Total Analysis Volume [veh/h]	43	58	114	252	152	299	127	1588	37	120	1877	275
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	28	39	0	23	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	26	26	26	9	53	53	9	52	52
g / C, Green / Cycle	0.26	0.26	0.26	0.26	0.26	0.26	0.09	0.53	0.53	0.09	0.52	0.52
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.08	0.19	0.05	0.20	0.08	0.32	0.32	0.07	0.39	0.18
s, saturation flow rate [veh/h]	1235	1772	1506	1345	3373	1506	1687	3373	1751	1687	4826	1506
c, Capacity [veh/h]	325	467	397	361	888	397	158	1781	925	149	2524	788
d1, Uniform Delay [s]	32.76	28.05	29.36	37.95	28.41	33.86	44.43	16.31	16.31	44.72	18.61	13.91
k, delay calibration	0.11	0.11	0.11	0.12	0.11	0.15	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	0.12	0.40	2.81	0.09	3.99	9.20	1.51	2.88	9.57	2.03	1.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.12	0.29	0.70	0.17	0.75	0.80	0.60	0.60	0.80	0.74	0.35
d, Delay for Lane Group [s/veh]	32.94	28.17	29.75	40.76	28.50	37.84	53.64	17.81	19.19	54.29	20.64	15.13
Lane Group LOS	C	C	C	D	C	D	D	B	B	D	C	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.87	1.07	2.21	6.15	1.41	7.00	3.47	8.38	9.06	3.30	11.08	3.75
50th-Percentile Queue Length [ft/ln]	21.80	26.73	55.28	153.77	35.25	174.89	86.66	209.44	226.43	82.41	277.08	93.82
95th-Percentile Queue Length [veh/ln]	1.57	1.92	3.98	10.22	2.54	11.33	6.24	13.12	13.99	5.93	16.54	6.75
95th-Percentile Queue Length [ft/ln]	39.24	48.11	99.50	255.46	63.44	283.34	156.00	328.12	349.82	148.34	413.58	168.87

Movement, Approach, & Intersection Results

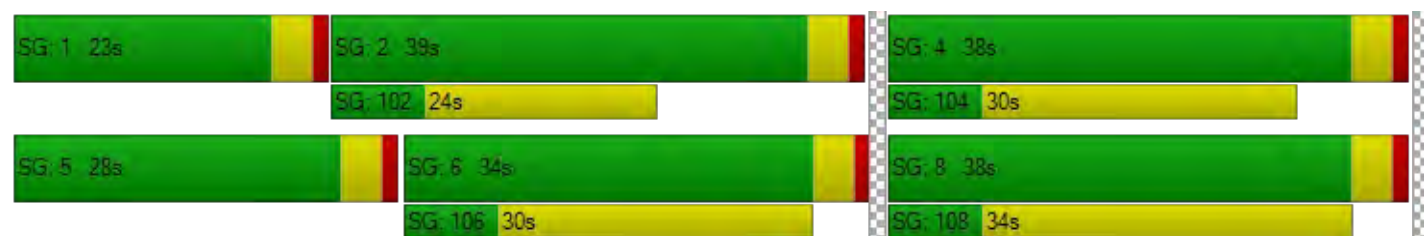
d_M, Delay for Movement [s/veh]	32.94	28.17	29.75	40.76	28.50	37.84	53.64	18.27	19.19	54.29	20.64	15.13
Movement LOS	C	C	C	D	C	D	D	B	B	D	C	B
d_A, Approach Delay [s/veh]	29.96			36.87			20.85			21.75		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	23.94											
Intersection LOS	C											
Intersection V/C	0.753											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.407			2.531			3.213			3.604		
Crosswalk LOS	B			B			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	680			680			700			600		
d_b, Bicycle Delay [s]	21.78			21.78			21.13			24.50		
I_b,int, Bicycle LOS Score for Intersection	1.914			2.140			2.523			2.809		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	46.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.945

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	497	837	265	221	652	203	235	1736	400	238	1755	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	497	837	265	221	652	203	235	1736	400	238	1755	145
Peak Hour Factor	0.9630	0.9630	0.9630	0.9380	0.9380	0.9380	0.9710	0.9710	0.9710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	129	217	69	59	174	54	61	447	103	62	454	37
Total Analysis Volume [veh/h]	516	869	275	236	695	216	242	1788	412	246	1815	150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	47	0	14	39	0	13	41	0	13	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	35	35	10	27	27	9	45	45	9	45	45
g / C, Green / Cycle	0.16	0.30	0.30	0.09	0.23	0.23	0.08	0.39	0.39	0.08	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.16	0.18	0.18	0.07	0.21	0.14	0.07	0.37	0.27	0.08	0.38	0.10
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	515	1461	456	289	789	352	261	1885	588	261	1885	588
d1, Uniform Delay [s]	48.54	34.14	34.25	51.59	42.58	39.46	52.67	33.97	29.44	52.74	34.28	23.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.00	0.39	1.29	5.62	3.44	1.74	13.57	11.71	6.81	15.48	13.65	1.04
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.59	0.60	0.82	0.88	0.61	0.93	0.95	0.70	0.94	0.96	0.26
d, Delay for Lane Group [s/veh]	67.53	34.53	35.54	57.21	46.01	41.20	66.25	45.68	36.26	68.23	47.93	24.80
Lane Group LOS	F	C	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.71	6.91	6.69	3.57	9.84	5.62	3.96	17.73	10.51	4.09	18.44	2.93
50th-Percentile Queue Length [ft/ln]	217.71	172.69	167.27	89.19	245.94	140.52	99.04	443.14	262.69	102.32	461.10	73.25
95th-Percentile Queue Length [veh/ln]	13.56	11.22	10.93	6.42	14.98	9.51	7.13	24.63	15.82	7.37	25.49	5.27
95th-Percentile Queue Length [ft/ln]	339.08	280.44	273.33	160.54	374.54	237.72	178.27	615.75	395.59	184.18	637.18	131.85

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.53	34.53	35.54	57.21	46.01	41.20	66.25	45.68	36.26	68.23	47.93	24.80
Movement LOS	F	C	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	44.96			47.41			46.13			48.62		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.80											
Intersection LOS	D											
Intersection V/C	0.945											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	3.104			3.031			3.401			3.350		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	748			609			643			643		
d_b, Bicycle Delay [s]	22.54			27.83			26.45			26.45		
I_b,int, Bicycle LOS Score for Intersection	2.473			2.506			2.903			2.776		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	35.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	42	32	58	324	24	244	320	1659	27	55	1902	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	32	58	324	24	244	320	1659	27	55	1902	339
Peak Hour Factor	0.8890	0.8890	0.8890	0.8820	0.8820	0.8820	0.9540	0.9540	0.9540	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	9	16	92	7	69	84	435	7	15	503	90
Total Analysis Volume [veh/h]	47	36	65	367	27	277	335	1739	28	58	2013	359
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	40	0	18	60	0	10	52	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	8	8	27	27	14	64	64	5	55	55
g / C, Green / Cycle	0.06	0.06	0.06	0.22	0.22	0.12	0.53	0.53	0.04	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.05	0.11	0.20	0.10	0.34	0.34	0.03	0.42	0.24
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1526	3277	3373	1757	1687	4826	1506
c, Capacity [veh/h]	109	115	89	732	341	384	1802	939	75	2226	694
d1, Uniform Delay [s]	54.00	53.58	55.11	40.76	45.20	52.12	19.87	19.88	56.80	29.90	22.88
k, delay calibration	0.11	0.11	0.11	0.11	0.21	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.65	1.54	10.92	0.53	14.05	6.27	1.79	3.42	15.83	6.63	2.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.31	0.73	0.50	0.89	0.87	0.64	0.65	0.78	0.90	0.52
d, Delay for Lane Group [s/veh]	56.65	55.12	66.02	41.29	59.25	58.39	21.66	23.30	72.62	36.53	25.62
Lane Group LOS	E	E	E	D	E	E	C	C	E	D	C
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.45	1.09	2.20	4.81	10.07	5.29	11.62	12.56	2.07	18.70	7.63
50th-Percentile Queue Length [ft/ln]	36.22	27.23	55.02	120.23	251.67	132.25	290.53	314.02	51.73	467.56	190.67
95th-Percentile Queue Length [veh/ln]	2.61	1.96	3.96	8.41	15.27	9.06	17.21	18.37	3.72	25.79	12.16
95th-Percentile Queue Length [ft/ln]	65.20	49.01	99.04	210.14	381.75	226.55	430.30	459.33	93.12	644.87	303.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.65	55.12	66.02	41.29	59.25	59.25	58.39	22.20	23.30	72.62	36.53	25.62
Movement LOS	E	E	E	D	E	E	E	C	C	E	D	C
d_A, Approach Delay [s/veh]	60.39			49.43			27.98			35.78		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	35.11											
Intersection LOS	D											
Intersection V/C	0.884											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.208			2.587			3.280			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			600			933			800		
d_b, Bicycle Delay [s]	54.15			29.40			17.07			21.60		
I_b,int, Bicycle LOS Score for Intersection	1.682			2.667			2.716			2.896		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	93.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.085

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Peak Hour Factor	0.8990	0.8990	0.8990	0.8970	0.8970	0.8970	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	165	94	145	86	26	27	477	26	113	486	171
Total Analysis Volume [veh/h]	399	660	376	580	343	103	110	1908	106	451	1946	684
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	41	0	28	39	0	10	34	0	17	41	41
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	17	33	33	24	40	40	6	34	34	13	41	69
g / C, Green / Cycle	0.14	0.27	0.27	0.20	0.33	0.33	0.05	0.28	0.28	0.11	0.34	0.58
(v / s)_i Volume / Saturation Flow Rate	0.12	0.20	0.25	0.25	0.13	0.13	0.03	0.31	0.31	0.14	0.40	0.45
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1633	3277	4826	1711	3277	4826	1506
c, Capacity [veh/h]	470	922	412	474	585	539	165	1371	486	358	1656	868
d1, Uniform Delay [s]	50.17	39.44	42.28	48.04	31.03	31.03	56.06	43.00	43.00	53.50	39.46	19.73
k, delay calibration	0.11	0.11	0.32	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.35	1.05	19.69	105.27	0.44	0.47	4.61	50.77	65.78	121.62	85.66	7.16
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.72	0.91	1.22	0.40	0.40	0.67	1.08	1.09	1.26	1.18	0.79
d, Delay for Lane Group [s/veh]	54.52	40.49	61.97	153.31	31.47	31.51	60.66	93.77	108.78	175.12	125.11	26.90
Lane Group LOS	D	D	E	F	C	C	E	F	F	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.12	8.90	12.95	13.97	5.27	4.86	1.75	19.83	23.11	11.45	29.09	15.78
50th-Percentile Queue Length [ft/ln]	153.02	222.42	323.82	349.30	131.67	121.53	43.63	495.65	577.82	286.19	727.19	394.45
95th-Percentile Queue Length [veh/ln]	10.18	13.79	18.86	22.11	9.03	8.48	3.14	28.51	32.61	18.50	42.02	22.29
95th-Percentile Queue Length [ft/ln]	254.45	344.71	471.38	552.73	225.76	211.92	78.54	712.71	815.28	462.51	1050.54	557.31

Movement, Approach, & Intersection Results

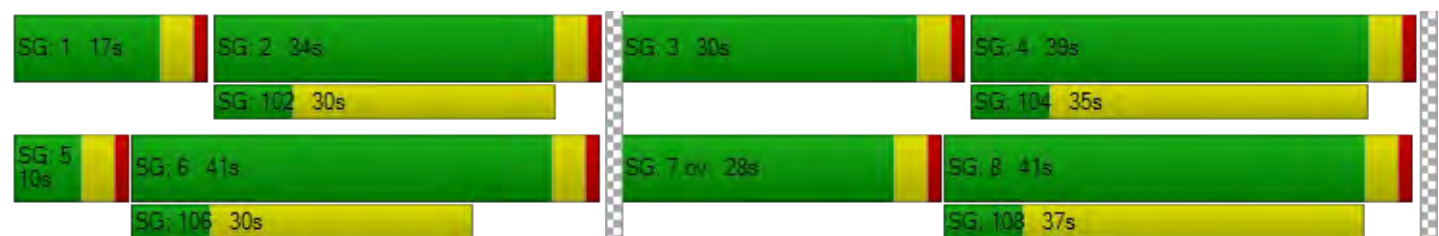
d_M, Delay for Movement [s/veh]	54.52	40.49	61.97	153.31	31.48	31.51	60.66	97.09	108.78	175.12	125.11	26.90
Movement LOS	D	D	E	F	C	C	E	F	F	F	F	C
d_A, Approach Delay [s/veh]	50.02			100.35			95.78			110.63		
Approach LOS	D			F			F			F		
d_I, Intersection Delay [s/veh]	93.79											
Intersection LOS	F											
Intersection V/C	1.085											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.933			2.870			3.358			3.560		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			500			617		
d_b, Bicycle Delay [s]	28.70			30.10			33.75			28.70		
I_b,int, Bicycle LOS Score for Intersection	2.743			2.406			2.436			3.254		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	20.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.866

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	652	0	537	0	1680	1022	0	2406	393
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	652	0	537	0	1680	1022	0	2406	393
Peak Hour Factor	1.0000	1.0000	1.0000	0.9390	1.0000	0.9390	1.0000	0.9540	0.9540	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	174	0	143	0	440	268	0	618	101
Total Analysis Volume [veh/h]	0	0	0	694	0	572	0	1761	1071	0	2473	404
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	69	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		95	95	95	95	95
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		31	31	31	56	56
g / C, Green / Cycle		0.32	0.32	0.32	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate		0.25	0.26	0.28	0.36	0.51
s, saturation flow rate [veh/h]		1687	1618	1506	4826	4826
c, Capacity [veh/h]		546	523	487	2858	2858
d1, Uniform Delay [s]		28.96	29.37	30.17	12.43	16.19
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.37	2.99	4.79	1.01	3.81
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.81	0.87	0.62	0.87
d, Delay for Lane Group [s/veh]		31.33	32.36	34.96	13.43	20.00
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		8.77	8.97	9.41	7.55	14.33
50th-Percentile Queue Length [ft/ln]		219.29	224.21	235.30	188.74	358.30
95th-Percentile Queue Length [veh/ln]		13.63	13.88	14.44	12.06	20.54
95th-Percentile Queue Length [ft/ln]		340.72	346.99	361.09	301.40	513.51

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	31.73	0.00	34.28	0.00	13.43	0.00	0.00	20.00	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			32.88			13.43			20.00		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	20.86											
Intersection LOS	C											
Intersection V/C	0.866											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			37.14			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.442			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			463			463		
d_b, Bicycle Delay [s]	47.50			47.50			28.05			28.05		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.221			2.528			2.920		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1071	77	401	0	0	282	207	1764	362	0	2293	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1071	77	401	0	0	282	207	1764	362	0	2293	57
Peak Hour Factor	0.9490	0.9490	0.9490	1.0000	1.0000	0.8840	0.9510	0.9510	0.9510	1.0000	0.9830	0.9830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	282	20	106	0	0	80	54	464	95	0	583	14
Total Analysis Volume [veh/h]	1129	81	423	0	0	319	218	1855	381	0	2333	58
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	54	0	0	0	19	19	66	0	0	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	38	38	38	15	15	74	55	55
g / C, Green / Cycle	0.32	0.32	0.32	0.13	0.13	0.62	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.25	0.24	0.28	0.12	0.13	0.38	0.37	0.34
s, saturation flow rate [veh/h]	3277	1699	1506	2665	1687	4826	4826	1742
c, Capacity [veh/h]	1038	538	477	335	212	2975	2209	797
d1, Uniform Delay [s]	37.11	37.03	38.62	52.09	52.44	14.32	28.07	26.85
k, delay calibration	0.11	0.16	0.21	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.28	3.40	9.22	14.16	36.41	1.00	3.38	6.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.77	0.87	0.95	1.03	0.62	0.81	0.75
d, Delay for Lane Group [s/veh]	38.38	40.43	47.84	66.24	88.85	15.32	31.45	33.26
Lane Group LOS	D	D	D	E	F	B	C	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.78	11.40	12.58	5.42	8.51	10.22	15.14	15.24
50th-Percentile Queue Length [ft/ln]	269.56	284.99	314.53	135.42	212.65	255.42	378.39	380.93
95th-Percentile Queue Length [veh/ln]	16.17	16.94	18.40	9.23	13.45	15.46	21.52	21.64
95th-Percentile Queue Length [ft/ln]	404.19	423.42	459.96	230.84	336.31	386.47	537.90	540.97

Movement, Approach, & Intersection Results

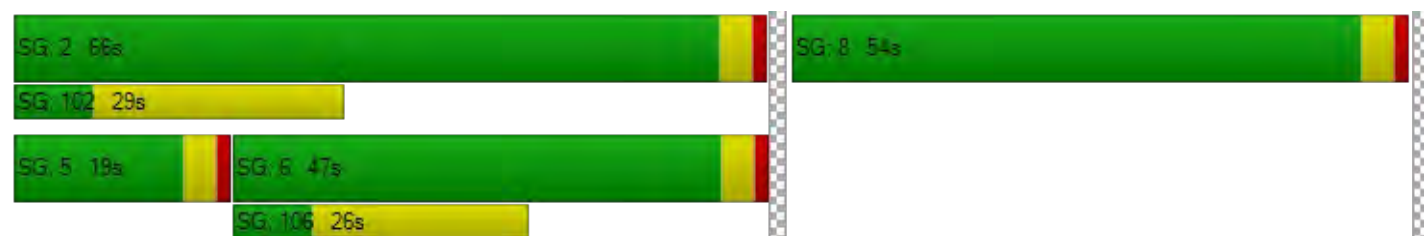
d_M, Delay for Movement [s/veh]	38.96	40.43	47.58	0.00	0.00	66.24	88.85	15.32	0.00	0.00	31.87	33.26
Movement LOS	D	D	D			E	F	B			C	C
d_A, Approach Delay [s/veh]	41.30			66.24			23.05			31.90		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	33.14											
Intersection LOS	C											
Intersection V/C	0.862											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.632	2.174	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	833	0	1033	717
d_b, Bicycle Delay [s]	20.42	60.00	14.02	24.70
I_b,int, Bicycle LOS Score for Intersection	4.254	4.132	2.700	2.546
Bicycle LOS	E	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	48.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.938

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	213	257	80	289	341	219	244	1766	137	167	1682	163
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	213	257	80	289	341	219	244	1766	137	167	1682	163
Peak Hour Factor	0.9100	0.9100	0.9100	0.8290	0.8290	0.8290	0.9480	0.9480	0.9480	0.9350	0.9350	0.9350
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	71	22	87	103	66	64	466	36	45	450	44
Total Analysis Volume [veh/h]	234	282	88	349	411	264	257	1863	145	179	1799	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	39	0	16	43	0	22	44	0	16	38	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	25	25	12	29	29	18	50	50	12	44	44
g / C, Green / Cycle	0.07	0.22	0.22	0.10	0.26	0.26	0.16	0.43	0.43	0.10	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.11	0.11	0.23	0.18	0.15	0.39	0.40	0.11	0.30	0.30
s, saturation flow rate [veh/h]	3277	1772	1630	3277	1772	1506	1687	3373	1707	1687	4826	1671
c, Capacity [veh/h]	232	390	359	345	451	384	265	1450	734	178	1825	632
d1, Uniform Delay [s]	53.50	39.24	39.30	51.51	41.63	38.77	48.26	30.88	31.10	51.51	31.98	31.99
k, delay calibration	0.11	0.11	0.11	0.11	0.23	0.11	0.15	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	29.02	0.96	1.06	25.08	13.92	2.20	23.32	10.59	19.44	32.94	3.85	10.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.01	0.49	0.50	1.01	0.91	0.69	0.97	0.92	0.93	1.01	0.80	0.80
d, Delay for Lane Group [s/veh]	82.51	40.20	40.36	76.59	55.55	40.97	71.58	41.47	50.55	84.45	35.83	42.41
Lane Group LOS	F	D	D	F	E	D	E	D	D	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.30	4.84	4.52	6.17	12.95	6.93	9.01	18.91	21.26	6.74	12.56	14.21
50th-Percentile Queue Length [ft/ln]	107.38	120.98	112.98	154.27	323.64	173.36	225.37	472.68	531.51	168.58	313.95	355.15
95th-Percentile Queue Length [veh/ln]	7.71	8.45	8.01	10.29	18.85	11.25	13.94	26.04	28.82	11.03	18.37	20.39
95th-Percentile Queue Length [ft/ln]	192.73	211.17	200.14	257.13	471.16	281.32	348.48	650.95	720.55	275.73	459.24	509.68

Movement, Approach, & Intersection Results

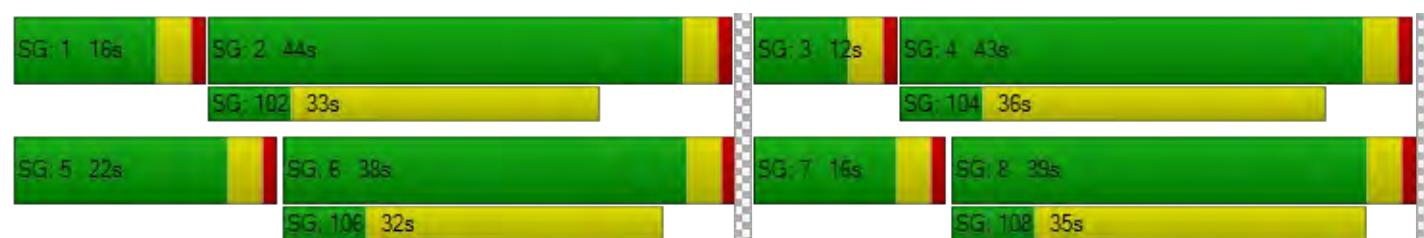
d_M, Delay for Movement [s/veh]	82.51	40.25	40.36	76.59	55.55	40.97	71.58	44.07	50.55	84.45	37.05	42.41
Movement LOS	F	D	D	F	E	D	E	D	D	F	D	D
d_A, Approach Delay [s/veh]	56.64			58.96			47.61			41.43		
Approach LOS	E			E			D			D		
d_I, Intersection Delay [s/veh]	48.23											
Intersection LOS	D											
Intersection V/C	0.938											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.573			2.747			3.293			3.280		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	609			678			696			591		
d_b, Bicycle Delay [s]	27.83			25.11			24.46			28.53		
I_b,int, Bicycle LOS Score for Intersection	2.058			3.249			2.805			2.447		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.868

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	253	45	253	24	22	13	18	1774	282	219	1821	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	253	45	253	24	22	13	18	1774	282	219	1821	54
Peak Hour Factor	0.8580	0.8580	0.8580	0.6480	0.6480	0.6480	0.9520	0.9520	0.9520	0.9460	0.9460	0.9460
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	13	74	9	8	5	5	466	74	58	481	14
Total Analysis Volume [veh/h]	295	52	295	37	34	20	19	1863	296	232	1925	57
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	47	0	0	10	0	10	32	0	31	53	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	6	6	3	53	53	19	69	69
g / C, Green / Cycle	0.22	0.22	0.22	0.05	0.05	0.02	0.44	0.44	0.15	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.10	0.10	0.20	0.02	0.03	0.01	0.39	0.20	0.14	0.39	0.39
s, saturation flow rate [veh/h]	1687	1711	1506	1687	1663	1687	4826	1506	1687	3373	1746
c, Capacity [veh/h]	372	377	332	82	80	41	2140	668	261	1935	1002
d1, Uniform Delay [s]	40.66	40.65	45.40	55.58	56.19	57.79	30.29	23.14	49.73	17.78	17.83
k, delay calibration	0.11	0.11	0.12	0.11	0.11	0.11	0.50	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.90	0.89	9.23	3.89	9.28	7.85	5.20	2.13	10.91	1.90	3.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.46	0.89	0.45	0.67	0.46	0.87	0.44	0.89	0.67	0.68
d, Delay for Lane Group [s/veh]	41.56	41.54	54.62	59.47	65.47	65.64	35.48	25.27	60.64	19.68	21.49
Lane Group LOS	D	D	D	E	E	E	D	C	E	B	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.53	4.59	9.33	1.18	1.82	0.66	16.86	6.16	7.60	12.52	13.53
50th-Percentile Queue Length [ft/ln]	113.30	114.72	233.29	29.50	45.45	16.49	421.50	154.02	189.94	313.06	338.33
95th-Percentile Queue Length [veh/ln]	8.02	8.10	14.34	2.12	3.27	1.19	23.59	10.23	12.12	18.33	19.57
95th-Percentile Queue Length [ft/ln]	200.59	202.54	358.54	53.09	81.81	29.69	589.85	255.79	302.96	458.14	489.16

Movement, Approach, & Intersection Results

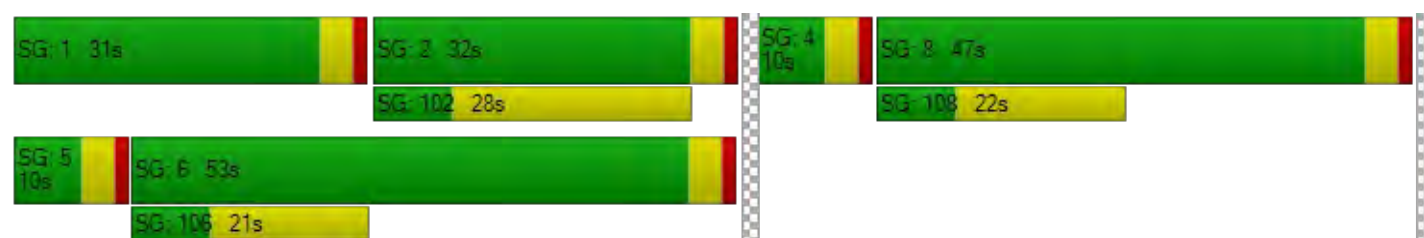
d_M, Delay for Movement [s/veh]	41.55	41.54	54.62	59.47	65.47	65.47	65.64	35.48	25.27	60.64	20.27	21.49
Movement LOS	D	D	D	E	E	E	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	47.56			63.03			34.36			24.53		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	32.27											
Intersection LOS	C											
Intersection V/C	0.868											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.438			2.025			0.000			3.222		
Crosswalk LOS	B			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	717			100			467			817		
d_b, Bicycle Delay [s]	24.70			54.15			35.27			21.00		
I_b,int, Bicycle LOS Score for Intersection	2.619			1.710			2.758			2.777		
Bicycle LOS	B			A			C			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.888

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	344	586	98	253	449	108	204	1341	203	176	1471	306
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	344	586	98	253	449	108	204	1341	203	176	1471	306
Peak Hour Factor	0.9600	0.9600	0.9600	0.8590	0.8590	0.8590	0.9620	0.9620	0.9620	0.9050	0.9050	0.9050
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	153	26	74	131	31	53	348	53	49	406	85
Total Analysis Volume [veh/h]	358	610	102	295	523	126	212	1394	211	194	1625	338
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	33	0	15	30	0	12	50	0	12	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	25	25	11	22	22	8	50	50	8	50	50
g / C, Green / Cycle	0.13	0.23	0.23	0.10	0.20	0.20	0.07	0.45	0.45	0.07	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.11	0.21	0.21	0.09	0.16	0.08	0.06	0.32	0.32	0.06	0.39	0.40
s, saturation flow rate [veh/h]	3277	1772	1684	3277	3373	1506	3277	3373	1655	3277	3373	1622
c, Capacity [veh/h]	416	402	382	331	678	303	243	1527	749	243	1527	734
d1, Uniform Delay [s]	47.16	41.48	41.49	48.92	41.62	38.38	50.50	24.23	24.28	50.21	27.08	27.43
k, delay calibration	0.11	0.27	0.27	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.34	17.05	17.80	8.15	1.90	0.91	9.41	2.75	5.56	5.95	6.68	14.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.91	0.91	0.89	0.77	0.42	0.87	0.70	0.71	0.80	0.86	0.88
d, Delay for Lane Group [s/veh]	52.50	58.54	59.29	57.07	43.52	39.29	59.91	26.98	29.84	56.16	33.77	41.63
Lane Group LOS	D	E	E	E	D	D	E	C	C	E	C	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.10	11.44	10.96	4.37	6.84	3.04	3.20	11.50	11.94	2.83	16.37	17.74
50th-Percentile Queue Length [ft/ln]	127.46	285.97	273.99	109.16	171.08	75.95	80.06	287.53	298.38	70.63	409.15	443.53
95th-Percentile Queue Length [veh/ln]	8.80	16.99	16.39	7.79	11.13	5.47	5.76	17.06	17.60	5.09	23.00	24.65
95th-Percentile Queue Length [ft/ln]	220.04	424.64	409.72	194.84	278.34	136.71	144.11	426.57	440.03	127.13	575.02	616.22

Movement, Approach, & Intersection Results

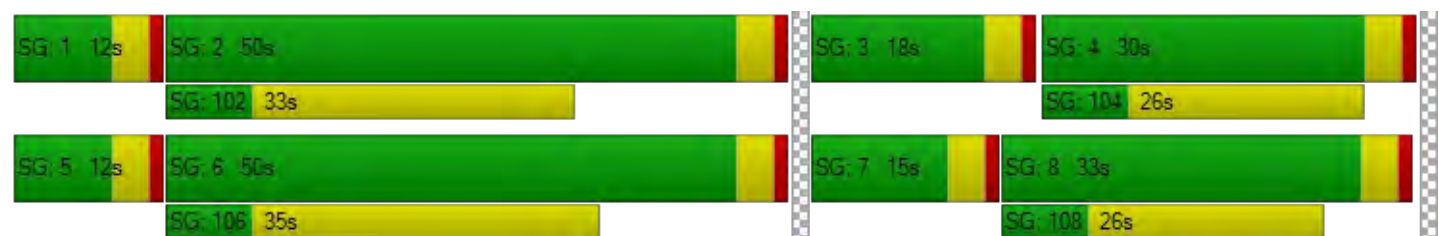
d_M, Delay for Movement [s/veh]	52.50	58.84	59.29	57.07	43.52	39.29	59.91	27.64	29.84	56.16	35.26	41.63
Movement LOS	D	E	E	E	D	D	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	56.76			47.19			31.66			38.14		
Approach LOS	E			D			C			D		
d_I, Intersection Delay [s/veh]	40.93											
Intersection LOS	D											
Intersection V/C	0.888											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.787			2.897			3.213			3.216		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	527			473			836			836		
d_b, Bicycle Delay [s]	29.82			32.07			18.62			18.62		
I_b,int, Bicycle LOS Score for Intersection	2.442			2.338			2.559			2.746		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	47.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.952

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	77	886	318	166	626	339	561	1266	68	314	1129	255
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	886	318	166	626	339	561	1266	68	314	1129	255
Peak Hour Factor	0.9210	0.9210	0.9210	0.9300	0.9300	0.9300	0.8600	0.8600	0.8600	0.9710	0.9710	0.9710
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	240	86	45	168	91	163	368	20	81	291	66
Total Analysis Volume [veh/h]	84	962	345	178	673	365	652	1472	79	323	1163	263
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	44	44	11	45	45	27	48	0	17	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	37	54	7	38	65	23	47	47	13	37	37
g / C, Green / Cycle	0.05	0.31	0.45	0.06	0.32	0.54	0.19	0.39	0.39	0.11	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.05	0.29	0.23	0.05	0.20	0.24	0.20	0.31	0.05	0.10	0.29	0.29
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1610
c, Capacity [veh/h]	85	1039	678	192	1067	815	628	1889	589	356	1040	496
d1, Uniform Delay [s]	56.96	40.20	23.55	56.23	35.04	16.66	48.51	31.99	23.46	52.91	40.22	40.28
k, delay calibration	0.11	0.11	0.39	0.11	0.11	0.25	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.55	4.15	2.13	16.76	0.62	0.88	27.54	3.26	0.47	8.87	15.13	26.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.93	0.51	0.93	0.63	0.45	1.04	0.78	0.13	0.91	0.93	0.93
d, Delay for Lane Group [s/veh]	99.50	44.35	25.68	73.00	35.66	17.54	76.05	35.25	23.94	61.78	55.35	66.69
Lane Group LOS	F	D	C	E	D	B	F	D	C	E	E	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.55	14.16	7.30	3.13	8.45	6.16	11.75	12.87	1.53	5.25	15.82	16.72
50th-Percentile Queue Length [ft/ln]	88.72	354.02	182.62	78.26	211.19	154.05	293.85	321.84	38.25	131.17	395.55	418.07
95th-Percentile Queue Length [veh/ln]	6.39	20.33	11.74	5.63	13.21	10.23	17.71	18.76	2.75	9.00	22.35	23.43
95th-Percentile Queue Length [ft/ln]	159.69	508.31	293.43	140.86	330.35	255.82	442.81	468.95	68.86	225.08	558.63	585.73

Movement, Approach, & Intersection Results

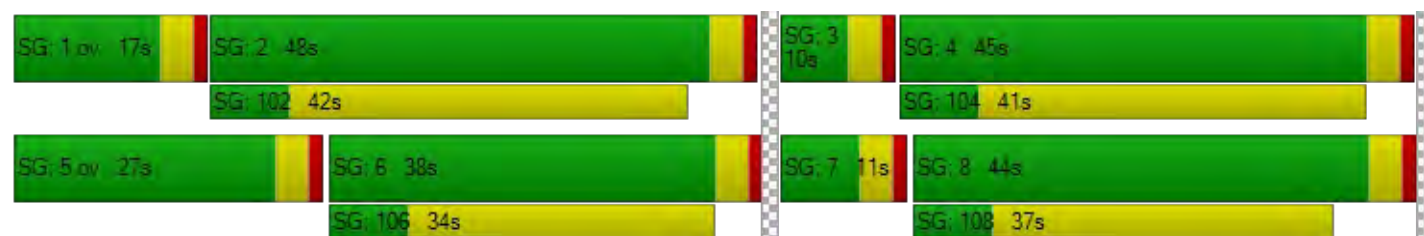
d_M, Delay for Movement [s/veh]	99.50	44.35	25.68	73.00	35.66	17.54	76.05	35.25	23.94	61.78	57.29	66.69
Movement LOS	F	D	C	E	D	B	F	D	C	E	E	E
d_A, Approach Delay [s/veh]	43.05			35.68			46.92			59.54		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	47.38											
Intersection LOS	D											
Intersection V/C	0.952											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.867			3.038			3.276			3.196		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			683			733			567		
d_b, Bicycle Delay [s]	26.67			26.00			24.07			30.82		
I_b,int, Bicycle LOS Score for Intersection	2.707			2.563			2.771			2.522		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	56.2
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.895

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	404	977	25	135	397	248	339	1077	296	20	1013	303
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	404	977	25	135	397	248	339	1077	296	20	1013	303
Peak Hour Factor	0.9360	0.9360	0.9360	0.9320	0.9320	0.9320	0.8080	0.8080	0.8080	0.9070	0.9070	0.9070
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	108	261	7	36	106	67	105	333	92	6	279	84
Total Analysis Volume [veh/h]	432	1044	27	145	426	266	420	1333	366	22	1117	334
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	51	0	10	44	44	16	42	42	17	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	40	6	33	49	12	55	72	3	46	46
g / C, Green / Cycle	0.11	0.34	0.05	0.28	0.41	0.10	0.45	0.60	0.03	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.13	0.31	0.04	0.09	0.18	0.13	0.40	0.24	0.01	0.29	0.29
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1571
c, Capacity [veh/h]	356	1130	165	1336	618	329	1534	899	87	1285	598
d1, Uniform Delay [s]	53.50	38.43	56.63	34.42	25.33	54.00	29.50	12.90	57.27	32.55	32.55
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	102.26	3.75	13.63	0.14	0.49	130.51	6.96	1.37	1.52	4.50	9.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.21	0.92	0.88	0.32	0.43	1.28	0.87	0.41	0.25	0.77	0.77
d, Delay for Lane Group [s/veh]	155.76	42.18	70.26	34.56	25.83	184.51	36.46	14.27	58.79	37.06	41.81
Lane Group LOS	F	D	E	C	C	F	D	B	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	10.41	15.16	2.50	3.32	5.50	10.91	18.34	5.45	0.35	13.24	13.13
50th-Percentile Queue Length [ft/ln]	260.21	378.90	62.39	83.01	137.50	272.64	458.38	136.27	8.65	331.11	328.16
95th-Percentile Queue Length [veh/ln]	16.88	21.54	4.49	5.98	9.35	17.79	25.36	9.28	0.62	19.21	19.07
95th-Percentile Queue Length [ft/ln]	421.92	538.52	112.31	149.42	233.65	444.84	633.94	231.99	15.56	480.32	476.71

Movement, Approach, & Intersection Results

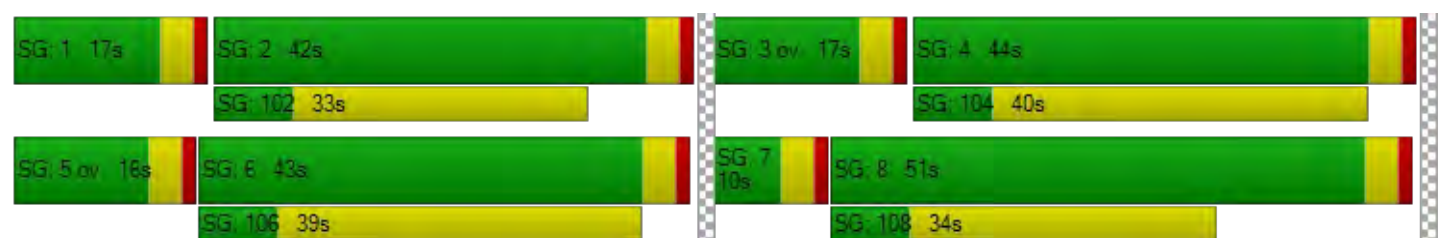
d_M, Delay for Movement [s/veh]	155.76	42.18	0.00	70.26	34.56	25.83	184.51	36.46	14.27	58.79	37.60	41.81
Movement LOS	F	D		E	C	C	F	D	B	E	D	D
d_A, Approach Delay [s/veh]	75.42			37.97			61.97			38.87		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	56.17											
Intersection LOS	E											
Intersection V/C	0.895											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.018			3.060			3.219			3.019		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	783			667			633			650		
d_b, Bicycle Delay [s]	22.20			26.67			28.02			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.777			2.020			3.308			2.370		
Bicycle LOS	C			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.545

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	71	117	52	97	120	72	65	1181	51	43	1192	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	71	117	52	97	120	72	65	1181	51	43	1192	72
Peak Hour Factor	0.9400	0.9400	0.9400	0.8420	0.8420	0.8420	0.9760	0.9760	0.9760	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	31	14	29	36	21	17	303	13	12	343	21
Total Analysis Volume [veh/h]	76	124	55	115	143	86	67	1210	52	49	1372	83
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	32	0	17	32	0	10	31	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	7	7	8	10	10	5	55	55	4	54	54
g / C, Green / Cycle	0.06	0.08	0.08	0.09	0.11	0.11	0.05	0.61	0.61	0.05	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.05	0.07	0.07	0.07	0.04	0.25	0.25	0.03	0.29	0.29
s, saturation flow rate [veh/h]	1687	1772	1594	1687	1772	1557	1687	3373	1734	1687	3373	1720
c, Capacity [veh/h]	99	142	128	146	191	168	94	2050	1054	82	2026	1033
d1, Uniform Delay [s]	41.84	40.24	40.37	40.39	38.48	38.63	41.89	9.22	9.22	42.05	10.06	10.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.67	4.87	6.31	9.12	3.30	4.31	9.76	0.60	1.17	6.87	0.80	1.57
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.77	0.65	0.68	0.79	0.62	0.66	0.72	0.41	0.41	0.60	0.48	0.48
d, Delay for Lane Group [s/veh]	53.50	45.11	46.68	49.52	41.78	42.94	51.65	9.82	10.38	48.92	10.87	11.63
Lane Group LOS	D	D	D	D	D	D	D	A	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.97	2.14	2.08	2.84	2.66	2.51	1.70	3.98	4.26	1.21	4.99	5.31
50th-Percentile Queue Length [ft/ln]	49.19	53.52	52.11	70.92	66.39	62.64	42.56	99.61	106.60	30.32	124.81	132.81
95th-Percentile Queue Length [veh/ln]	3.54	3.85	3.75	5.11	4.78	4.51	3.06	7.17	7.65	2.18	8.66	9.09
95th-Percentile Queue Length [ft/ln]	88.53	96.33	93.80	127.66	119.50	112.75	76.61	179.30	191.26	54.58	216.41	227.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.50	45.52	46.68	49.52	41.98	42.94	51.65	9.99	10.38	48.92	11.09	11.63
Movement LOS	D	D	D	D	D	D	D	A	B	D	B	B
d_A, Approach Delay [s/veh]	48.15			44.74			12.11			12.36		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	18.16											
Intersection LOS	B											
Intersection V/C	0.545											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.397			2.420			2.992			2.995		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	622			622			600			600		
d_b, Bicycle Delay [s]	21.36			21.36			22.05			22.05		
I_b,int, Bicycle LOS Score for Intersection	1.770			1.843			2.291			2.387		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	40.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.827

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	293	375	165	155	697	140	63	1125	259	230	981	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	375	165	155	697	140	63	1125	259	230	981	44
Peak Hour Factor	0.9230	0.9230	0.9230	0.9210	0.9210	0.9210	0.9640	0.9640	0.9640	0.8850	0.8850	0.8850
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	79	102	45	42	189	38	16	292	67	65	277	12
Total Analysis Volume [veh/h]	317	406	179	168	757	152	65	1167	269	260	1108	50
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	39	0	16	38	0	10	42	0	23	55	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	31	31	12	30	30	6	42	42	19	55	55
g / C, Green / Cycle	0.11	0.25	0.25	0.10	0.25	0.25	0.05	0.35	0.35	0.16	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.10	0.12	0.12	0.10	0.22	0.10	0.04	0.24	0.18	0.15	0.23	0.23
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1733
c, Capacity [veh/h]	358	857	383	171	829	370	84	1702	531	268	1557	800
d1, Uniform Delay [s]	52.75	37.98	37.92	53.90	44.04	37.99	56.38	33.19	30.64	50.23	22.52	22.52
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.17	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.32	0.41	0.89	28.65	4.41	0.73	13.66	2.27	3.43	25.47	1.11	2.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.47	0.47	0.99	0.91	0.41	0.77	0.69	0.51	0.97	0.49	0.49
d, Delay for Lane Group [s/veh]	60.07	38.39	38.81	82.55	48.44	38.72	70.04	35.46	34.07	75.71	23.63	24.67
Lane Group LOS	E	D	D	F	D	D	E	D	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.07	5.12	4.56	6.42	11.36	3.84	2.27	9.95	6.63	9.64	7.69	8.13
50th-Percentile Queue Length [ft/ln]	126.83	127.95	113.93	160.39	284.07	95.89	56.72	248.84	165.76	240.88	192.22	203.27
95th-Percentile Queue Length [veh/ln]	8.77	8.83	8.06	10.57	16.89	6.90	4.08	15.13	10.85	14.73	12.24	12.81
95th-Percentile Queue Length [ft/ln]	219.18	220.70	201.45	264.24	422.28	172.60	102.09	378.20	271.34	368.15	305.90	320.18

Movement, Approach, & Intersection Results

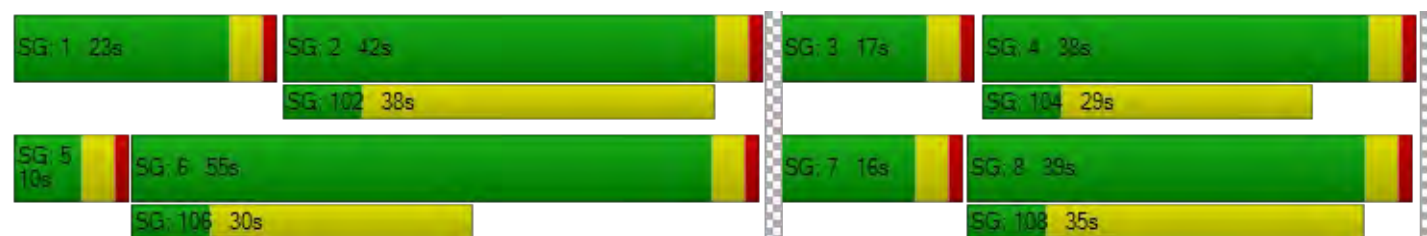
d_M, Delay for Movement [s/veh]	60.07	38.39	38.81	82.55	48.44	38.72	70.04	35.46	34.07	75.71	23.95	24.67
Movement LOS	E	D	D	F	D	D	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	46.09			52.39			36.71			33.47		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	40.95											
Intersection LOS	D											
Intersection V/C	0.827											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.912			2.726			3.114			3.016		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			567			633			850		
d_b, Bicycle Delay [s]	30.10			30.82			28.02			19.84		
I_b,int, Bicycle LOS Score for Intersection	2.304			2.448			2.385			2.340		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	51.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.935

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	159	248	408	486	348	5	18	1090	287	729	1389	676
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	159	248	408	486	348	5	18	1090	287	729	1389	676
Peak Hour Factor	0.9010	0.9010	0.9010	0.8760	0.8760	0.8760	0.8390	0.8390	0.8390	0.9650	0.9650	0.9650
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	69	113	139	99	1	5	325	86	189	360	175
Total Analysis Volume [veh/h]	176	275	453	555	397	6	21	1299	342	755	1439	701
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	29	0	25	44	0	10	39	0	27	56	56
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	21	21	21	21	36	36	3	39	39	23	59	84
g / C, Green / Cycle	0.05	0.17	0.17	0.17	0.18	0.30	0.30	0.03	0.33	0.33	0.19	0.49	0.70
(v / s)_i Volume / Saturation Flow Rate	0.05	0.15	0.15	0.15	0.17	0.11	0.11	0.01	0.26	0.26	0.23	0.30	0.47
s, saturation flow rate [veh/h]	3277	1772	1512	1506	3277	1772	1762	3277	4826	1538	3277	4826	1506
c, Capacity [veh/h]	166	308	263	262	574	529	526	86	1572	501	628	2372	1054
d1, Uniform Delay [s]	56.98	48.30	48.30	48.30	49.17	33.35	33.35	57.31	36.76	36.80	48.52	22.12	10.11
k, delay calibration	0.11	0.16	0.16	0.16	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	48.98	11.00	12.67	12.72	11.25	0.45	0.46	1.47	4.15	12.19	94.19	1.16	3.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.87	0.87	0.87	0.97	0.38	0.38	0.25	0.79	0.79	1.20	0.61	0.67
d, Delay for Lane Group [s/veh]	105.9	59.30	60.98	61.02	60.42	33.81	33.81	58.78	40.92	48.99	142.71	23.29	13.43
Lane Group LOS	F	E	E	E	E	C	C	E	D	D	F	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.65	8.77	7.61	7.58	9.12	4.74	4.72	0.33	11.54	12.20	17.58	9.86	10.29
50th-Percentile Queue Length [ft/ln]	91.31	219.2	190.2	189.6	228.06	118.54	117.92	8.26	288.60	304.90	439.43	246.50	257.20
95th-Percentile Queue Length [veh/ln]	6.57	13.63	12.13	12.10	14.08	8.31	8.28	0.59	17.12	17.92	26.74	15.01	15.55
95th-Percentile Queue Length [ft/ln]	164.3	340.6	303.3	302.5	351.89	207.81	206.97	14.87	427.90	448.08	668.40	375.24	388.70

Movement, Approach, & Intersection Results

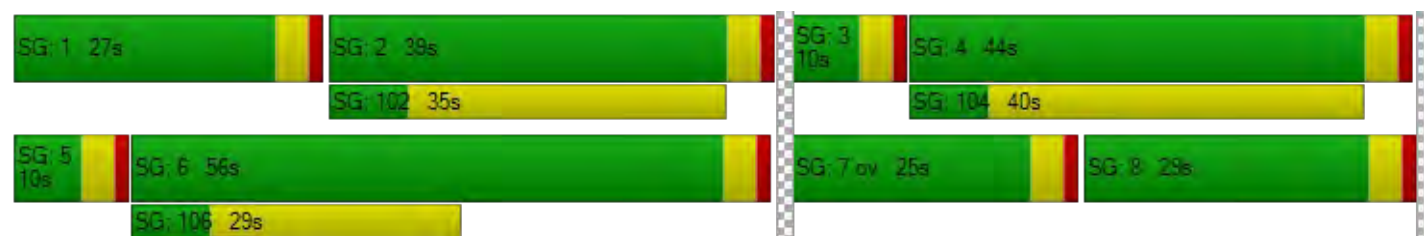
d_M, Delay for Movement [s/veh]	105.97	59.34	61.00	60.42	33.81	33.81	58.78	41.26	48.99	142.71	23.29	13.43
Movement LOS	F	E	E	E	C	C	E	D	D	F	C	B
d_A, Approach Delay [s/veh]	69.25			49.22			43.07			52.04		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	51.72											
Intersection LOS	D											
Intersection V/C	0.935											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.942			2.784			3.219			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417			667			583			867		
d_b, Bicycle Delay [s]	37.60			26.67			30.10			19.27		
I_b,int, Bicycle LOS Score for Intersection	2.305			2.350			2.245			3.152		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	43.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.949

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				T T T			U U U			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9460	1.0000	0.9460	1.0000	0.9230	0.9230	0.9510	0.9510	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	206	0	300	0	384	150	43	436	0
Total Analysis Volume [veh/h]	0	0	0	823	0	1199	0	1536	598	170	1744	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	62	0	0	0	47	0	11	58	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		56	56	56	45	45	45	7	56
g / C, Green / Cycle		0.47	0.47	0.47	0.37	0.37	0.37	0.06	0.46
(v / s)_i Volume / Saturation Flow Rate		0.40	0.44	0.45	0.32	0.35	0.35	0.05	0.36
s, saturation flow rate [veh/h]		1687	1542	1506	3373	1543	1506	3277	4826
c, Capacity [veh/h]		792	724	707	1253	573	559	194	2239
d1, Uniform Delay [s]		28.11	29.99	30.56	34.65	36.22	36.69	55.99	26.99
k, delay calibration		0.34	0.40	0.42	0.50	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		7.94	17.26	21.51	7.42	23.94	28.21	11.85	2.76
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.85	0.93	0.95	0.85	0.93	0.95	0.88	0.78
d, Delay for Lane Group [s/veh]		36.06	47.25	52.07	42.08	60.16	64.90	67.84	29.75
Lane Group LOS		D	D	D	D	E	E	E	C
Critical Lane Group		No	No	Yes	No	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		18.34	21.17	22.27	15.38	18.54	19.30	2.87	14.22
50th-Percentile Queue Length [ft/ln]		458.61	529.34	556.66	384.57	463.44	482.55	71.81	355.43
95th-Percentile Queue Length [veh/ln]		25.37	28.72	30.01	21.82	25.60	26.51	5.17	20.40
95th-Percentile Queue Length [ft/ln]		634.22	718.01	750.13	545.38	639.96	662.67	129.26	510.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	38.08	0.00	49.96	0.00	43.41	64.39	67.84	29.75	0.00
Movement LOS				D		D		D	E	E	C	
d_A, Approach Delay [s/veh]	0.00			45.13			52.30			33.13		
Approach LOS	A			D			D			C		
d_I, Intersection Delay [s/veh]	43.87											
Intersection LOS	D											
Intersection V/C	0.949											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.103			2.611			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			717			900		
d_b, Bicycle Delay [s]	60.00			60.00			24.70			18.15		
I_b,int, Bicycle LOS Score for Intersection	4.132			7.469			2.733			2.612		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	29.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	0	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1011	0	413	0	0	0	679	1521	0	0	810	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1011	0	413	0	0	0	679	1521	0	0	810	391
Peak Hour Factor	0.9860	1.0000	0.9860	1.0000	1.0000	1.0000	0.9080	0.9080	1.0000	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	256	0	105	0	0	0	187	419	0	0	215	104
Total Analysis Volume [veh/h]	1025	0	419	0	0	0	748	1675	0	0	862	416
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	6	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	30	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	42	0	0	0	0	0	32	53	0	0	21	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	16	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No						No	No			No	
Maximum Recall	No						No	No			No	
Pedestrian Recall	No						No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		L	C	C	C	R
C, Cycle Length [s]	95	95		95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33		24	54	25	25	25
g / C, Green / Cycle	0.35	0.35		0.25	0.56	0.27	0.27	0.27
(v / s)_i Volume / Saturation Flow Rate	0.31	0.28		0.23	0.35	0.19	0.21	0.21
s, saturation flow rate [veh/h]	3277	1506		3277	4826	3373	1511	1506
c, Capacity [veh/h]	1151	529		835	2725	903	404	403
d1, Uniform Delay [s]	29.11	27.71		34.18	13.79	31.44	32.32	32.35
k, delay calibration	0.11	0.23		0.11	0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.62	5.73		3.70	1.05	4.67	14.52	14.76
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.79		0.90	0.61	0.71	0.79	0.79
d, Delay for Lane Group [s/veh]	31.72	33.45		37.88	14.84	36.11	46.84	47.11
Lane Group LOS	C	C		D	B	D	D	D
Critical Lane Group	Yes	No		Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	11.04	9.11		8.56	7.62	7.07	8.29	8.32
50th-Percentile Queue Length [ft/ln]	276.00	227.75		214.07	190.57	176.65	207.31	208.00
95th-Percentile Queue Length [veh/ln]	16.49	14.06		13.36	12.15	11.43	13.02	13.05
95th-Percentile Queue Length [ft/ln]	412.23	351.50		334.04	303.76	285.63	325.38	326.26

Movement, Approach, & Intersection Results

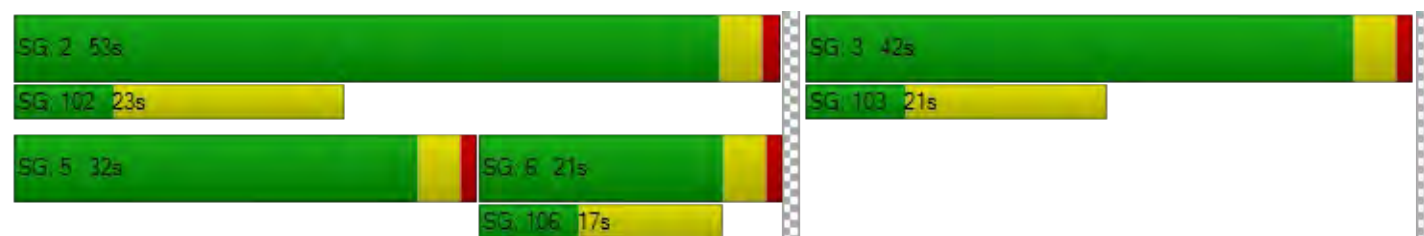
d_M, Delay for Movement [s/veh]	31.72	0.00	33.45	0.00	0.00	0.00	37.88	14.84	0.00	0.00	36.23	47.05
Movement LOS	C		C				D	B			D	D
d_A, Approach Delay [s/veh]	32.22			0.00			21.95			41.54		
Approach LOS	C			A			C			D		
d_I, Intersection Delay [s/veh]	29.70											
Intersection LOS	C											
Intersection V/C	0.862											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	37.14	37.14	0.00	37.14
I_p,int, Pedestrian LOS Score for Intersection	2.412	2.285	0.000	3.066
Crosswalk LOS	B	B	F	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	1032	358
d_b, Bicycle Delay [s]	47.50	47.50	11.14	32.02
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.892	2.263
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	25.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.599

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	214	144	85	1	141	176	149	761	606	92	584	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	214	144	85	1	141	176	149	761	606	92	584	7
Peak Hour Factor	0.8290	0.8290	0.8290	0.8490	0.8490	0.8490	0.8680	0.8680	0.8680	0.8840	0.8840	0.8840
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	43	26	0	42	52	43	219	175	26	165	2
Total Analysis Volume [veh/h]	258	174	103	1	166	207	172	877	698	104	661	8
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	14	46	46	10	42	0	17	39	39	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	27	37	0	17	17	12	56	70	6	50	50
g / C, Green / Cycle	0.10	0.25	0.35	0.00	0.16	0.16	0.12	0.53	0.67	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.08	0.10	0.07	0.00	0.09	0.14	0.10	0.26	0.26	0.03	0.13	0.13
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1761
c, Capacity [veh/h]	314	452	529	5	287	244	201	1795	1775	190	1588	829
d1, Uniform Delay [s]	46.64	32.34	23.76	52.30	40.73	42.80	45.39	15.56	7.95	48.17	16.93	16.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.34	0.54	0.18	21.49	1.84	8.01	9.86	0.95	0.66	2.45	0.43	0.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.39	0.19	0.21	0.58	0.85	0.85	0.49	0.39	0.55	0.28	0.28
d, Delay for Lane Group [s/veh]	51.97	32.88	23.94	73.79	42.57	50.81	55.25	16.51	8.60	50.62	17.37	17.77
Lane Group LOS	D	C	C	E	D	D	E	B	A	D	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.52	3.71	1.80	0.05	4.10	5.72	4.92	6.61	3.40	1.39	3.26	3.50
50th-Percentile Queue Length [ft/ln]	88.12	92.66	45.07	1.35	102.50	143.06	123.09	165.13	84.96	34.67	81.54	87.55
95th-Percentile Queue Length [veh/ln]	6.34	6.67	3.24	0.10	7.38	9.65	8.56	10.82	6.12	2.50	5.87	6.30
95th-Percentile Queue Length [ft/ln]	158.62	166.78	81.12	2.43	184.50	241.14	214.07	270.50	152.92	62.41	146.78	157.58

Movement, Approach, & Intersection Results

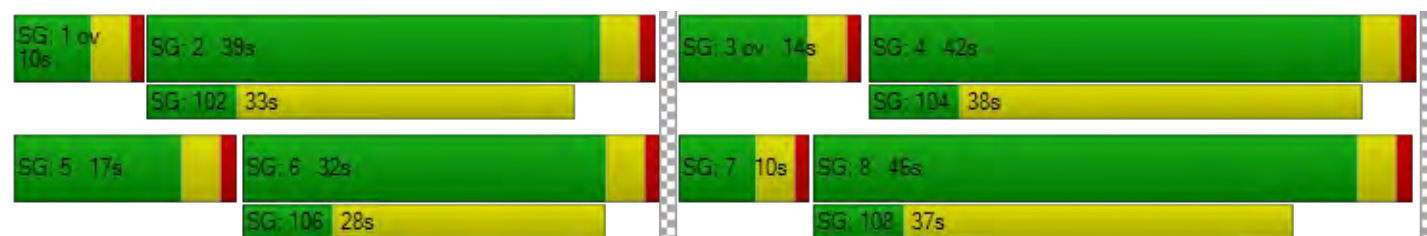
d_M, Delay for Movement [s/veh]	51.97	32.88	23.94	73.79	42.57	50.81	55.25	16.51	8.60	50.62	17.50	17.77
Movement LOS	D	C	C	E	D	D	E	B	A	D	B	B
d_A, Approach Delay [s/veh]	40.37			47.22			17.17			21.96		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	25.14											
Intersection LOS	C											
Intersection V/C	0.599											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.704			2.316			3.083			2.845		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			724			667			533		
d_b, Bicycle Delay [s]	18.90			21.38			23.33			28.23		
I_b,int, Bicycle LOS Score for Intersection	2.442			2.177			3.001			1.985		
Bicycle LOS	B			B			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	32.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.682

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	94	451	292	354	880	96	83	115	38	329	128	325
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	94	451	292	354	880	96	83	115	38	329	128	325
Peak Hour Factor	0.9110	0.9110	0.9110	0.9020	0.9020	0.9020	0.8540	0.8540	0.8540	0.8960	0.8960	0.8960
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	26	124	80	98	244	27	24	34	11	92	36	91
Total Analysis Volume [veh/h]	103	495	321	392	976	106	97	135	44	367	143	363
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	22	31	0	23	32	0	12	37	0	24	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	51	51	19	61	61	8	14	15	21	44
g / C, Green / Cycle	0.08	0.44	0.44	0.17	0.53	0.53	0.07	0.12	0.13	0.19	0.39
(v / s)_i Volume / Saturation Flow Rate	0.06	0.15	0.21	0.12	0.21	0.21	0.06	0.11	0.11	0.08	0.24
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1684	1687	1698	3277	1772	1506
c, Capacity [veh/h]	129	1482	661	542	1782	890	119	211	433	330	582
d1, Uniform Delay [s]	52.29	21.20	22.99	45.52	16.28	16.28	52.77	49.35	48.80	41.47	28.57
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.18
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.83	0.61	2.54	1.85	0.69	1.37	12.77	9.19	4.66	0.90	1.84
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.33	0.49	0.72	0.40	0.40	0.82	0.85	0.85	0.43	0.62
d, Delay for Lane Group [s/veh]	63.12	21.81	25.53	47.37	16.96	17.65	65.55	58.55	53.46	42.37	30.40
Lane Group LOS	E	C	C	D	B	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.31	4.48	6.59	5.44	5.75	5.91	3.18	5.56	5.42	3.68	8.30
50th-Percentile Queue Length [ft/ln]	82.75	112.02	164.81	135.88	143.78	147.81	79.57	139.08	135.42	92.02	207.57
95th-Percentile Queue Length [veh/ln]	5.96	7.95	10.80	9.26	9.68	9.90	5.73	9.43	9.23	6.63	13.03
95th-Percentile Queue Length [ft/ln]	148.95	198.81	270.08	231.47	242.11	247.50	143.22	235.79	230.84	165.64	325.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	63.12	21.81	25.53	47.37	17.14	17.65	65.55	58.55	58.55	53.46	42.37	30.40
Movement LOS	E	C	C	D	B	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	27.74			25.22			61.01			42.06		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	32.81											
Intersection LOS	C											
Intersection V/C	0.682											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.927			3.033			2.156			2.744		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	470			487			574			783		
d_b, Bicycle Delay [s]	33.67			32.91			29.23			21.30		
I_b,int, Bicycle LOS Score for Intersection	2.065			2.370			2.015			3.000		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	21.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.520

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	111	73	166	53	37	75	84	624	129	144	767	25
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	111	73	166	53	37	75	84	624	129	144	767	25
Peak Hour Factor	0.8630	0.8630	0.8630	0.7790	0.7790	0.7790	0.9320	0.9320	0.9320	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	21	48	17	12	24	23	167	35	37	198	6
Total Analysis Volume [veh/h]	129	85	192	68	47	96	90	670	138	149	793	26
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	22	22	22	6	47	47	10	50	50
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.07	0.52	0.52	0.11	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.10	0.05	0.13	0.05	0.09	0.05	0.23	0.23	0.09	0.24	0.02
s, saturation flow rate [veh/h]	1245	1772	1506	1312	1584	1687	1772	1668	1687	3373	1506
c, Capacity [veh/h]	244	422	359	302	378	116	921	867	183	1887	842
d1, Uniform Delay [s]	37.88	27.43	29.93	32.75	28.70	41.23	13.58	13.58	39.24	11.43	8.89
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.78	0.23	1.24	0.37	0.63	10.42	1.60	1.70	8.39	0.69	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.20	0.53	0.22	0.38	0.77	0.45	0.45	0.81	0.42	0.03
d, Delay for Lane Group [s/veh]	39.66	27.66	31.16	33.12	29.33	51.65	15.18	15.28	47.63	12.12	8.96
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.83	1.47	3.68	1.31	2.60	2.28	5.38	5.09	3.60	4.40	0.23
50th-Percentile Queue Length [ft/ln]	70.71	36.71	91.89	32.82	65.08	56.92	134.47	127.26	90.00	110.01	5.78
95th-Percentile Queue Length [veh/ln]	5.09	2.64	6.62	2.36	4.69	4.10	9.18	8.79	6.48	7.84	0.42
95th-Percentile Queue Length [ft/ln]	127.28	66.08	165.41	59.07	117.14	102.46	229.56	219.76	162.00	196.02	10.41

Movement, Approach, & Intersection Results

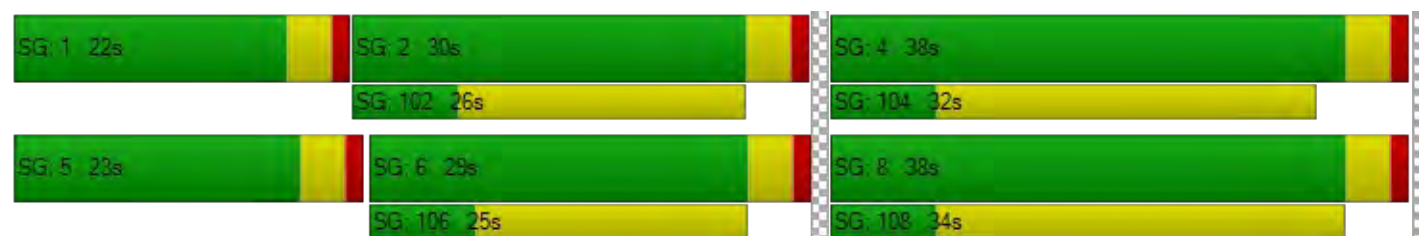
d_M, Delay for Movement [s/veh]	39.66	27.66	31.16	33.12	29.33	29.33	51.65	15.22	15.28	47.63	12.12	8.96
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	33.13			30.55			18.88			17.50		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	21.66											
Intersection LOS	C											
Intersection V/C	0.520											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.311			2.074			2.856			2.858		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.230			1.908			2.300			2.358		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.856

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	121	409	179	264	684	487	286	684	159	165	650	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	409	179	264	684	487	286	684	159	165	650	229
Peak Hour Factor	0.9440	0.9440	0.9440	0.9150	0.9150	0.9150	0.9030	0.9030	0.9030	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	108	47	72	187	133	79	189	44	45	175	62
Total Analysis Volume [veh/h]	128	433	190	289	748	532	317	757	176	178	702	247
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	27	56	0	17	42	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	43	43	13	50	50	13	40	40	8	35	35
g / C, Green / Cycle	0.05	0.36	0.36	0.11	0.42	0.42	0.11	0.33	0.33	0.07	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.13	0.09	0.38	0.40	0.10	0.22	0.12	0.05	0.21	0.16
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1535	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	164	1206	538	354	736	638	355	1128	504	219	987	441
d1, Uniform Delay [s]	56.35	28.42	28.34	52.35	32.95	34.03	52.81	34.27	30.10	55.27	37.90	35.90
k, delay calibration	0.11	0.11	0.11	0.11	0.37	0.41	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.82	0.18	0.39	4.63	13.73	23.33	7.85	3.19	1.91	7.19	4.34	5.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.36	0.35	0.82	0.91	0.96	0.89	0.67	0.35	0.81	0.71	0.56
d, Delay for Lane Group [s/veh]	64.17	28.60	28.74	56.98	46.68	57.36	60.66	37.46	32.01	62.45	42.24	40.98
Lane Group LOS	E	C	C	E	D	E	E	D	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.10	4.63	4.09	4.48	20.66	20.96	5.10	9.92	4.12	2.87	9.77	6.74
50th-Percentile Queue Length [ft/ln]	52.38	115.78	102.17	112.06	516.39	523.89	127.41	248.08	102.88	71.87	244.24	168.42
95th-Percentile Queue Length [veh/ln]	3.77	8.16	7.36	7.95	28.11	28.46	8.80	15.09	7.41	5.17	14.90	10.99
95th-Percentile Queue Length [ft/ln]	94.28	204.02	183.90	198.86	702.73	711.58	219.97	377.23	185.19	129.36	372.39	274.84

Movement, Approach, & Intersection Results

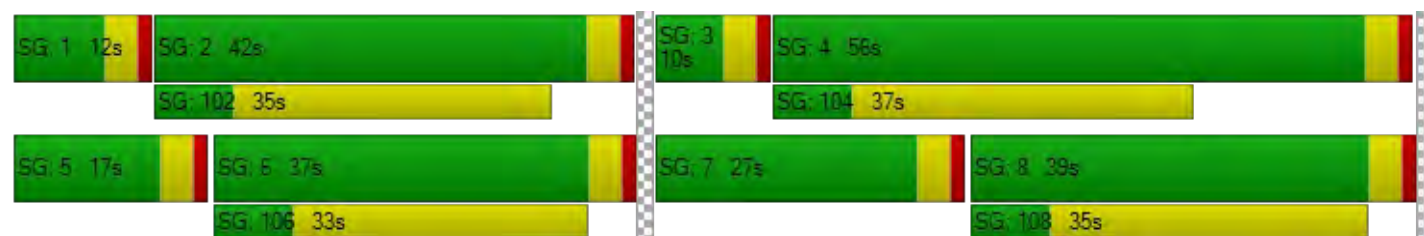
d_M, Delay for Movement [s/veh]	64.17	28.60	28.74	56.98	47.80	57.36	60.66	37.46	32.01	62.45	42.24	40.98
Movement LOS	E	C	C	E	D	E	E	D	C	E	D	D
d_A, Approach Delay [s/veh]	34.69			52.73			42.58			45.16		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	45.33											
Intersection LOS	D											
Intersection V/C	0.856											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.866			2.884			2.972			2.937		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			867			633			550		
d_b, Bicycle Delay [s]	30.10			19.27			28.02			31.54		
I_b,int, Bicycle LOS Score for Intersection	2.179			2.854			2.591			2.489		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	21.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.604

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	312	19	169	11	21	12	8	720	328	155	703	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	19	169	11	21	12	8	720	328	155	703	12
Peak Hour Factor	0.9600	0.9600	0.9600	0.7170	0.7170	0.7170	0.9350	0.9350	0.9350	0.9260	0.9260	0.9260
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	81	5	44	4	7	4	2	193	88	42	190	3
Total Analysis Volume [veh/h]	325	20	176	15	29	17	9	770	351	167	759	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	56	56	0	37	0	10	38	0	11	39	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	22	33	5	5	1	64	64	7	70	70
g / C, Green / Cycle	0.12	0.20	0.31	0.05	0.05	0.01	0.61	0.61	0.07	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.10	0.01	0.12	0.01	0.03	0.01	0.33	0.33	0.05	0.22	0.22
s, saturation flow rate [veh/h]	3277	1772	1506	1392	1663	1687	1772	1586	3277	1772	1761
c, Capacity [veh/h]	390	364	467	99	80	23	1087	973	220	1181	1174
d1, Uniform Delay [s]	45.25	33.56	28.29	50.81	48.96	51.37	11.77	11.79	48.18	7.46	7.46
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.66	0.06	0.50	0.70	6.40	10.21	1.95	2.19	5.34	0.74	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.06	0.38	0.15	0.58	0.39	0.54	0.54	0.76	0.33	0.33
d, Delay for Lane Group [s/veh]	49.90	33.62	28.79	51.51	55.37	61.57	13.73	13.98	53.52	8.21	8.21
Lane Group LOS	D	C	C	D	E	E	B	B	D	A	A
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.37	0.42	3.50	0.41	1.32	0.30	8.01	7.26	2.30	3.62	3.60
50th-Percentile Queue Length [ft/ln]	109.23	10.43	87.59	10.21	33.00	7.50	200.27	181.62	57.62	90.52	90.02
95th-Percentile Queue Length [veh/ln]	7.80	0.75	6.31	0.74	2.38	0.54	12.65	11.69	4.15	6.52	6.48
95th-Percentile Queue Length [ft/ln]	194.93	18.78	157.67	18.38	59.40	13.51	316.32	292.13	103.71	162.94	162.04

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.90	33.62	28.79	51.51	55.37	55.37	61.57	13.79	13.98	53.52	8.21	8.21
Movement LOS	D	C	C	D	E	E	E	B	B	D	A	A
d_A, Approach Delay [s/veh]	42.15			54.42			14.23			16.27		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	21.36											
Intersection LOS	C											
Intersection V/C	0.604											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.634			1.981			2.742			2.790		
Crosswalk LOS	B			A			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	990			629			648			667		
d_b, Bicycle Delay [s]	13.38			24.69			24.00			23.33		
I_b,int, Bicycle LOS Score for Intersection	2.419			1.660			2.492			2.334		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	93	4	197	161	774	5	11	625	72
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	93	4	197	161	774	5	11	625	72
Peak Hour Factor	0.7140	0.7140	0.7140	0.9130	0.9130	0.9130	0.9210	0.9210	0.9210	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	1	3	25	1	54	44	210	1	3	173	20
Total Analysis Volume [veh/h]	14	3	11	102	4	216	175	840	5	12	692	80
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	44	37	0	39	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	16	16	43	16	83	83	2	69	69
g / C, Green / Cycle	0.03	0.03	0.03	0.13	0.13	0.36	0.13	0.69	0.69	0.02	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.03	0.03	0.14	0.10	0.24	0.24	0.01	0.21	0.05
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1693	1506	1687	1772	1768	1687	3373	1506
c, Capacity [veh/h]	85	56	47	219	219	541	222	1219	1217	29	1936	864
d1, Uniform Delay [s]	58.47	56.41	56.73	46.95	46.95	28.76	50.50	7.66	7.66	58.37	13.71	11.51
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.14	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.89	0.40	2.47	0.57	0.56	0.61	6.09	0.78	0.78	8.82	0.52	0.21
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.16	0.05	0.23	0.24	0.24	0.40	0.79	0.35	0.35	0.41	0.36	0.09
d, Delay for Lane Group [s/veh]	59.36	56.81	59.20	47.52	47.51	29.37	56.59	8.45	8.45	67.19	14.22	11.72
Lane Group LOS	E	E	E	D	D	C	E	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	0.09	0.36	1.46	1.47	4.75	5.47	4.42	4.41	0.43	5.06	1.01
50th-Percentile Queue Length [ft/ln]	11.09	2.36	8.96	36.55	36.66	118.81	136.63	110.58	110.36	10.83	126.59	25.17
95th-Percentile Queue Length [veh/ln]	0.80	0.17	0.65	2.63	2.64	8.33	9.30	7.87	7.86	0.78	8.75	1.81
95th-Percentile Queue Length [ft/ln]	19.96	4.26	16.14	65.78	65.99	208.19	232.48	196.81	196.50	19.50	218.84	45.31

Movement, Approach, & Intersection Results

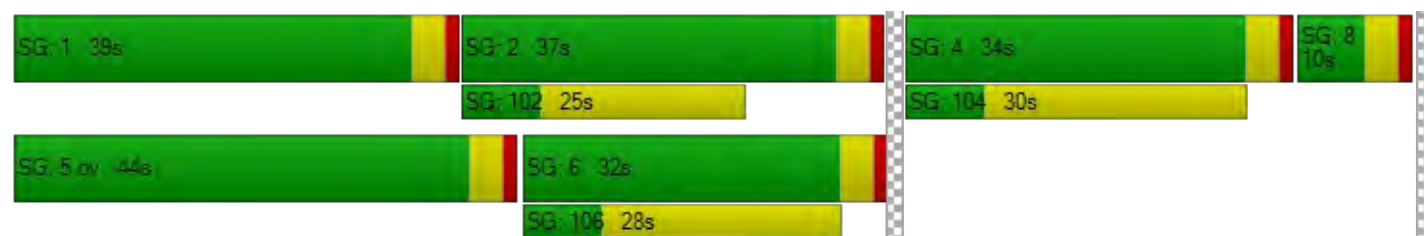
d_M, Delay for Movement [s/veh]	59.36	56.81	59.20	47.52	47.51	29.37	56.59	8.45	8.45	67.19	14.22	11.72
Movement LOS	E	E	E	D	D	C	E	A	A	E	B	B
d_A, Approach Delay [s/veh]	59.02			35.34			16.71			14.78		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	19.34											
Intersection LOS	B											
Intersection V/C	0.509											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.157			2.286			2.712			0.000		
Crosswalk LOS	B			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			500			550			467		
d_b, Bicycle Delay [s]	54.15			33.75			31.54			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.606			2.091			2.401			2.206		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	34.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.587

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	227	306	60	158	606	109	117	444	294	55	382	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	227	306	60	158	606	109	117	444	294	55	382	88
Peak Hour Factor	0.8820	0.8820	0.8820	0.8520	0.8520	0.8520	0.9210	0.9210	0.9210	0.8340	0.8340	0.8340
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	64	87	17	46	178	32	32	121	80	16	115	26
Total Analysis Volume [veh/h]	257	347	68	185	711	128	127	482	319	66	458	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	37	0	14	37	0	15	44	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	51	51	8	48	48	10	25	25	5	21	21
g / C, Green / Cycle	0.10	0.48	0.48	0.08	0.46	0.46	0.09	0.24	0.24	0.05	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.08	0.06	0.17	0.17	0.08	0.14	0.21	0.04	0.14	0.07
s, saturation flow rate [veh/h]	3277	3373	1629	3277	3373	1637	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	314	1618	781	249	1550	752	155	816	364	85	676	302
d1, Uniform Delay [s]	46.62	15.51	15.55	47.57	18.43	18.45	46.87	35.24	38.32	49.33	38.88	36.15
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.13	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.23	0.23	0.49	4.38	0.66	1.37	10.11	0.68	7.69	13.99	1.20	0.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.17	0.18	0.74	0.36	0.37	0.82	0.59	0.88	0.78	0.68	0.35
d, Delay for Lane Group [s/veh]	51.86	15.74	16.04	51.95	19.09	19.83	56.98	35.92	46.01	63.32	40.08	36.84
Lane Group LOS	D	B	B	D	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.51	1.91	1.95	2.51	4.49	4.54	3.68	5.49	8.57	2.04	5.53	2.39
50th-Percentile Queue Length [ft/ln]	87.67	47.71	48.67	62.84	112.31	113.61	92.02	137.23	214.20	50.91	138.35	59.78
95th-Percentile Queue Length [veh/ln]	6.31	3.43	3.50	4.52	7.97	8.04	6.63	9.33	13.37	3.67	9.39	4.30
95th-Percentile Queue Length [ft/ln]	157.80	85.87	87.60	113.11	199.21	201.02	165.63	233.29	334.21	91.65	234.80	107.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.86	15.80	16.04	51.95	19.24	19.83	56.98	35.92	46.01	63.32	40.08	36.84
Movement LOS	D	B	B	D	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	29.61			25.23			42.27			41.97		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	34.23											
Intersection LOS	C											
Intersection V/C	0.587											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.948			2.928			2.748			2.682		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	629			629			762			667		
d_b, Bicycle Delay [s]	24.69			24.69			20.12			23.33		
I_b,int, Bicycle LOS Score for Intersection	1.929			2.123			2.325			2.079		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	19.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.276

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	21	287	109	68	266	20	33	10	57	78	4	56
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	21	287	109	68	266	20	33	10	57	78	4	56
Peak Hour Factor	0.9200	0.9200	0.9200	0.9030	0.9030	0.9030	0.6380	0.6380	0.6380	0.9310	0.9310	0.9310
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	78	30	19	74	6	13	4	22	21	1	15
Total Analysis Volume [veh/h]	23	312	118	75	295	22	52	16	89	84	4	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	30	26	0	39	35	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	61	61	5	64	64	16	16	16	16
g / C, Green / Cycle	0.03	0.65	0.65	0.06	0.68	0.68	0.17	0.17	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.01	0.13	0.13	0.04	0.09	0.09	0.04	0.07	0.07	0.04
s, saturation flow rate [veh/h]	1687	1772	1610	1687	1772	1729	1338	1541	1289	1520
c, Capacity [veh/h]	49	1147	1042	97	1197	1168	218	260	182	256
d1, Uniform Delay [s]	45.38	6.76	6.78	44.15	5.49	5.50	39.45	35.23	42.82	34.27
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.65	0.38	0.43	12.09	0.23	0.24	0.56	1.01	1.83	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.19	0.20	0.77	0.13	0.13	0.24	0.40	0.46	0.25
d, Delay for Lane Group [s/veh]	52.03	7.13	7.21	56.24	5.72	5.74	40.01	36.24	44.65	34.77
Lane Group LOS	D	A	A	E	A	A	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.62	1.76	1.66	2.05	1.08	1.06	1.15	2.22	2.01	1.31
50th-Percentile Queue Length [ft/ln]	15.54	43.97	41.48	51.31	26.91	26.56	28.80	55.43	50.19	32.68
95th-Percentile Queue Length [veh/ln]	1.12	3.17	2.99	3.69	1.94	1.91	2.07	3.99	3.61	2.35
95th-Percentile Queue Length [ft/ln]	27.97	79.14	74.66	92.36	48.44	47.81	51.84	99.77	90.35	58.83

Movement, Approach, & Intersection Results

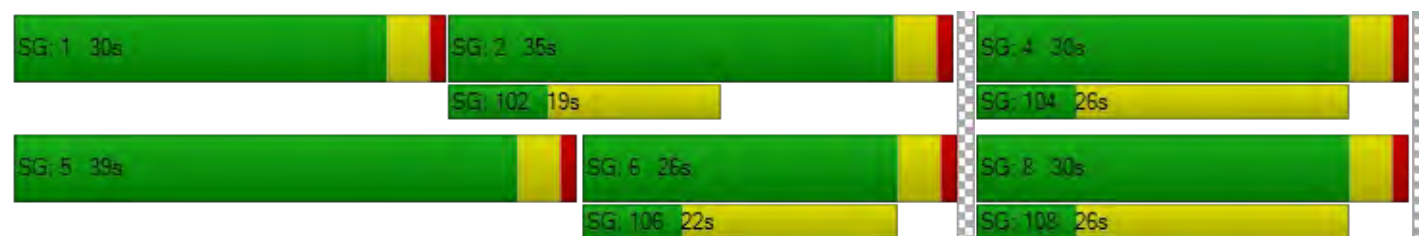
d_M, Delay for Movement [s/veh]	52.03	7.16	7.21	56.24	5.73	5.74	40.01	36.24	36.24	44.65	34.77	34.77
Movement LOS	D	A	A	E	A	A	D	D	D	D	C	C
d_A, Approach Delay [s/veh]	9.45			15.39			37.49			40.38		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	19.28											
Intersection LOS	B											
Intersection V/C	0.276											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.601			2.535			2.009			2.058		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	463			653			547			547		
d_b, Bicycle Delay [s]	28.05			21.56			25.06			25.06		
I_b,int, Bicycle LOS Score for Intersection	1.933			1.883			1.819			1.804		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.640

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	22	318	473	52	286	21	24	13	26	470	6	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	318	473	52	286	21	24	13	26	470	6	92
Peak Hour Factor	0.9560	0.9560	0.9560	0.8510	0.8510	0.8510	0.8970	0.8970	0.8970	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	83	124	15	84	6	7	4	7	135	2	26
Total Analysis Volume [veh/h]	23	333	495	61	336	25	27	14	29	541	7	106
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	64	55	55	64	57	57	5	5	23	23
g / C, Green / Cycle	0.61	0.53	0.53	0.61	0.55	0.55	0.05	0.05	0.22	0.22
(v / s)_i Volume / Saturation Flow Rate	0.02	0.19	0.33	0.08	0.10	0.10	0.02	0.02	0.20	0.20
s, saturation flow rate [veh/h]	1072	1772	1506	774	1772	1729	1715	1506	1687	1624
c, Capacity [veh/h]	699	931	792	416	966	943	86	76	377	363
d1, Uniform Delay [s]	8.20	14.55	17.60	11.54	12.11	12.12	48.55	48.32	39.43	39.47
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.19	0.20
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	1.07	3.71	0.74	0.43	0.45	4.03	3.16	11.28	12.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.36	0.63	0.15	0.19	0.19	0.48	0.38	0.88	0.88
d, Delay for Lane Group [s/veh]	8.22	15.62	21.31	12.28	12.54	12.56	52.58	51.48	50.71	51.53
Lane Group LOS	A	B	C	B	B	B	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.20	4.76	8.88	0.62	2.22	2.19	1.14	0.80	9.37	9.14
50th-Percentile Queue Length [ft/ln]	5.01	119.02	221.95	15.48	55.45	54.66	28.49	20.02	234.25	228.53
95th-Percentile Queue Length [veh/ln]	0.36	8.34	13.76	1.11	3.99	3.94	2.05	1.44	14.39	14.10
95th-Percentile Queue Length [ft/ln]	9.01	208.47	344.12	27.87	99.81	98.38	51.28	36.03	359.75	352.49

Movement, Approach, & Intersection Results

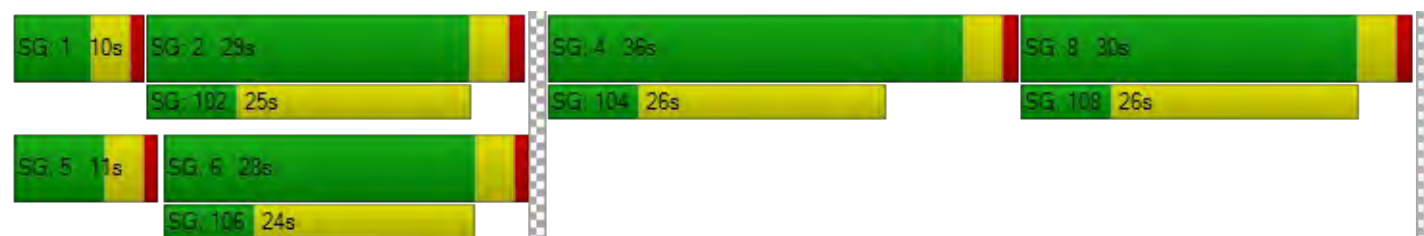
d_M, Delay for Movement [s/veh]	8.22	15.62	21.31	12.28	12.55	12.56	52.58	52.58	51.48	51.03	51.53	51.53
Movement LOS	A	B	C	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	18.73			12.51			52.12			51.11		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	29.19											
Intersection LOS	C											
Intersection V/C	0.640											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.650			2.480			2.007			2.393		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	457			476			495			610		
d_b, Bicycle Delay [s]	31.24			30.48			29.72			25.38		
I_b,int, Bicycle LOS Score for Intersection	2.262			1.908			1.675			2.639		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.960

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	165	24	89	84	19	628	717	476	29	84	705	49
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	165	24	89	84	19	628	717	476	29	84	705	49
Peak Hour Factor	0.8300	0.8300	0.8300	0.8970	0.8970	0.8970	0.9440	0.9440	0.9440	0.8860	0.8860	0.8860
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	50	7	27	23	5	175	190	126	8	24	199	14
Total Analysis Volume [veh/h]	199	29	107	94	21	700	760	504	31	95	796	55
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	14	14	37	31	0	38	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	14	10	10	64	33	72	72	8	48	48
g / C, Green / Cycle	0.11	0.11	0.11	0.08	0.08	0.53	0.27	0.60	0.60	0.07	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.07	0.06	0.01	0.46	0.23	0.15	0.15	0.06	0.24	0.24
s, saturation flow rate [veh/h]	1417	1509	1506	1687	1612	1506	3277	1772	1736	1687	1772	1732
c, Capacity [veh/h]	198	224	170	142	135	806	891	1061	1039	120	705	689
d1, Uniform Delay [s]	50.40	51.95	50.84	53.35	51.04	24.21	41.44	11.41	11.41	54.89	28.74	28.74
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.53	2.87	3.78	5.24	0.53	12.20	2.45	0.58	0.59	11.03	3.91	4.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.44	0.63	0.63	0.66	0.16	0.87	0.85	0.25	0.26	0.79	0.61	0.61
d, Delay for Lane Group [s/veh]	51.93	54.82	54.63	58.59	51.57	36.41	43.89	11.99	12.00	65.91	32.65	32.74
Lane Group LOS	D	D	D	E	D	D	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.57	4.32	3.25	2.96	0.61	19.25	10.90	3.51	3.45	3.20	10.52	10.30
50th-Percentile Queue Length [ft/ln]	64.18	107.95	81.31	74.01	15.21	481.36	272.48	87.74	86.27	79.90	263.09	257.58
95th-Percentile Queue Length [veh/ln]	4.62	7.73	5.85	5.33	1.10	26.45	16.31	6.32	6.21	5.75	15.84	15.57
95th-Percentile Queue Length [ft/ln]	115.52	193.15	146.36	133.22	27.38	661.27	407.83	157.92	155.29	143.82	396.09	389.19

Movement, Approach, & Intersection Results

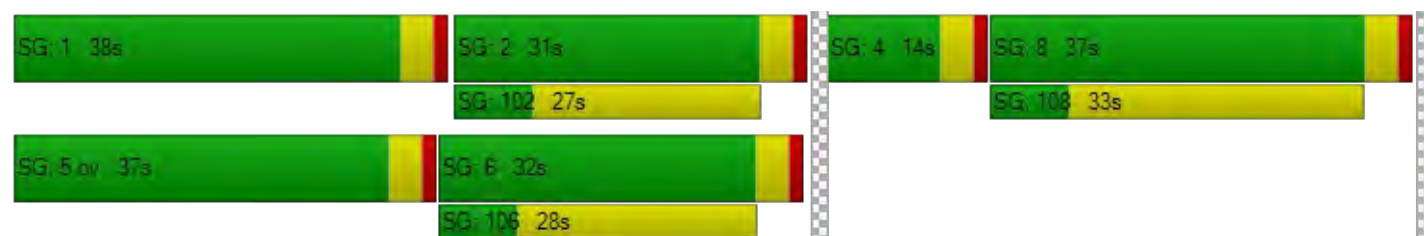
d_M, Delay for Movement [s/veh]	53.51	54.82	54.63	58.59	51.57	36.41	43.89	11.99	12.00	65.91	32.70	32.74
Movement LOS	D	D	D	E	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	54.01			39.36			30.71			36.03		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	36.58											
Intersection LOS	D											
Intersection V/C	0.960											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.408			2.637			0.000			2.636		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			167			450			467		
d_b, Bicycle Delay [s]	31.54			50.42			36.04			35.27		
I_b,int, Bicycle LOS Score for Intersection	2.112			2.232			2.628			2.340		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	43.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.843

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	337	768	195	237	800	312	352	1152	267	339	1257	204
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	337	768	195	237	800	312	352	1152	267	339	1257	204
Peak Hour Factor	0.9070	0.9070	0.9070	0.9640	0.9640	0.9640	0.9710	0.9710	0.9710	0.9600	0.9600	0.9600
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	93	212	54	61	207	81	91	297	69	88	327	53
Total Analysis Volume [veh/h]	372	847	215	246	830	324	363	1186	275	353	1309	213
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	43	0	15	39	0	19	43	0	19	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	34	34	11	29	29	15	45	45	15	45	45
g / C, Green / Cycle	0.13	0.28	0.28	0.09	0.24	0.24	0.13	0.37	0.37	0.12	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.11	0.18	0.14	0.08	0.17	0.22	0.11	0.29	0.29	0.11	0.27	0.14
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1607	3277	4826	1506
c, Capacity [veh/h]	412	1346	420	300	1181	368	412	1257	599	406	1788	558
d1, Uniform Delay [s]	51.77	37.88	36.44	53.58	41.39	43.66	51.61	33.44	33.52	51.68	32.66	27.73
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.27	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.44	0.49	0.97	5.50	0.78	14.93	6.22	5.00	10.24	5.85	2.69	1.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.63	0.51	0.82	0.70	0.88	0.88	0.79	0.79	0.87	0.73	0.38
d, Delay for Lane Group [s/veh]	59.22	38.37	37.40	59.09	42.16	58.60	57.84	38.44	43.77	57.54	35.36	29.71
Lane Group LOS	E	D	D	E	D	E	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.94	7.30	5.42	3.88	7.54	10.73	5.72	13.46	13.80	5.54	11.28	4.80
50th-Percentile Queue Length [ft/ln]	148.52	182.62	135.46	96.93	188.39	268.34	143.03	336.53	344.88	138.57	281.99	119.89
95th-Percentile Queue Length [veh/ln]	9.94	11.74	9.24	6.98	12.04	16.11	9.64	19.48	19.89	9.40	16.79	8.39
95th-Percentile Queue Length [ft/ln]	248.46	293.43	230.89	174.47	300.93	402.67	241.09	486.96	497.16	235.09	419.69	209.68

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	59.22	38.37	37.40	59.09	42.16	58.60	57.84	39.33	43.77	57.54	35.36	29.71
Movement LOS	E	D	D	E	D	E	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	43.63			48.94			43.68			38.89		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.42											
Intersection LOS	D											
Intersection V/C	0.843											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.176			3.169			3.206			3.245		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			583			650			650		
d_b, Bicycle Delay [s]	27.34			30.10			27.34			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.348			2.330			2.563			2.591		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.559

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	26	30	105	123	41	112	68	1344	35	90	1439	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	30	105	123	41	112	68	1344	35	90	1439	154
Peak Hour Factor	0.8200	0.8200	0.8200	0.7710	0.7710	0.7710	0.9890	0.9890	0.9890	0.9120	0.9120	0.9120
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	9	32	40	13	36	17	340	9	25	394	42
Total Analysis Volume [veh/h]	32	37	128	160	53	145	69	1359	35	99	1578	169
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	10	28	0	24	42	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	17	17	17	5	54	54	7	56	56
g / C, Green / Cycle	0.19	0.19	0.19	0.19	0.19	0.19	0.06	0.60	0.60	0.07	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.09	0.12	0.02	0.10	0.04	0.27	0.27	0.06	0.33	0.11
s, saturation flow rate [veh/h]	1351	1772	1506	1371	3373	1506	1687	3373	1749	1687	4826	1506
c, Capacity [veh/h]	279	331	281	276	629	281	93	2041	1058	126	3015	941
d1, Uniform Delay [s]	33.50	30.42	32.55	37.41	30.26	32.95	41.88	9.64	9.64	40.92	9.42	7.14
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.18	0.15	1.15	1.92	0.06	1.47	10.78	0.72	1.38	10.04	0.65	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.46	0.58	0.08	0.52	0.74	0.45	0.45	0.78	0.52	0.18
d, Delay for Lane Group [s/veh]	33.68	30.56	33.70	39.33	30.31	34.42	52.66	10.36	11.03	50.96	10.07	7.56
Lane Group LOS	C	C	C	D	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.62	0.67	2.53	3.50	0.47	2.91	1.77	4.62	4.98	2.48	5.27	1.35
50th-Percentile Queue Length [ft/ln]	15.44	16.82	63.24	87.57	11.86	72.81	44.30	115.44	124.58	62.06	131.70	33.70
95th-Percentile Queue Length [veh/ln]	1.11	1.21	4.55	6.30	0.85	5.24	3.19	8.14	8.64	4.47	9.03	2.43
95th-Percentile Queue Length [ft/ln]	27.79	30.27	113.83	157.62	21.35	131.06	79.74	203.54	216.11	111.71	225.80	60.66

Movement, Approach, & Intersection Results

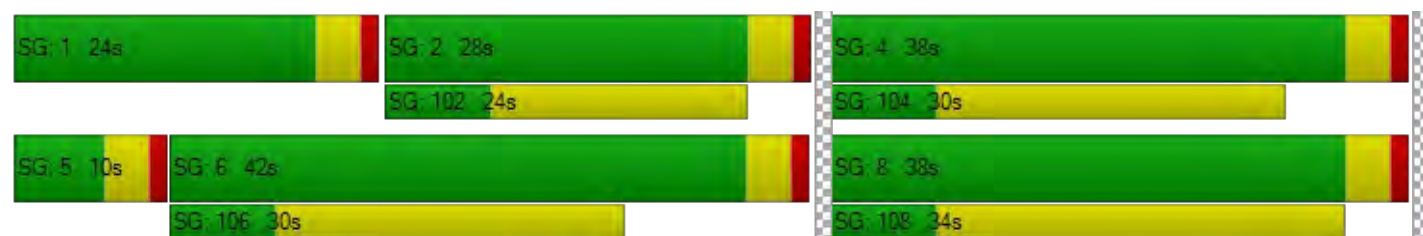
d_M, Delay for Movement [s/veh]	33.68	30.56	33.70	39.33	30.31	34.42	52.66	10.58	11.03	50.96	10.07	7.56
Movement LOS	C	C	C	D	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	33.11			36.01			12.57			12.03		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	15.53											
Intersection LOS	B											
Intersection V/C	0.559											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.374			2.423			3.087			3.378		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			533			844		
d_b, Bicycle Delay [s]	17.42			17.42			24.20			15.02		
I_b,int, Bicycle LOS Score for Intersection	1.885			1.855			2.364			2.575		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	52.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.986

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	394	518	272	282	863	216	231	1417	253	361	1419	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	518	272	282	863	216	231	1417	253	361	1419	156
Peak Hour Factor	0.9240	0.9240	0.9240	0.9170	0.9170	0.9170	0.9130	0.9130	0.9130	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	140	74	77	235	59	63	388	69	101	399	44
Total Analysis Volume [veh/h]	426	561	294	308	941	236	253	1552	277	406	1594	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	41	0	18	39	0	14	42	0	19	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	38	38	13	35	35	10	38	38	15	43	43
g / C, Green / Cycle	0.13	0.31	0.31	0.11	0.29	0.29	0.08	0.32	0.32	0.13	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.12	0.20	0.09	0.28	0.16	0.08	0.32	0.18	0.12	0.33	0.12
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	437	1512	472	360	978	437	274	1536	479	410	1736	542
d1, Uniform Delay [s]	51.80	32.01	35.15	52.47	41.96	35.88	54.62	40.91	34.18	52.43	36.72	27.83
k, delay calibration	0.11	0.11	0.18	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.81	0.15	2.21	5.84	7.13	1.11	12.72	25.61	5.01	18.53	9.27	1.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	0.37	0.62	0.86	0.96	0.54	0.92	1.01	0.58	0.99	0.92	0.32
d, Delay for Lane Group [s/veh]	66.61	32.16	37.36	58.32	49.10	36.99	67.35	66.52	39.19	70.96	45.99	29.40
Lane Group LOS	E	C	D	E	D	D	E	F	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.27	4.25	7.59	4.85	14.52	5.94	4.28	18.56	7.41	7.14	16.15	3.90
50th-Percentile Queue Length [ft/ln]	181.66	106.21	189.70	121.15	362.90	148.61	106.91	463.93	185.27	178.62	403.78	97.40
95th-Percentile Queue Length [veh/ln]	11.69	7.63	12.11	8.46	20.76	9.94	7.67	25.80	11.88	11.53	22.74	7.01
95th-Percentile Queue Length [ft/ln]	292.18	190.71	302.64	211.40	519.11	248.57	191.70	645.07	296.89	288.21	568.55	175.33

Movement, Approach, & Intersection Results

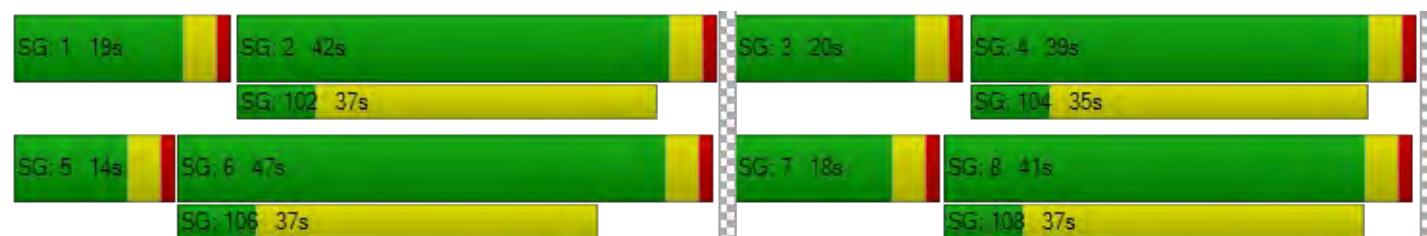
d_M, Delay for Movement [s/veh]	66.61	32.16	37.36	58.32	49.10	36.99	67.35	66.52	39.19	70.96	45.99	29.40
Movement LOS	E	C	D	E	D	D	E	F	D	E	D	C
d_A, Approach Delay [s/veh]	44.81			49.08			62.99			49.32		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	52.50											
Intersection LOS	D											
Intersection V/C	0.986											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.093			3.041			3.333			3.332		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			633			717		
d_b, Bicycle Delay [s]	28.70			30.10			28.02			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.264			2.785			2.705			2.756		
Bicycle LOS	B			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	73.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.061

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	37	169	411	74	355	349	1464	31	107	1653	460
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	37	169	411	74	355	349	1464	31	107	1653	460
Peak Hour Factor	0.8250	0.8250	0.8250	0.9010	0.9010	0.9010	0.9400	0.9400	0.9400	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	11	51	114	21	99	93	389	8	27	421	117
Total Analysis Volume [veh/h]	80	45	205	456	82	394	371	1557	33	109	1683	468
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	21	0	0	40	0	17	47	0	12	42	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	17	17	36	36	13	43	43	8	38	38
g / C, Green / Cycle	0.14	0.14	0.14	0.30	0.30	0.11	0.36	0.36	0.07	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.15	0.14	0.31	0.11	0.31	0.31	0.06	0.35	0.31
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1546	3277	3373	1753	1687	4826	1506
c, Capacity [veh/h]	241	253	196	982	463	356	1204	626	113	1523	475
d1, Uniform Delay [s]	46.29	45.25	51.45	34.18	42.02	53.50	35.95	35.97	55.85	41.08	40.80
k, delay calibration	0.11	0.11	0.16	0.11	0.48	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.80	0.33	49.03	0.34	48.00	34.24	8.60	15.21	31.40	57.61	37.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.18	1.05	0.46	1.03	1.04	0.87	0.87	0.96	1.11	0.99
d, Delay for Lane Group [s/veh]	47.09	45.58	100.48	34.52	90.03	87.74	44.56	51.18	87.25	98.69	78.55
Lane Group LOS	D	D	F	C	F	F	D	D	F	F	E
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.21	1.21	8.53	5.46	19.72	7.05	15.48	17.27	4.28	22.89	18.51
50th-Percentile Queue Length [ft/ln]	55.32	30.26	213.35	136.61	492.95	176.19	387.09	431.67	106.88	572.27	462.67
95th-Percentile Queue Length [veh/ln]	3.98	2.18	13.60	9.30	27.47	11.59	21.94	24.08	7.67	32.75	25.56
95th-Percentile Queue Length [ft/ln]	99.57	54.47	340.01	232.46	686.83	289.72	548.42	602.04	191.65	818.66	639.05

Movement, Approach, & Intersection Results

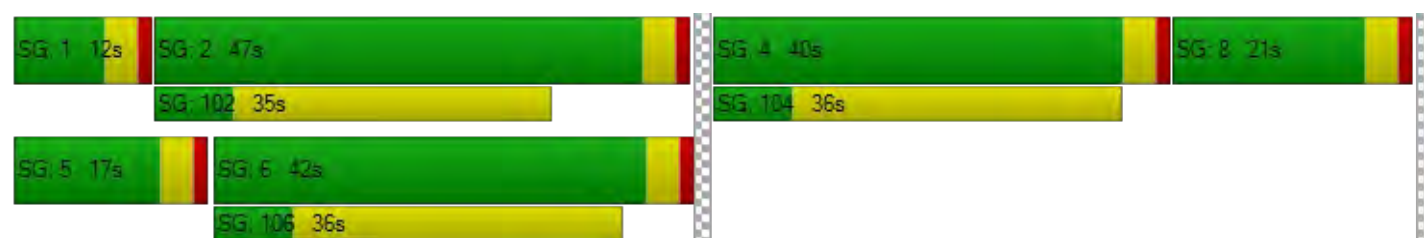
d_M, Delay for Movement [s/veh]	47.09	45.58	100.48	34.52	90.03	90.03	87.74	46.73	51.18	87.25	98.69	78.55
Movement LOS	D	D	F	C	F	F	F	D	D	F	F	E
d_A, Approach Delay [s/veh]	80.05			62.87			54.57			93.97		
Approach LOS	F			E			D			F		
d_I, Intersection Delay [s/veh]	73.75											
Intersection LOS	E											
Intersection V/C	1.061											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.280			2.668			3.241			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	283			600			717			633		
d_b, Bicycle Delay [s]	44.20			29.40			24.70			28.02		
I_b,int, Bicycle LOS Score for Intersection	1.832			3.097			2.638			2.803		
Bicycle LOS	A			C			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	198.4
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.486

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Peak Hour Factor	0.9800	0.9800	0.9800	0.8330	0.8330	0.8330	0.9250	0.9250	0.9250	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	139	141	224	131	52	35	416	51	168	502	287
Total Analysis Volume [veh/h]	281	554	562	896	522	209	141	1664	202	673	2008	1150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	41	0	28	39	0	10	34	0	17	41	41
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	37	37	24	48	48	6	30	30	13	37	65
g / C, Green / Cycle	0.11	0.31	0.31	0.20	0.40	0.40	0.05	0.25	0.25	0.11	0.31	0.54
(v / s)_i Volume / Saturation Flow Rate	0.09	0.16	0.37	0.38	0.21	0.22	0.04	0.29	0.29	0.21	0.42	0.76
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1605	3277	4826	1648	3277	4826	1506
c, Capacity [veh/h]	348	1036	462	473	710	643	165	1211	414	356	1492	817
d1, Uniform Delay [s]	52.43	34.48	41.59	48.01	27.34	27.67	56.55	44.95	44.95	53.50	41.46	27.45
k, delay calibration	0.11	0.11	0.50	0.27	0.11	0.13	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.44	0.43	115.39	406.09	0.64	0.90	11.71	76.76	91.40	403.55	160.12	190.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.53	1.22	1.89	0.53	0.55	0.85	1.15	1.15	1.89	1.35	1.41
d, Delay for Lane Group [s/veh]	56.88	34.91	156.98	454.10	27.99	28.57	68.27	121.71	136.35	457.05	201.58	218.16
Lane Group LOS	E	C	F	F	C	C	E	F	F	F	F	F
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.35	6.76	28.30	33.74	8.26	7.95	2.39	20.52	22.71	25.30	36.64	65.39
50th-Percentile Queue Length [ft/ln]	108.78	168.90	707.47	843.43	206.57	198.80	59.72	513.07	567.66	632.41	915.94	1634.80
95th-Percentile Queue Length [veh/ln]	7.77	11.02	41.56	54.42	12.98	12.58	4.30	30.21	33.02	40.38	54.95	98.78
95th-Percentile Queue Length [ft/ln]	194.30	275.47	1038.97	1360.43	324.42	314.41	107.50	755.17	825.41	1009.39	1373.71	2469.39

Movement, Approach, & Intersection Results

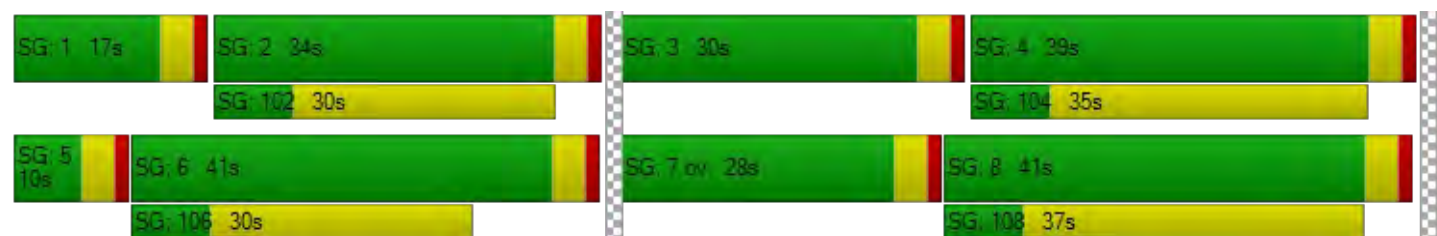
d_M, Delay for Movement [s/veh]	56.88	34.91	156.98	454.10	28.15	28.57	68.27	124.11	136.35	457.05	201.58	218.16
Movement LOS	E	C	F	F	C	C	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	88.44			262.78			121.42			251.44		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	198.38											
Intersection LOS	F											
Intersection V/C	1.486											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.997			3.031			3.351			3.658		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			500			617		
d_b, Bicycle Delay [s]	28.70			30.10			33.75			28.70		
I_b,int, Bicycle LOS Score for Intersection	2.712			2.902			2.387			3.667		
Bicycle LOS	B			C			B			D		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.935

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	537	0	735	0	1951	1171	0	2667	358
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	537	0	735	0	1951	1171	0	2667	358
Peak Hour Factor	1.0000	1.0000	1.0000	0.9240	1.0000	0.9240	1.0000	0.9460	0.9460	1.0000	0.9730	0.9730
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	145	0	199	0	516	309	0	685	92
Total Analysis Volume [veh/h]	0	0	0	581	0	795	0	2062	1238	0	2741	368
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	46	0	0	0	74	0	0	74	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		39	39	39	73	73
g / C, Green / Cycle		0.33	0.33	0.33	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate		0.27	0.30	0.30	0.43	0.57
s, saturation flow rate [veh/h]		1687	1550	1506	4826	4826
c, Capacity [veh/h]		552	507	492	2925	2925
d1, Uniform Delay [s]		37.26	38.53	39.01	16.22	21.50
k, delay calibration		0.30	0.35	0.37	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		8.56	16.83	21.45	1.45	7.28
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.90	0.93	0.70	0.94
d, Delay for Lane Group [s/veh]		45.82	55.35	60.46	17.67	28.78
Lane Group LOS		D	E	E	B	C
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		13.60	15.08	15.80	12.69	23.64
50th-Percentile Queue Length [ft/ln]		340.07	377.00	395.09	317.28	591.07
95th-Percentile Queue Length [veh/ln]		19.65	21.45	22.32	18.53	31.62
95th-Percentile Queue Length [ft/ln]		491.29	536.21	558.08	463.34	790.43

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	47.82	0.00	58.30	0.00	17.67	0.00	0.00	28.78	0.00
Movement LOS				D		E		B			C	
d_A, Approach Delay [s/veh]	0.00			53.88			17.67			28.78		
Approach LOS	A			D			B			C		
d_I, Intersection Delay [s/veh]	30.66											
Intersection LOS	C											
Intersection V/C	0.935											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.480			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			1167			1167		
d_b, Bicycle Delay [s]	60.00			60.00			10.42			10.42		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.403			2.694			3.067		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG 2 74s

SG 6 74s

SG 105 22s

SG 7 46s

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.954

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1441	168	542	0	0	259	273	1764	560	0	1787	43
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1441	168	542	0	0	259	273	1764	560	0	1787	43
Peak Hour Factor	0.9320	0.9320	0.9320	1.0000	1.0000	0.8040	0.9340	0.9340	0.9340	1.0000	0.9510	0.9510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	387	45	145	0	0	81	73	472	150	0	470	11
Total Analysis Volume [veh/h]	1546	180	582	0	0	322	292	1889	600	0	1879	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	62	0	0	0	23	23	58	0	0	35	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	52	52	52	19	19	60	37	37
g / C, Green / Cycle	0.43	0.43	0.43	0.16	0.16	0.50	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.35	0.34	0.39	0.12	0.17	0.39	0.30	0.28
s, saturation flow rate [veh/h]	3277	1712	1506	2665	1687	4826	4826	1743
c, Capacity [veh/h]	1411	737	649	423	268	2425	1498	541
d1, Uniform Delay [s]	29.76	29.63	31.68	48.26	50.44	24.38	40.67	39.38
k, delay calibration	0.11	0.26	0.32	0.11	0.22	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.13	4.70	12.32	2.85	63.71	2.55	16.00	19.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.80	0.90	0.76	1.09	0.78	0.96	0.89
d, Delay for Lane Group [s/veh]	30.89	34.32	44.00	51.11	114.15	26.93	56.67	58.62
Lane Group LOS	C	C	D	D	F	C	E	E
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.22	15.40	17.48	4.77	12.75	14.74	16.01	16.24
50th-Percentile Queue Length [ft/ln]	355.54	385.01	436.88	119.35	318.81	368.60	400.13	405.99
95th-Percentile Queue Length [veh/ln]	20.41	21.84	24.33	8.36	19.38	21.04	22.57	22.85
95th-Percentile Queue Length [ft/ln]	510.16	545.90	608.27	208.93	484.54	526.04	564.16	571.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	31.78	34.32	43.92	0.00	0.00	51.11	114.15	26.93	0.00	0.00	57.12	58.62
Movement LOS	C	C	D			D	F	C			E	E
d_A, Approach Delay [s/veh]	35.07			51.11			38.61			57.16		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	43.29											
Intersection LOS	D											
Intersection V/C	0.954											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.764	2.227	0.000	0.000
Crosswalk LOS	C	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	967	0	900	517
d_b, Bicycle Delay [s]	16.02	60.00	18.15	33.00
I_b,int, Bicycle LOS Score for Intersection	5.368	4.132	2.759	2.353
Bicycle LOS	F	D	C	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	238	186	107	327	236	179	212	1679	241	141	1476	201
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	238	186	107	327	236	179	212	1679	241	141	1476	201
Peak Hour Factor	0.9140	0.9140	0.9140	0.8970	0.8970	0.8970	0.9020	0.9020	0.9020	0.9490	0.9490	0.9490
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	51	29	91	66	50	59	465	67	37	389	53
Total Analysis Volume [veh/h]	260	204	117	365	263	200	235	1861	267	149	1555	212
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	13	39	0	15	41	0	20	43	0	13	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	9	17	17	11	19	19	16	57	57	9	50	50
g / C, Green / Cycle	0.08	0.15	0.15	0.10	0.17	0.17	0.15	0.52	0.52	0.08	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.08	0.10	0.10	0.11	0.15	0.13	0.14	0.42	0.43	0.09	0.27	0.27
s, saturation flow rate [veh/h]	3277	1772	1560	3277	1772	1506	1687	3373	1662	1687	4826	1635
c, Capacity [veh/h]	270	274	241	330	306	260	246	1743	859	139	2188	741
d1, Uniform Delay [s]	50.34	43.48	43.57	49.51	44.23	43.43	46.67	22.13	22.53	50.51	22.63	22.63
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.83	2.25	2.69	58.45	6.96	4.74	17.87	4.23	9.19	55.87	1.24	3.62
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.62	0.63	1.11	0.86	0.77	0.96	0.81	0.83	1.07	0.60	0.60
d, Delay for Lane Group [s/veh]	68.17	45.73	46.26	107.97	51.19	48.17	64.53	26.36	31.72	106.38	23.87	26.25
Lane Group LOS	E	D	D	F	D	D	E	C	C	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.22	4.47	4.04	7.19	7.51	5.51	7.56	15.47	17.03	5.98	8.61	9.24
50th-Percentile Queue Length [ft/ln]	105.60	111.65	101.09	179.65	187.82	137.77	189.11	386.64	425.76	149.46	215.23	230.96
95th-Percentile Queue Length [veh/ln]	7.59	7.93	7.28	12.02	12.01	9.36	12.08	21.92	23.80	10.22	13.42	14.22
95th-Percentile Queue Length [ft/ln]	189.86	198.29	181.96	300.55	300.20	234.02	301.88	547.88	594.96	255.54	335.52	355.58

Movement, Approach, & Intersection Results

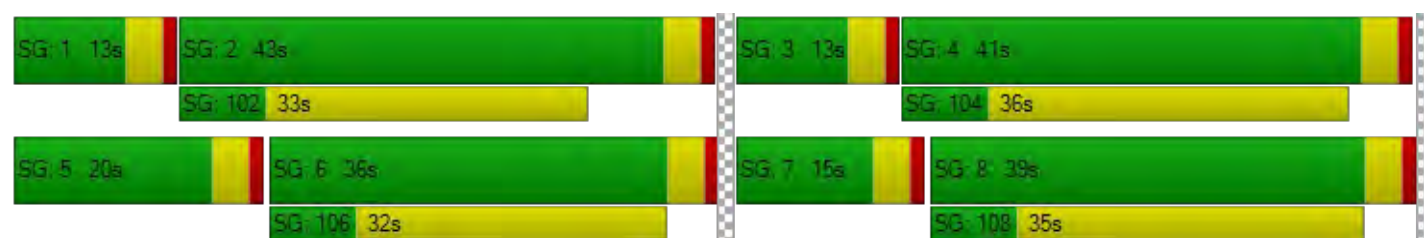
d_M, Delay for Movement [s/veh]	68.17	45.82	46.26	107.97	51.19	48.17	64.53	27.65	31.72	106.38	24.23	26.25
Movement LOS	E	D	D	F	D	D	E	C	C	F	C	C
d_A, Approach Delay [s/veh]	55.91			75.49			31.77			30.84		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	40.29											
Intersection LOS	D											
Intersection V/C	0.872											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.555			2.703			3.269			3.254		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			673			709			582		
d_b, Bicycle Delay [s]	25.57			24.22			22.91			27.65		
I_b,int, Bicycle LOS Score for Intersection	2.039			2.926			2.859			2.350		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	26.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	166	16	227	25	10	11	24	1831	287	196	1734	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	166	16	227	25	10	11	24	1831	287	196	1734	44
Peak Hour Factor	0.9770	0.9770	0.9770	0.8650	0.8650	0.8650	0.9010	0.9010	0.9010	0.9030	0.9030	0.9030
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	4	58	7	3	3	7	508	80	54	480	12
Total Analysis Volume [veh/h]	170	16	232	29	12	13	27	2032	319	217	1920	49
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	28	0	0	10	0	10	46	0	21	57	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	18	18	5	5	3	50	50	15	62	62
g / C, Green / Cycle	0.18	0.18	0.18	0.05	0.05	0.03	0.48	0.48	0.15	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.05	0.05	0.15	0.02	0.02	0.02	0.42	0.21	0.13	0.38	0.39
s, saturation flow rate [veh/h]	1687	1701	1506	1687	1623	1687	4826	1506	1687	3373	1749
c, Capacity [veh/h]	296	298	264	78	75	54	2314	722	247	2003	1039
d1, Uniform Delay [s]	37.82	37.81	42.25	48.64	48.55	50.02	24.59	18.06	43.94	14.08	14.11
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.60	0.59	9.47	2.90	2.55	6.83	5.12	1.96	9.62	1.63	3.14
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.31	0.88	0.37	0.33	0.50	0.88	0.44	0.88	0.65	0.65
d, Delay for Lane Group [s/veh]	38.41	38.41	51.72	51.54	51.10	56.85	29.72	20.02	53.56	15.71	17.25
Lane Group LOS	D	D	D	D	D	E	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.12	2.14	6.50	0.80	0.69	0.80	15.48	5.37	6.15	9.86	10.72
50th-Percentile Queue Length [ft/ln]	53.10	53.52	162.52	19.99	17.18	19.99	386.97	134.19	153.70	246.61	267.90
95th-Percentile Queue Length [veh/ln]	3.82	3.85	10.68	1.44	1.24	1.44	21.93	9.17	10.21	15.02	16.08
95th-Percentile Queue Length [ft/ln]	95.58	96.33	267.06	35.98	30.92	35.97	548.27	229.17	255.36	375.38	402.12

Movement, Approach, & Intersection Results

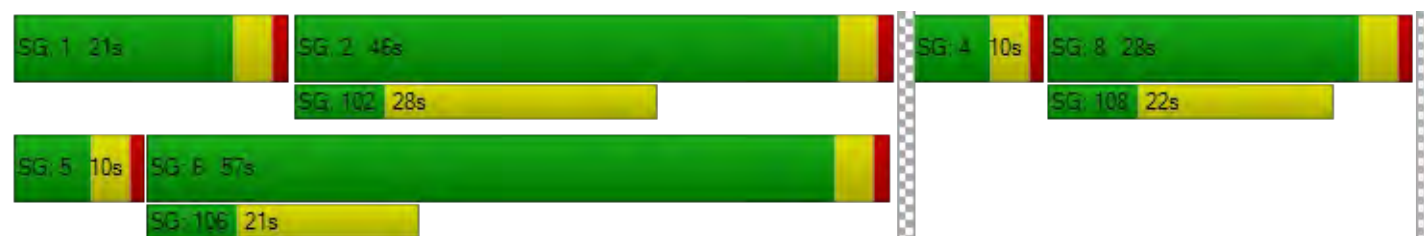
d_M, Delay for Movement [s/veh]	38.41	38.41	51.72	51.54	51.10	51.10	56.85	29.72	20.02	53.56	16.21	17.25
Movement LOS	D	D	D	D	D	D	E	C	C	D	B	B
d_A, Approach Delay [s/veh]	45.80			51.34			28.73			19.94		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	26.57											
Intersection LOS	C											
Intersection V/C	0.850											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			0.00			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.374			1.995			0.000			3.225		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	457			114			800			1010		
d_b, Bicycle Delay [s]	31.24			46.67			18.90			12.88		
I_b,int, Bicycle LOS Score for Intersection	2.249			1.649			2.868			2.762		
Bicycle LOS	B			A			C			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	33.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.769

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	290	285	71	268	621	126	163	1122	286	115	1179	102
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	290	285	71	268	621	126	163	1122	286	115	1179	102
Peak Hour Factor	0.8830	0.8830	0.8830	0.8790	0.8790	0.8790	0.9500	0.9500	0.9500	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	82	81	20	76	177	36	43	295	75	31	319	28
Total Analysis Volume [veh/h]	328	323	80	305	706	143	172	1181	301	125	1277	111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	30	0	21	35	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	24	24	12	24	24	6	42	42	6	42	42
g / C, Green / Cycle	0.12	0.24	0.24	0.12	0.24	0.24	0.06	0.42	0.42	0.06	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.10	0.12	0.12	0.09	0.21	0.09	0.05	0.30	0.30	0.04	0.27	0.27
s, saturation flow rate [veh/h]	3277	1772	1652	3277	3373	1506	3277	3373	1594	3277	3373	1700
c, Capacity [veh/h]	390	429	400	381	806	360	199	1427	674	194	1421	716
d1, Uniform Delay [s]	43.17	32.61	32.63	43.12	36.67	32.04	46.61	23.75	23.77	46.09	23.09	23.09
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.91	0.85	0.92	3.93	3.21	0.71	10.48	2.95	6.13	3.59	2.31	4.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.49	0.49	0.80	0.88	0.40	0.86	0.70	0.71	0.65	0.65	0.65
d, Delay for Lane Group [s/veh]	48.08	33.46	33.55	47.05	39.89	32.75	57.08	26.70	29.90	49.68	25.40	27.62
Lane Group LOS	D	C	C	D	D	C	E	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.20	4.39	4.12	3.86	8.52	2.96	2.40	9.99	10.06	1.61	8.83	9.34
50th-Percentile Queue Length [ft/ln]	105.12	109.80	103.05	96.39	212.95	73.96	59.97	249.83	251.57	40.23	220.72	233.51
95th-Percentile Queue Length [veh/ln]	7.57	7.83	7.42	6.94	13.30	5.33	4.32	15.18	15.26	2.90	13.70	14.35
95th-Percentile Queue Length [ft/ln]	189.19	195.73	185.49	173.50	332.62	133.13	107.95	379.44	381.62	72.42	342.54	358.82

Movement, Approach, & Intersection Results

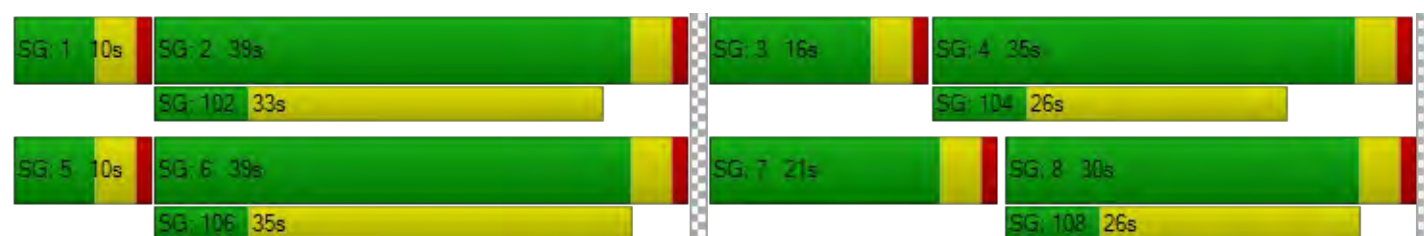
d_M, Delay for Movement [s/veh]	48.08	33.49	33.55	47.05	39.89	32.75	57.08	27.18	29.90	49.68	26.02	27.62
Movement LOS	D	C	C	D	D	C	E	C	C	D	C	C
d_A, Approach Delay [s/veh]	40.04			40.89			30.78			28.09		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.63											
Intersection LOS	C											
Intersection V/C	0.769											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.760			2.844			3.145			3.106		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			620			700			700		
d_b, Bicycle Delay [s]	27.38			23.81			21.13			21.13		
I_b,int, Bicycle LOS Score for Intersection	2.163			2.512			2.469			2.392		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	38.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.720

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	77	561	334	201	761	376	389	843	76	305	802	169
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	561	334	201	761	376	389	843	76	305	802	169
Peak Hour Factor	0.9000	0.9000	0.9000	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550	0.9150	0.9150	0.9150
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	156	93	53	199	98	102	221	20	83	219	46
Total Analysis Volume [veh/h]	86	623	371	210	795	393	407	883	80	333	877	185
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	43	43	13	45	45	23	46	0	18	41	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	30	48	9	32	55	19	51	51	14	46	46
g / C, Green / Cycle	0.06	0.25	0.40	0.08	0.27	0.46	0.16	0.42	0.42	0.12	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.05	0.18	0.25	0.06	0.24	0.26	0.12	0.18	0.05	0.10	0.21	0.21
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1618
c, Capacity [veh/h]	101	844	604	250	899	691	521	2041	637	385	1287	617
d1, Uniform Delay [s]	55.95	41.43	28.60	54.76	42.27	23.81	48.52	24.49	21.13	52.06	29.18	29.18
k, delay calibration	0.11	0.11	0.44	0.11	0.11	0.29	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.65	1.29	4.09	7.41	3.11	1.99	2.61	0.67	0.41	5.87	1.75	3.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.74	0.61	0.84	0.88	0.57	0.78	0.43	0.13	0.86	0.56	0.56
d, Delay for Lane Group [s/veh]	73.60	42.72	32.69	62.17	45.38	25.80	51.13	25.16	21.54	57.93	30.93	32.79
Lane Group LOS	E	D	C	E	D	C	D	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.08	8.60	9.11	3.39	11.60	8.45	6.04	6.01	1.45	5.24	8.39	8.37
50th-Percentile Queue Length [ft/ln]	76.92	215.05	227.64	84.81	290.11	211.16	150.97	150.30	36.30	130.91	209.74	209.26
95th-Percentile Queue Length [veh/ln]	5.54	13.41	14.05	6.11	17.19	13.21	10.07	10.03	2.61	8.99	13.14	13.12
95th-Percentile Queue Length [ft/ln]	138.45	335.30	351.36	152.66	429.78	330.32	251.72	250.83	65.34	224.73	328.49	327.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.60	42.72	32.69	62.17	45.38	25.80	51.13	25.16	21.54	57.93	31.27	32.79
Movement LOS	E	D	C	E	D	C	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	41.73			42.40			32.66			37.83		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	38.50											
Intersection LOS	D											
Intersection V/C	0.720											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.838			2.972			3.158			3.088		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			683			700			617		
d_b, Bicycle Delay [s]	27.34			26.00			25.35			28.70		
I_b,int, Bicycle LOS Score for Intersection	2.451			2.713			2.313			2.327		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	38.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.734

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	291	813	462	148	503	290	289	789	222	39	765	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	291	813	462	148	503	290	289	789	222	39	765	172
Peak Hour Factor	0.8670	0.8670	0.8670	0.8450	0.8450	0.8450	0.9130	0.9130	0.9130	0.9100	0.9100	0.9100
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	84	234	133	44	149	86	79	216	61	11	210	47
Total Analysis Volume [veh/h]	336	938	533	175	595	343	317	864	243	43	841	189
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	17	50	0	11	44	44	16	47	47	12	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	37	7	31	47	12	56	73	5	48	48
g / C, Green / Cycle	0.11	0.30	0.06	0.25	0.39	0.10	0.47	0.61	0.04	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.10	0.28	0.05	0.12	0.23	0.10	0.26	0.16	0.01	0.21	0.21
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1611
c, Capacity [veh/h]	357	1025	193	1227	584	329	1568	914	128	1360	650
d1, Uniform Delay [s]	53.12	40.29	56.15	38.09	29.11	53.77	23.12	11.06	56.18	26.94	26.98
k, delay calibration	0.11	0.11	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.13	3.72	14.28	0.30	1.98	15.67	1.40	0.71	1.54	1.38	2.90
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.91	0.90	0.49	0.59	0.96	0.55	0.27	0.34	0.51	0.51
d, Delay for Lane Group [s/veh]	65.26	44.01	70.43	38.39	31.09	69.44	24.52	11.77	57.73	28.31	29.88
Lane Group LOS	E	D	E	D	C	E	C	B	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.62	13.73	3.02	5.01	8.10	5.48	8.98	3.14	0.66	7.71	7.70
50th-Percentile Queue Length [ft/ln]	140.62	343.15	75.46	125.14	202.60	136.88	224.62	78.51	16.57	192.79	192.46
95th-Percentile Queue Length [veh/ln]	9.51	19.80	5.43	8.67	12.77	9.31	13.90	5.65	1.19	12.27	12.25
95th-Percentile Queue Length [ft/ln]	237.86	495.05	135.83	216.87	319.31	232.81	347.52	141.32	29.83	306.65	306.22

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.26	44.01	0.00	70.43	38.39	31.09	69.44	24.52	11.77	57.73	28.59	29.88
Movement LOS	E	D		E	D	C	E	C	B	E	C	C
d_A, Approach Delay [s/veh]	49.61			41.18			32.34			29.98		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	38.34											
Intersection LOS	D											
Intersection V/C	0.734											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.002			3.051			3.098			2.902		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	767			667			717			650		
d_b, Bicycle Delay [s]	22.82			26.67			24.70			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.611			2.172			2.734			2.150		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-VI

YEAR 2022 CUMULATIVE PLUS PROJECT
WITH MITIGATION TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1006	0	662	0	1770	577	213	2034	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1006	0	662	0	1770	577	213	2034	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.8640	1.0000	0.8640	1.0000	0.9400	0.9400	0.9190	0.9190	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	291	0	192	0	471	153	58	553	0
Total Analysis Volume [veh/h]	0	0	0	1164	0	766	0	1883	614	232	2213	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	52	0	0	0	50	0	13	63	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		115	115	115	115	115	115
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		45	45	49	49	9	62
g / C, Green / Cycle		0.39	0.39	0.43	0.43	0.08	0.54
(v / s)_i Volume / Saturation Flow Rate		0.36	0.29	0.39	0.23	0.07	0.46
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1276	1038	2061	1138	259	2610
d1, Uniform Delay [s]		33.22	30.06	30.94	24.51	52.47	22.38
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.94	1.04	7.71	1.84	10.59	3.65
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.91	0.74	0.91	0.54	0.90	0.85
d, Delay for Lane Group [s/veh]		36.16	31.10	38.65	26.35	63.06	26.03
Lane Group LOS		D	C	D	C	E	C
Critical Lane Group		Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		15.51	9.08	17.33	6.44	3.69	16.94
50th-Percentile Queue Length [ft/ln]		387.79	226.91	433.25	160.89	92.35	423.44
95th-Percentile Queue Length [veh/ln]		21.97	14.02	24.16	10.60	6.65	23.69
95th-Percentile Queue Length [ft/ln]		549.27	350.43	603.93	264.90	166.24	592.17

Movement, Approach, & Intersection Results

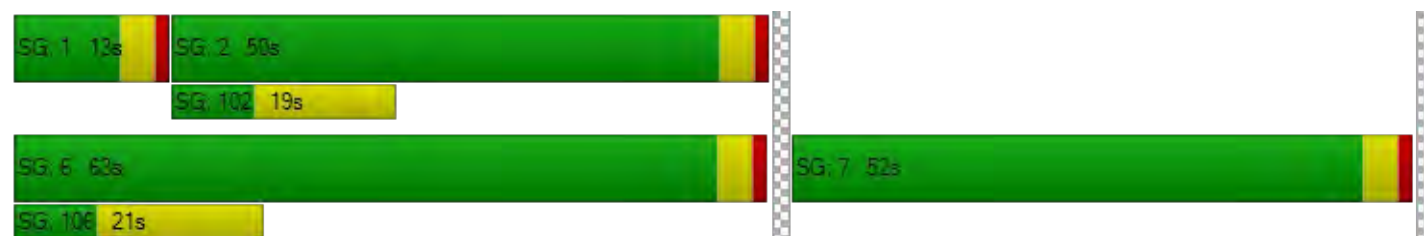
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	36.16	0.00	31.10	0.00	38.65	26.35	63.06	26.03	0.00
Movement LOS				D		C		D	C	E	C	
d_A, Approach Delay [s/veh]	0.00			34.15			35.63			29.54		
Approach LOS	A			C			D			C		
d_I, Intersection Delay [s/veh]	33.05											
Intersection LOS	C											
Intersection V/C	0.911											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.139			2.613			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			800			1026		
d_b, Bicycle Delay [s]	57.50			57.50			20.70			13.63		
I_b,int, Bicycle LOS Score for Intersection	4.132			4.132			2.933			2.904		
Bicycle LOS	D			D			C			C		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.908

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	999	0	473	0	0	0	0	2384	383	0	1259	466
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	999	0	473	0	0	0	0	2384	383	0	1259	466
Peak Hour Factor	0.8940	1.0000	0.8940	1.0000	1.0000	1.0000	0.9710	0.9710	0.9710	1.0000	0.8830	0.8830
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	279	0	132	0	0	0	0	614	99	0	356	132
Total Analysis Volume [veh/h]	1117	0	529	0	0	0	0	2455	394	0	1426	528
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0	
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0	
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	
Split [s]	58	0	0	0	0	0	0	62	0	0	62	0	
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0	
Pedestrian Clearance [s]	0	0	0	0	0	0	0	21	0	0	0	0	
Rest In Walk	No							No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	
Minimum Recall	No							No			No		
Maximum Recall	No							No			No		
Pedestrian Recall	No							No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	47	47		65	65	65	65
g / C, Green / Cycle	0.39	0.39		0.55	0.55	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.34	0.35		0.49	0.50	0.26	0.30
s, saturation flow rate [veh/h]	3277	1506		3373	1651	1506	4826
c, Capacity [veh/h]	1270	584		1841	901	822	2634
d1, Uniform Delay [s]	34.12	34.67		24.03	24.53	16.75	17.56
k, delay calibration	0.11	0.31		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.15	13.78		6.89	14.62	2.00	0.80
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.91		0.89	0.91	0.48	0.54
d, Delay for Lane Group [s/veh]	36.28	48.45		30.92	39.15	18.75	18.36
Lane Group LOS	D	D		C	D	B	B
Critical Lane Group	No	Yes		No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.22	16.52		21.25	23.55	7.00	8.47
50th-Percentile Queue Length [ft/ln]	380.54	412.91		531.19	588.82	174.95	211.67
95th-Percentile Queue Length [veh/ln]	21.62	23.18		28.81	31.51	11.34	13.24
95th-Percentile Queue Length [ft/ln]	540.50	579.54		720.18	787.79	283.41	330.97

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	36.28	0.00	48.45	0.00	0.00	0.00	0.00	32.78	18.75	0.00	18.36	0.00
Movement LOS	D		D					C	B		B	
d_A, Approach Delay [s/veh]	40.19			0.00			31.60			18.36		
Approach LOS	D			A			C			B		
d_I, Intersection Delay [s/veh]	30.80											
Intersection LOS	C											
Intersection V/C	0.908											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.711	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	967	967
d_b, Bicycle Delay [s]	60.00	60.00	16.02	16.02
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	3.127	2.344
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	45.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.934

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	419	473	155	141	970	200	157	1510	342	166	1618	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	419	473	155	141	970	200	157	1510	342	166	1618	73
Peak Hour Factor	0.7960	0.7960	0.7960	0.9500	0.9500	0.9500	0.9210	0.9210	0.9210	0.8690	0.8690	0.8690
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	132	149	49	37	255	53	43	410	93	48	465	21
Total Analysis Volume [veh/h]	526	594	195	148	1021	211	170	1640	371	191	1862	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	24	51	0	12	39	0	11	46	0	11	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	42	42	7	29	29	7	48	48	7	48	48
g / C, Green / Cycle	0.17	0.35	0.35	0.06	0.24	0.24	0.06	0.40	0.40	0.06	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.16	0.12	0.13	0.05	0.21	0.14	0.05	0.34	0.25	0.06	0.39	0.06
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	548	1686	526	204	1179	368	196	1909	596	196	1909	596
d1, Uniform Delay [s]	49.63	29.00	29.21	55.33	43.50	39.89	56.00	33.24	29.12	56.38	35.73	23.24
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.75	0.13	0.43	4.88	2.06	1.41	11.02	5.31	4.85	24.49	15.56	0.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.35	0.37	0.73	0.87	0.57	0.87	0.86	0.62	0.98	0.98	0.14
d, Delay for Lane Group [s/veh]	60.38	29.13	29.65	60.21	45.56	41.30	67.02	38.55	33.97	80.87	51.29	23.74
Lane Group LOS	E	C	C	E	D	D	E	D	C	F	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.62	4.26	4.28	2.34	9.86	5.62	2.85	15.22	9.29	3.56	20.18	1.62
50th-Percentile Queue Length [ft/ln]	215.47	106.62	106.88	58.51	246.45	140.51	71.36	380.48	232.32	88.90	504.47	40.41
95th-Percentile Queue Length [veh/ln]	13.43	7.65	7.67	4.21	15.01	9.51	5.14	21.62	14.29	6.40	27.55	2.91
95th-Percentile Queue Length [ft/ln]	335.84	191.29	191.65	105.31	375.18	237.71	128.46	540.43	357.30	160.02	688.64	72.73

Movement, Approach, & Intersection Results

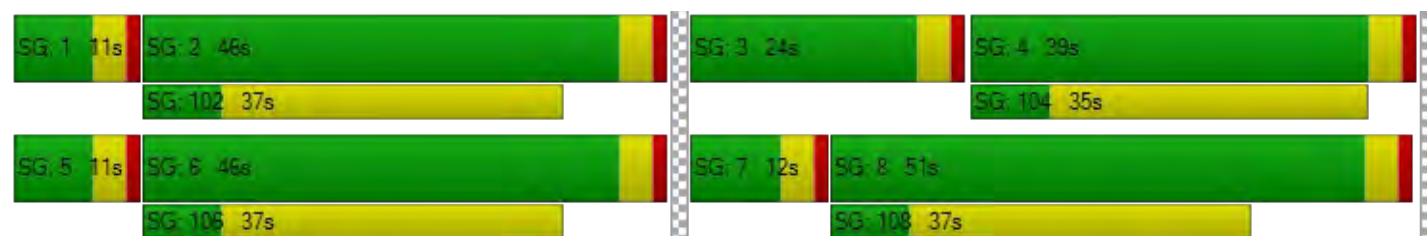
d_M, Delay for Movement [s/veh]	60.38	29.13	29.65	60.21	45.56	41.30	67.02	38.55	33.97	80.87	51.29	23.74
Movement LOS	E	C	C	E	D	D	E	D	C	F	D	C
d_A, Approach Delay [s/veh]	41.71			46.48			39.99			52.85		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.51											
Intersection LOS	D											
Intersection V/C	0.934											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.177			3.104			3.381			3.309		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	783			583			700			700		
d_b, Bicycle Delay [s]	22.20			30.10			25.35			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.283			2.319			2.759			2.735		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.654

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	14	13	52	165	13	65	104	1538	9	24	1671	154
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	14	13	52	165	13	65	104	1538	9	24	1671	154
Peak Hour Factor	0.7700	0.7700	0.7700	0.8070	0.8070	0.8070	0.8950	0.8950	0.8950	0.8510	0.8510	0.8510
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	5	4	17	51	4	20	29	430	3	7	491	45
Total Analysis Volume [veh/h]	18	17	68	204	16	81	116	1718	10	28	1964	181
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	31	0	19	40	40	10	40	0	10	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	29	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	6	6	8	12	6	66	66	3	64	64
g / C, Green / Cycle	0.02	0.06	0.06	0.08	0.12	0.06	0.66	0.66	0.03	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.05	0.06	0.06	0.04	0.34	0.34	0.02	0.41	0.12
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1544	3277	3373	1766	1687	4826	1506
c, Capacity [veh/h]	42	108	92	277	186	192	2230	1168	57	3070	958
d1, Uniform Delay [s]	48.13	44.57	46.23	44.75	41.31	46.01	8.67	8.67	47.55	11.18	7.53
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.81	0.67	10.98	3.82	2.24	3.05	0.83	1.58	6.49	1.03	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.43	0.16	0.74	0.74	0.52	0.60	0.51	0.51	0.49	0.64	0.19
d, Delay for Lane Group [s/veh]	54.94	45.24	57.21	48.57	43.55	49.06	9.50	10.25	54.03	12.21	7.97
Lane Group LOS	D	D	E	D	D	D	A	B	D	B	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.52	0.42	1.93	2.60	2.35	1.48	5.81	6.33	0.79	8.24	1.60
50th-Percentile Queue Length [ft/ln]	13.01	10.47	48.37	65.06	58.71	37.05	145.20	158.22	19.64	205.88	39.91
95th-Percentile Queue Length [veh/ln]	0.94	0.75	3.48	4.68	4.23	2.67	9.76	10.45	1.41	12.94	2.87
95th-Percentile Queue Length [ft/ln]	23.41	18.85	87.06	117.11	105.68	66.70	244.01	261.36	35.35	323.54	71.83

Movement, Approach, & Intersection Results

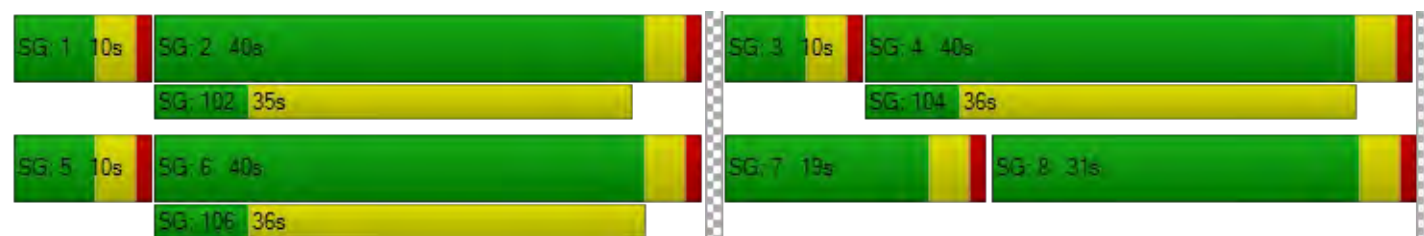
d_M, Delay for Movement [s/veh]	54.94	45.24	57.21	48.57	43.55	43.55	49.06	9.75	10.25	54.03	12.21	7.97
Movement LOS	D	D	E	D	D	D	D	A	B	D	B	A
d_A, Approach Delay [s/veh]	54.84			46.95			12.23			12.40		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	15.67											
Intersection LOS	B											
Intersection V/C	0.654											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.174	2.425	3.206	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	540	720	720	720
d_b, Bicycle Delay [s]	26.65	20.48	20.48	20.48
I_b,int, Bicycle LOS Score for Intersection	1.645	2.056	2.574	2.755
Bicycle LOS	A	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.921

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	107	167	389	204	382	26	32	1567	185	422	1723	229
Peak Hour Factor	0.9050	0.9050	0.9050	0.9420	0.9420	0.9420	0.9090	0.9090	0.9090	0.9000	0.9000	0.9000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	46	107	54	101	7	9	431	51	117	479	64
Total Analysis Volume [veh/h]	118	185	430	217	406	28	35	1724	204	469	1914	254
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	46	46	13	39	0	10	34	0	22	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	30	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	35	35	9	38	38	4	37	37	18	51	64
g / C, Green / Cycle	0.05	0.31	0.31	0.08	0.33	0.33	0.04	0.32	0.32	0.16	0.44	0.56
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.29	0.07	0.12	0.02	0.01	0.30	0.30	0.14	0.40	0.17
s, saturation flow rate [veh/h]	3277	3373	1506	3277	3373	1506	3277	4826	1651	3277	4826	1506
c, Capacity [veh/h]	175	1029	459	258	1114	497	117	1548	529	513	2132	836
d1, Uniform Delay [s]	53.46	29.40	38.89	52.30	29.34	26.30	54.08	37.80	37.80	47.74	29.71	13.69
k, delay calibration	0.11	0.11	0.30	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.45	0.08	20.37	7.33	0.20	0.05	1.42	11.19	24.87	6.82	6.50	0.94
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.67	0.18	0.94	0.84	0.36	0.06	0.30	0.93	0.93	0.91	0.90	0.30
d, Delay for Lane Group [s/veh]	57.91	29.48	59.27	59.63	29.54	26.35	55.50	48.98	62.67	54.56	36.21	14.63
Lane Group LOS	E	C	E	E	C	C	E	D	E	D	D	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.78	1.90	14.22	3.35	4.30	0.53	0.52	14.44	16.83	7.07	17.09	3.68
50th-Percentile Queue Length [ft/ln]	44.58	47.55	355.56	83.71	107.55	13.36	12.93	360.94	420.68	176.79	427.27	92.01
95th-Percentile Queue Length [veh/ln]	3.21	3.42	20.41	6.03	7.70	0.96	0.93	20.67	23.55	11.43	23.87	6.62
95th-Percentile Queue Length [ft/ln]	80.24	85.58	510.18	150.68	192.60	24.05	23.27	516.72	588.86	285.81	596.77	165.61

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.91	29.48	59.27	59.63	29.54	26.35	55.50	51.26	62.67	54.56	36.21	14.63
Movement LOS	E	C	E	E	C	C	E	D	E	D	D	B
d_A, Approach Delay [s/veh]	51.53			39.44			52.52			37.40		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.31											
Intersection LOS	D											
Intersection V/C	0.921											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.858			2.762			3.297			3.466		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	730			609			522			730		
d_b, Bicycle Delay [s]	23.17			27.83			31.41			23.17		
I_b,int, Bicycle LOS Score for Intersection	2.164			2.097			2.369			3.010		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	24.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	435	0	809	0	1339	808	221	1615	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9480	1.0000	0.9480	1.0000	0.8820	0.8820	0.9530	0.9530	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	115	0	213	0	380	229	58	424	0
Total Analysis Volume [veh/h]	0	0	0	459	0	853	0	1518	916	232	1695	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	55	0	0	0	23	0	12	35	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		33	33	37	37	8	49
g / C, Green / Cycle		0.37	0.37	0.41	0.41	0.09	0.54
(v / s)_i Volume / Saturation Flow Rate		0.14	0.32	0.31	0.34	0.07	0.35
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1216	989	1959	1082	294	2606
d1, Uniform Delay [s]		20.71	26.19	23.18	24.21	40.14	14.68
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.19	2.38	3.07	8.21	4.70	1.27
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.38	0.86	0.77	0.85	0.79	0.65
d, Delay for Lane Group [s/veh]		20.91	28.57	26.26	32.43	44.84	15.95
Lane Group LOS		C	C	C	C	D	B
Critical Lane Group		No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.46	8.38	9.38	9.58	2.67	7.81
50th-Percentile Queue Length [ft/ln]		86.54	209.61	234.62	239.47	66.87	195.22
95th-Percentile Queue Length [veh/ln]		6.23	13.13	14.41	14.65	4.81	12.39
95th-Percentile Queue Length [ft/ln]		155.77	328.33	360.23	366.36	120.37	309.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	20.91	0.00	28.57	0.00	26.26	32.43	44.84	15.95	0.00
Movement LOS				C		C		C	C	D	B	
d_A, Approach Delay [s/veh]	0.00			25.89			28.58			19.43		
Approach LOS	A			C			C			B		
d_I, Intersection Delay [s/veh]	24.85											
Intersection LOS	C											
Intersection V/C	0.847											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		0.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	34.67		34.67		0.00		0.00	
I_p,int, Pedestrian LOS Score for Intersection	2.274		2.450		0.000		0.000	
Crosswalk LOS	B		B		F		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	0		0		422		689	
d_b, Bicycle Delay [s]	45.00		45.00		28.01		19.34	
I_b,int, Bicycle LOS Score for Intersection	4.132		4.132		2.898		2.619	
Bicycle LOS	D		D		C		B	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	15.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.675

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	624	0	255	0	0	0	0	1430	544	0	1040	502
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	624	0	255	0	0	0	0	1430	544	0	1040	502
Peak Hour Factor	0.8400	1.0000	0.8400	1.0000	1.0000	1.0000	0.8440	0.8440	0.8440	1.0000	0.9530	0.9530
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	186	0	76	0	0	0	0	424	161	0	273	132
Total Analysis Volume [veh/h]	743	0	304	0	0	0	0	1694	645	0	1091	527
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	58	0	0	0	0	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	7	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	14	0	0	0	0	0	0	21	0	0	10	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	25		57	57	57	57
g / C, Green / Cycle	0.27	0.27		0.64	0.64	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.23	0.20		0.35	0.38	0.39	0.23
s, saturation flow rate [veh/h]	3277	1506		3373	1546	1506	4826
c, Capacity [veh/h]	892	410		2155	987	962	3083
d1, Uniform Delay [s]	30.77	29.81		8.97	9.43	9.58	7.57
k, delay calibration	0.11	0.11		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	2.67		0.99	2.61	2.85	0.32
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.74		0.54	0.59	0.61	0.35
d, Delay for Lane Group [s/veh]	32.89	32.48		9.96	12.03	12.44	7.89
Lane Group LOS	C	C		A	B	B	A
Critical Lane Group	Yes	No		No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.60	6.12		5.80	6.50	6.64	2.98
50th-Percentile Queue Length [ft/ln]	190.10	153.10		144.99	162.48	166.04	74.52
95th-Percentile Queue Length [veh/ln]	12.13	10.18		9.75	10.68	10.87	5.37
95th-Percentile Queue Length [ft/ln]	303.16	254.56		243.72	267.00	271.70	134.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.89	0.00	32.48	0.00	0.00	0.00	0.00	10.12	12.40	0.00	7.89	0.00
Movement LOS	C		C					B	B		A	
d_A, Approach Delay [s/veh]	32.77			0.00			11.10			7.89		
Approach LOS	C			A			B			A		
d_I, Intersection Delay [s/veh]	15.38											
Intersection LOS	B											
Intersection V/C	0.675											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.629	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	622	622
d_b, Bicycle Delay [s]	45.00	45.00	21.36	21.36
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.846	2.160
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	497	837	265	221	652	203	235	1736	400	238	1755	145
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	497	837	265	221	652	203	235	1736	400	238	1755	145
Peak Hour Factor	0.9630	0.9630	0.9630	0.9380	0.9380	0.9380	0.9710	0.9710	0.9710	0.9670	0.9670	0.9670
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	129	217	69	59	174	54	61	447	103	62	454	37
Total Analysis Volume [veh/h]	516	869	275	236	695	216	242	1788	412	246	1815	150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	47	0	14	39	0	13	41	0	13	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	28	28	10	21	21	9	51	51	9	51	51
g / C, Green / Cycle	0.16	0.25	0.25	0.09	0.18	0.18	0.08	0.45	0.45	0.08	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.16	0.18	0.18	0.07	0.14	0.14	0.07	0.37	0.27	0.08	0.38	0.10
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	515	1195	373	289	862	269	261	2151	671	261	2151	671
d1, Uniform Delay [s]	48.54	39.75	39.88	51.59	45.38	45.35	52.67	28.11	24.36	52.74	28.36	19.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.00	0.86	2.86	5.62	1.83	5.53	13.57	3.92	4.16	15.48	4.27	0.77
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.73	0.74	0.82	0.81	0.80	0.93	0.83	0.61	0.94	0.84	0.22
d, Delay for Lane Group [s/veh]	67.53	40.62	42.74	57.21	47.21	50.88	66.25	32.03	28.52	68.23	32.63	20.42
Lane Group LOS	F	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.71	7.57	7.42	3.57	6.47	6.31	3.96	14.79	9.17	4.09	15.20	2.61
50th-Percentile Queue Length [ft/ln]	217.71	189.33	185.45	89.19	161.86	157.74	99.04	369.81	229.24	102.32	379.99	65.22
95th-Percentile Queue Length [veh/ln]	13.56	12.09	11.88	6.42	10.65	10.43	7.13	21.10	14.14	7.37	21.59	4.70
95th-Percentile Queue Length [ft/ln]	339.08	302.17	297.11	160.54	266.18	260.73	178.27	527.50	353.40	184.18	539.84	117.40

Movement, Approach, & Intersection Results

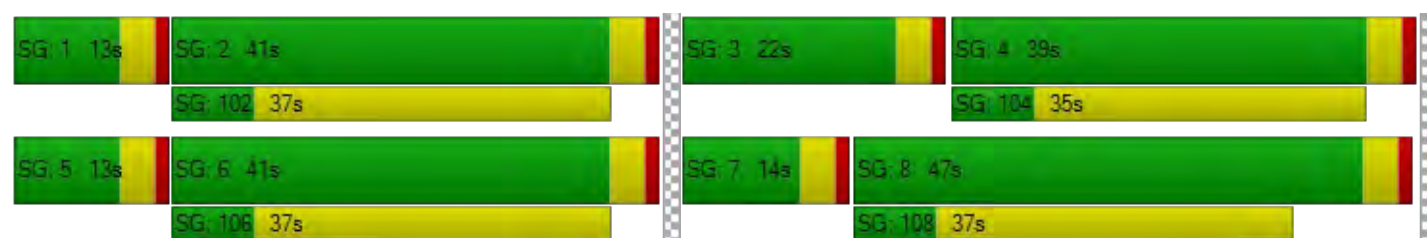
d_M, Delay for Movement [s/veh]	67.53	40.62	42.74	57.21	47.21	50.88	66.25	32.03	28.52	68.23	32.63	20.42
Movement LOS	F	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	49.33			49.96			34.83			35.76		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	40.66											
Intersection LOS	D											
Intersection V/C	0.873											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	3.187			3.122			3.401			3.350		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	748			609			643			643		
d_b, Bicycle Delay [s]	22.54			27.83			26.45			26.45		
I_b,int, Bicycle LOS Score for Intersection	2.473			2.190			2.903			2.776		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	31.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.873

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	42	32	58	324	24	244	320	1659	27	55	1902	339
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	42	32	58	324	24	244	320	1659	27	55	1902	339
Peak Hour Factor	0.8890	0.8890	0.8890	0.8820	0.8820	0.8820	0.9540	0.9540	0.9540	0.9450	0.9450	0.9450
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	9	16	92	7	69	84	435	7	15	503	90
Total Analysis Volume [veh/h]	47	36	65	367	27	277	335	1739	28	58	2013	359
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	30	0	23	43	43	17	47	0	10	40	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	29	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	14	14	15	24	13	60	60	5	52	52
g / C, Green / Cycle	0.04	0.13	0.13	0.13	0.22	0.12	0.55	0.55	0.05	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.04	0.11	0.20	0.10	0.34	0.34	0.03	0.42	0.24
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1526	3277	3373	1757	1687	4826	1506
c, Capacity [veh/h]	72	229	195	436	335	389	1842	960	78	2286	713
d1, Uniform Delay [s]	51.91	42.60	43.61	46.61	41.85	47.63	17.29	17.31	51.86	26.16	20.02
k, delay calibration	0.11	0.11	0.11	0.11	0.12	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.67	0.32	1.00	4.49	10.31	5.70	1.65	3.15	13.00	5.29	2.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.65	0.16	0.33	0.84	0.91	0.86	0.63	0.63	0.74	0.88	0.50
d, Delay for Lane Group [s/veh]	61.58	42.91	44.61	51.09	52.17	53.33	18.94	20.46	64.86	31.45	22.55
Lane Group LOS	E	D	D	D	D	D	B	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.47	0.89	1.67	5.15	8.92	4.80	10.12	10.97	1.86	16.29	6.71
50th-Percentile Queue Length [ft/ln]	36.73	22.32	41.67	128.87	223.08	119.95	253.04	274.26	46.51	407.22	167.81
95th-Percentile Queue Length [veh/ln]	2.64	1.61	3.00	8.88	13.82	8.39	15.34	16.40	3.35	22.91	10.96
95th-Percentile Queue Length [ft/ln]	66.11	40.17	75.01	221.96	345.56	209.75	383.48	410.06	83.73	572.69	274.03

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.58	42.91	44.61	51.09	52.17	52.17	53.33	19.44	20.46	64.86	31.45	22.55
Movement LOS	E	D	D	D	D	D	D	B	C	E	C	C
d_A, Approach Delay [s/veh]	49.59			51.58			24.86			30.93		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	31.65											
Intersection LOS	C											
Intersection V/C	0.873											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.204			2.583			3.276			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	473			709			782			655		
d_b, Bicycle Delay [s]	32.07			22.91			20.40			24.89		
I_b,int, Bicycle LOS Score for Intersection	1.682			2.667			2.716			2.896		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	65.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.007

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	593	338	520	308	92	105	1826	101	431	1858	653
Peak Hour Factor	0.8990	0.8990	0.8990	0.8970	0.8970	0.8970	0.9570	0.9570	0.9570	0.9550	0.9550	0.9550
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	100	165	94	145	86	26	27	477	26	113	486	171
Total Analysis Volume [veh/h]	399	660	376	580	343	103	110	1908	106	451	1946	684
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	21	41	41	23	43	0	10	36	0	20	46	46
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	30	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	17	33	33	19	35	35	6	36	36	16	46	69
g / C, Green / Cycle	0.14	0.27	0.27	0.16	0.29	0.29	0.05	0.30	0.30	0.13	0.39	0.58
(v / s)_i Volume / Saturation Flow Rate	0.12	0.20	0.25	0.18	0.10	0.07	0.03	0.31	0.31	0.14	0.40	0.45
s, saturation flow rate [veh/h]	3277	3373	1506	3277	3373	1506	3277	4826	1711	3277	4826	1506
c, Capacity [veh/h]	452	920	411	521	991	442	165	1452	515	439	1857	869
d1, Uniform Delay [s]	50.82	39.48	42.33	50.52	33.35	32.16	56.06	41.98	41.98	52.01	36.95	19.69
k, delay calibration	0.11	0.11	0.32	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.83	1.06	19.97	57.83	0.21	0.27	4.61	29.79	45.87	27.01	34.73	7.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.72	0.92	1.11	0.35	0.23	0.67	1.02	1.02	1.03	1.05	0.79
d, Delay for Lane Group [s/veh]	56.66	40.55	62.29	108.35	33.55	32.42	60.66	71.78	87.86	79.02	71.68	26.83
Lane Group LOS	E	D	E	F	C	C	E	F	F	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.25	8.90	12.98	11.97	3.97	2.32	1.75	18.15	21.60	8.25	23.69	15.76
50th-Percentile Queue Length [ft/ln]	156.13	222.50	324.59	299.32	99.32	57.92	43.63	453.64	539.99	206.18	592.15	394.11
95th-Percentile Queue Length [veh/ln]	10.34	13.79	18.89	18.55	7.15	4.17	3.14	25.51	29.68	13.10	32.74	22.28
95th-Percentile Queue Length [ft/ln]	258.59	344.82	472.33	463.66	178.77	104.26	78.54	637.81	742.01	327.61	818.39	556.90

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.66	40.55	62.29	108.35	33.55	32.42	60.66	75.33	87.86	79.02	71.68	26.83
Movement LOS	E	D	E	F	C	C	E	E	F	F	F	C
d_A, Approach Delay [s/veh]	50.73			75.72			75.19			62.80		
Approach LOS	D			E			E			E		
d_I, Intersection Delay [s/veh]	65.70											
Intersection LOS	E											
Intersection V/C	1.007											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.933			2.953			3.358			3.560		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			650			533			700		
d_b, Bicycle Delay [s]	28.70			27.34			32.27			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.743			2.406			2.436			3.254		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	35.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	779	0	1134	0	1418	552	162	1659	0
Peak Hour Factor	1.0000	1.0000	1.0000	0.9460	1.0000	0.9460	1.0000	0.9230	0.9230	0.9510	0.9510	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	206	0	300	0	384	150	43	436	0
Total Analysis Volume [veh/h]	0	0	0	823	0	1199	0	1536	598	170	1744	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	67	0	0	0	42	0	11	53	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		59	59	42	42	7	53
g / C, Green / Cycle		0.49	0.49	0.35	0.35	0.06	0.45
(v / s)_i Volume / Saturation Flow Rate		0.25	0.45	0.32	0.22	0.05	0.36
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1598	1300	1704	941	194	2151
d1, Uniform Delay [s]		21.02	28.62	36.80	32.34	55.99	28.85
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.26	3.26	8.14	3.26	11.85	3.45
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.52	0.92	0.90	0.64	0.88	0.81
d, Delay for Lane Group [s/veh]		21.28	31.87	44.94	35.61	67.84	32.30
Lane Group LOS		C	C	D	D	E	C
Critical Lane Group		No	Yes	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		7.85	16.04	15.30	7.62	2.87	14.88
50th-Percentile Queue Length [ft/ln]		196.30	401.12	382.51	190.51	71.81	372.04
95th-Percentile Queue Length [veh/ln]		12.45	22.61	21.72	12.15	5.17	21.21
95th-Percentile Queue Length [ft/ln]		311.19	565.35	542.88	303.70	129.26	530.21

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	21.28	0.00	31.87	0.00	44.94	35.61	67.84	32.30	0.00
Movement LOS				C		C		D	D	E	C	
d_A, Approach Delay [s/veh]	0.00			27.56			42.32			35.46		
Approach LOS	A			C			D			D		
d_I, Intersection Delay [s/veh]	35.24											
Intersection LOS	D											
Intersection V/C	0.911											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.103	2.638	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	633	817
d_b, Bicycle Delay [s]	60.00	60.00	28.02	21.00
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.733	2.612
Bicycle LOS	D	D	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	20.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.785

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1011	0	413	0	0	0	0	1521	679	0	810	391
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1011	0	413	0	0	0	0	1521	679	0	810	391
Peak Hour Factor	0.9860	1.0000	0.9860	1.0000	1.0000	1.0000	0.9080	0.9080	0.9080	1.0000	0.9400	0.9400
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	256	0	105	0	0	0	0	419	187	0	215	104
Total Analysis Volume [veh/h]	1025	0	419	0	0	0	0	1675	748	0	862	416
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	5	2	0	0	6	0	
Auxiliary Signal Groups													
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0	
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0	
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0	
Split [s]	58	0	0	0	0	0	0	32	0	0	32	0	
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0	
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0	
Pedestrian Clearance [s]	0	0	0	0	0	0	0	21	0	0	0	0	
Rest In Walk	No							No			No		
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0	
Minimum Recall	No							No			No		
Maximum Recall	No							No			No		
Pedestrian Recall	No							No			No		
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	33	33		49	49	49	49
g / C, Green / Cycle	0.37	0.37		0.54	0.54	0.54	0.54
(v / s)_i Volume / Saturation Flow Rate	0.31	0.28		0.36	0.40	0.40	0.18
s, saturation flow rate [veh/h]	3277	1506		3373	1523	1506	4826
c, Capacity [veh/h]	1199	551		1838	830	820	2629
d1, Uniform Delay [s]	26.27	25.01		14.52	15.45	15.57	11.33
k, delay calibration	0.11	0.11		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.85	2.19		1.87	5.61	5.89	0.33
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.76		0.66	0.73	0.74	0.33
d, Delay for Lane Group [s/veh]	28.12	27.20		16.39	21.06	21.46	11.66
Lane Group LOS	C	C		B	C	C	B
Critical Lane Group	Yes	No		No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.95	7.84		8.51	9.84	9.95	3.05
50th-Percentile Queue Length [ft/ln]	248.87	196.10		212.72	245.98	248.83	76.33
95th-Percentile Queue Length [veh/ln]	15.13	12.44		13.29	14.98	15.13	5.50
95th-Percentile Queue Length [ft/ln]	378.23	310.93		332.31	374.59	378.18	137.40

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	28.12	0.00	27.20	0.00	0.00	0.00	0.00	16.56	21.38	0.00	11.66	0.00
Movement LOS	C		C					B	C		B	
d_A, Approach Delay [s/veh]	27.85			0.00			18.83			11.66		
Approach LOS	C			A			B			B		
d_I, Intersection Delay [s/veh]	20.28											
Intersection LOS	C											
Intersection V/C	0.785											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.727	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	622	622
d_b, Bicycle Delay [s]	45.00	45.00	21.36	21.36
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.892	2.034
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	43.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.889

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	394	518	272	282	863	216	231	1417	253	361	1419	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	394	518	272	282	863	216	231	1417	253	361	1419	156
Peak Hour Factor	0.9240	0.9240	0.9240	0.9170	0.9170	0.9170	0.9130	0.9130	0.9130	0.8900	0.8900	0.8900
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	107	140	74	77	235	59	63	388	69	101	399	44
Total Analysis Volume [veh/h]	426	561	294	308	941	236	253	1552	277	406	1594	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	41	0	18	39	0	14	42	0	19	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	30	30	13	27	27	10	45	45	15	50	50
g / C, Green / Cycle	0.13	0.25	0.25	0.11	0.23	0.23	0.08	0.38	0.38	0.13	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.13	0.12	0.20	0.09	0.19	0.16	0.08	0.32	0.18	0.12	0.33	0.12
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	439	1218	380	363	1105	345	277	1823	569	412	2023	631
d1, Uniform Delay [s]	51.76	37.99	41.72	52.42	44.35	42.34	54.55	34.27	28.49	52.39	30.26	22.93
k, delay calibration	0.11	0.11	0.18	0.11	0.11	0.12	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	13.95	0.27	5.56	5.55	1.96	2.61	11.43	5.23	2.96	17.27	3.20	1.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.97	0.46	0.77	0.85	0.85	0.68	0.91	0.85	0.49	0.98	0.79	0.28
d, Delay for Lane Group [s/veh]	65.72	38.27	47.28	57.97	46.31	44.95	65.98	39.50	31.45	69.66	33.46	24.02
Lane Group LOS	E	D	D	E	D	D	E	D	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.22	4.70	8.64	4.83	9.10	6.64	4.23	14.49	6.52	7.08	13.66	3.45
50th-Percentile Queue Length [ft/ln]	180.47	117.39	216.01	120.83	227.39	165.96	105.82	362.24	163.11	176.99	341.44	86.25
95th-Percentile Queue Length [veh/ln]	11.63	8.25	13.46	8.44	14.04	10.86	7.61	20.73	10.71	11.44	19.72	6.21
95th-Percentile Queue Length [ft/ln]	290.63	206.24	336.53	210.97	351.04	271.60	190.17	518.31	267.84	286.08	492.96	155.25

Movement, Approach, & Intersection Results

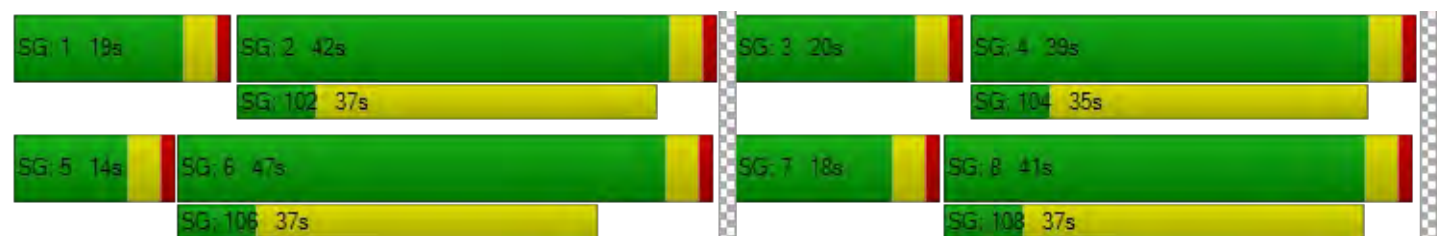
d_M, Delay for Movement [s/veh]	65.72	38.27	47.28	57.97	46.31	44.95	65.98	39.50	31.45	69.66	33.46	24.02
Movement LOS	E	D	D	E	D	D	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	49.46			48.52			41.65			39.46		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.85											
Intersection LOS	D											
Intersection V/C	0.889											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.178			3.131			3.333			3.332		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			633			717		
d_b, Bicycle Delay [s]	28.70			30.10			28.02			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.264			2.376			2.705			2.756		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	47.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.949

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵↵↵			↵↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	37	169	411	74	355	349	1464	31	107	1653	460
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	37	169	411	74	355	349	1464	31	107	1653	460
Peak Hour Factor	0.8250	0.8250	0.8250	0.9010	0.9010	0.9010	0.9400	0.9400	0.9400	0.9820	0.9820	0.9820
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	11	51	114	21	99	93	389	8	27	421	117
Total Analysis Volume [veh/h]	80	45	205	456	82	394	371	1557	33	109	1683	468
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	24	0	28	42	42	18	51	0	12	45	45
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	29	29	0	28	0	0	29	29
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	25	25	18	37	14	48	48	8	42	42
g / C, Green / Cycle	0.05	0.21	0.21	0.16	0.32	0.12	0.42	0.42	0.07	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.05	0.03	0.14	0.14	0.31	0.11	0.31	0.31	0.06	0.35	0.31
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1546	3277	3373	1753	1687	4826	1506
c, Capacity [veh/h]	88	377	321	525	496	399	1409	732	118	1765	551
d1, Uniform Delay [s]	54.22	36.55	41.23	47.11	38.32	50.01	28.25	28.27	53.21	35.53	33.57
k, delay calibration	0.11	0.11	0.11	0.11	0.41	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	26.12	0.14	2.12	4.53	27.91	9.78	3.56	6.71	24.08	12.94	15.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.12	0.64	0.87	0.96	0.93	0.74	0.74	0.93	0.95	0.85
d, Delay for Lane Group [s/veh]	80.33	36.69	43.35	51.64	66.23	59.79	31.81	34.98	77.29	48.46	48.68
Lane Group LOS	F	D	D	D	E	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.94	1.04	5.47	6.67	16.78	5.81	12.61	13.77	3.91	17.09	14.12
50th-Percentile Queue Length [ft/ln]	73.54	26.05	136.72	166.81	419.42	145.20	315.27	344.24	97.86	427.23	352.90
95th-Percentile Queue Length [veh/ln]	5.29	1.88	9.30	10.91	23.49	9.76	18.43	19.86	7.05	23.87	20.28
95th-Percentile Queue Length [ft/ln]	132.37	46.89	232.60	272.71	587.36	244.01	460.87	496.39	176.15	596.72	506.95

Movement, Approach, & Intersection Results

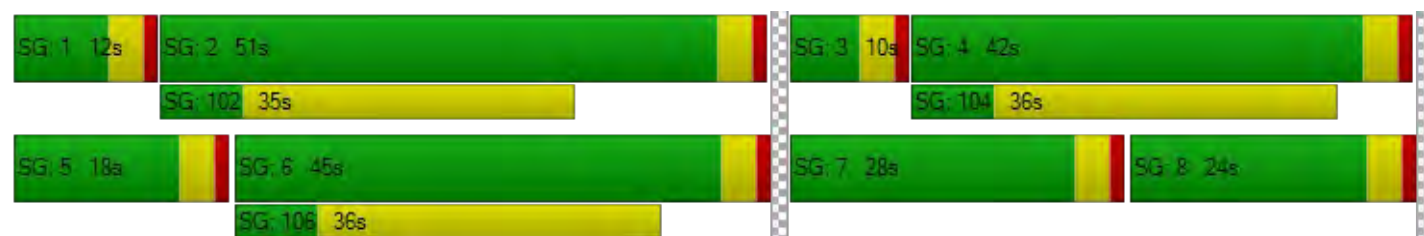
d_M, Delay for Movement [s/veh]	80.33	36.69	43.35	51.64	66.23	66.23	59.79	32.85	34.98	77.29	48.46	48.68
Movement LOS	F	D	D	D	E	E	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	51.41			59.09			37.99			49.90		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	47.29											
Intersection LOS	D											
Intersection V/C	0.949											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.278			2.666			3.239			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	348			661			817			713		
d_b, Bicycle Delay [s]	39.24			25.78			20.10			23.81		
I_b,int, Bicycle LOS Score for Intersection	1.832			3.097			2.638			2.803		
Bicycle LOS	A			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	160.7
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.457

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	275	543	551	746	435	174	130	1539	187	621	1853	1061
Peak Hour Factor	0.9800	0.9800	0.9800	0.8330	0.8330	0.8330	0.9250	0.9250	0.9250	0.9230	0.9230	0.9230
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	139	141	224	131	52	35	416	51	168	502	287
Total Analysis Volume [veh/h]	281	554	562	896	522	209	141	1664	202	673	2008	1150
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	41	41	25	49	0	10	34	0	20	44	44
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	30	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	12	37	37	21	46	46	6	30	30	16	40	65
g / C, Green / Cycle	0.10	0.31	0.31	0.18	0.38	0.38	0.05	0.25	0.25	0.13	0.33	0.54
(v / s)_i Volume / Saturation Flow Rate	0.09	0.16	0.37	0.27	0.15	0.14	0.04	0.29	0.29	0.21	0.42	0.76
s, saturation flow rate [veh/h]	3277	3373	1506	3277	3373	1506	3277	4826	1648	3277	4826	1506
c, Capacity [veh/h]	333	1036	463	574	1284	573	164	1211	414	437	1613	817
d1, Uniform Delay [s]	52.96	34.46	41.57	49.50	27.24	26.74	56.57	44.95	44.95	52.00	39.95	27.45
k, delay calibration	0.11	0.11	0.50	0.12	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.79	0.43	115.09	255.02	0.21	0.39	11.98	76.86	91.49	245.23	115.70	190.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.53	1.21	1.56	0.41	0.36	0.86	1.15	1.15	1.54	1.25	1.41
d, Delay for Lane Group [s/veh]	58.75	34.89	156.66	304.52	27.45	27.12	68.55	121.81	136.44	297.24	155.65	218.17
Lane Group LOS	E	C	F	F	C	C	E	F	F	F	F	F
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.43	6.75	28.28	28.87	5.52	4.37	2.39	20.53	22.71	21.45	32.88	65.39
50th-Percentile Queue Length [ft/ln]	110.67	168.86	706.93	721.82	137.92	109.22	59.85	513.22	567.79	536.26	821.98	1634.80
95th-Percentile Queue Length [veh/ln]	7.88	11.02	41.52	45.10	9.37	7.80	4.31	30.22	33.03	33.97	48.28	98.78
95th-Percentile Queue Length [ft/ln]	196.94	275.41	1037.96	1127.38	234.23	194.92	107.73	755.45	825.67	849.16	1206.90	2469.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.75	34.89	156.66	304.52	27.45	27.12	68.55	124.21	136.44	297.24	155.65	218.17
Movement LOS	E	C	F	F	C	C	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	88.68			179.99			121.53			199.29		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	160.70											
Intersection LOS	F											
Intersection V/C	1.457											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.997			3.091			3.351			3.658		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			750			500			667		
d_b, Bicycle Delay [s]	28.70			23.44			33.75			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.712			2.902			2.387			3.667		
Bicycle LOS	B			C			B			D		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-VII

YEAR 2040 TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	29.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.724

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	55	190	141	214	458	79	87	1326	139	150	1403	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	55	190	141	214	458	79	87	1326	139	150	1403	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	48	35	54	115	20	22	332	35	38	351	17
Total Analysis Volume [veh/h]	55	190	141	214	458	79	87	1326	139	150	1403	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	32	0	22	42	0	10	31	0	15	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	13	13	15	23	23	6	46	46	11	51	51
g / C, Green / Cycle	0.05	0.13	0.13	0.15	0.23	0.23	0.06	0.46	0.46	0.11	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.10	0.13	0.16	0.16	0.05	0.29	0.29	0.09	0.29	0.29
s, saturation flow rate [veh/h]	1687	1772	1530	1687	1772	1682	1687	3373	1687	1687	3373	1731
c, Capacity [veh/h]	81	227	196	247	402	381	103	1548	774	180	1702	873
d1, Uniform Delay [s]	46.90	42.16	42.40	41.79	35.45	35.47	46.56	20.64	20.64	43.86	17.26	17.26
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.47	5.23	7.41	8.92	2.08	2.20	16.88	1.97	3.89	9.60	1.40	2.70
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	0.76	0.80	0.87	0.69	0.69	0.85	0.63	0.63	0.83	0.57	0.57
d, Delay for Lane Group [s/veh]	56.37	47.39	49.81	50.71	37.53	37.67	63.44	22.60	24.53	53.46	18.65	19.96
Lane Group LOS	E	D	D	D	D	D	E	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.55	4.44	4.16	5.72	6.30	6.01	2.61	8.76	9.17	4.10	7.73	8.26
50th-Percentile Queue Length [ft/ln]	38.87	110.88	103.90	143.10	157.41	150.24	65.32	218.89	229.31	102.39	193.36	206.41
95th-Percentile Queue Length [veh/ln]	2.80	7.89	7.48	9.65	10.41	10.03	4.70	13.61	14.14	7.37	12.30	12.97
95th-Percentile Queue Length [ft/ln]	69.96	197.23	187.02	241.19	260.29	250.75	117.57	340.20	353.49	184.30	307.38	324.22

Movement, Approach, & Intersection Results

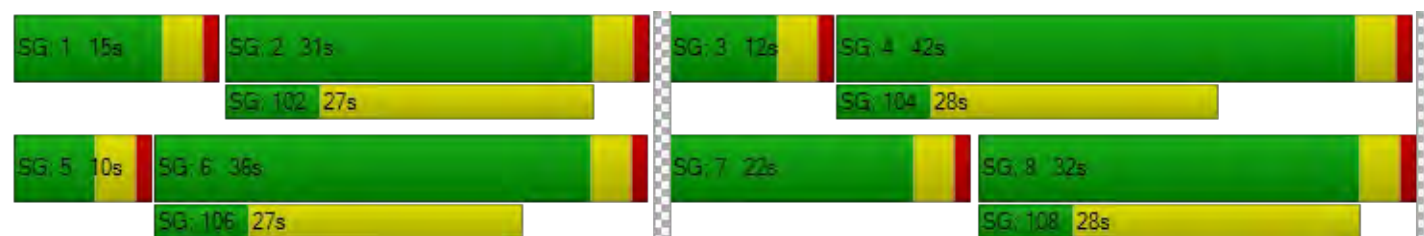
d_M, Delay for Movement [s/veh]	56.37	47.60	49.81	50.71	37.59	37.67	63.44	23.11	24.53	53.46	19.06	19.96
Movement LOS	E	D	D	D	D	D	E	C	C	D	B	B
d_A, Approach Delay [s/veh]	49.66			41.34			25.50			22.28		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.21											
Intersection LOS	C											
Intersection V/C	0.724											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.526			2.518			3.029			3.059		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	560			760			540			640		
d_b, Bicycle Delay [s]	25.92			19.22			26.65			23.12		
I_b,int, Bicycle LOS Score for Intersection	1.878			2.179			2.413			2.451		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	44.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.904

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	235	356	158	128	976	259	112	1409	440	219	1445	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	235	356	158	128	976	259	112	1409	440	219	1445	144
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	89	40	32	244	65	28	352	110	55	361	36
Total Analysis Volume [veh/h]	235	356	158	128	976	259	112	1409	440	219	1445	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	18	43	0	13	42	0	21	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	36	36	11	37	37	9	40	40	17	48	48
g / C, Green / Cycle	0.08	0.30	0.30	0.09	0.31	0.31	0.08	0.33	0.33	0.14	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.10	0.08	0.29	0.17	0.07	0.29	0.29	0.13	0.31	0.31
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1691
c, Capacity [veh/h]	274	1018	455	153	1043	465	127	1604	500	239	1346	674
d1, Uniform Delay [s]	54.30	32.70	32.68	53.69	40.31	34.59	54.98	37.78	37.79	50.79	31.58	31.62
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.73	0.21	0.46	11.26	4.70	1.07	17.42	7.18	19.32	13.12	4.68	9.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.35	0.35	0.84	0.94	0.56	0.88	0.88	0.88	0.92	0.79	0.79
d, Delay for Lane Group [s/veh]	62.03	32.90	33.13	64.95	45.00	35.67	72.39	44.96	57.11	63.91	36.26	40.68
Lane Group LOS	E	C	C	E	D	D	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.80	4.08	3.65	4.28	14.51	6.44	3.97	13.92	14.73	7.35	14.09	15.00
50th-Percentile Queue Length [ft/ln]	94.90	102.09	91.35	106.95	362.65	160.91	99.16	348.07	368.35	183.66	352.35	374.97
95th-Percentile Queue Length [veh/ln]	6.83	7.35	6.58	7.67	20.75	10.60	7.14	20.04	21.03	11.79	20.25	21.35
95th-Percentile Queue Length [ft/ln]	170.82	183.77	164.43	191.75	518.80	264.93	178.49	501.06	525.73	294.79	506.27	533.76

Movement, Approach, & Intersection Results

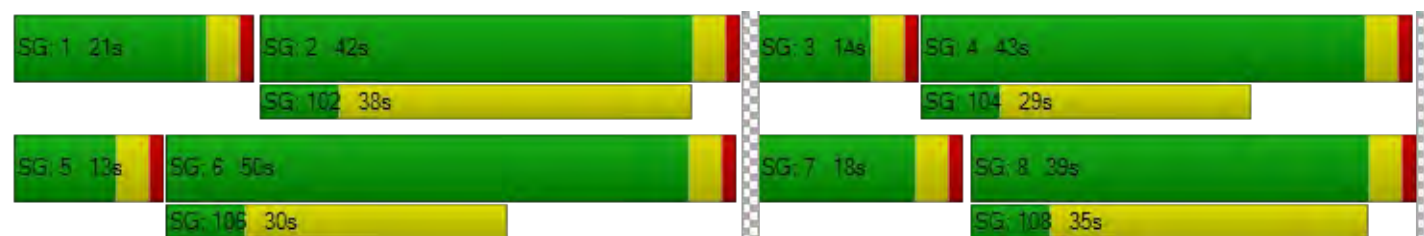
d_M, Delay for Movement [s/veh]	62.03	32.90	33.13	64.95	45.00	35.67	72.39	44.96	57.11	63.91	37.45	40.68
Movement LOS	E	C	C	E	D	D	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	42.09			45.10			49.25			40.91		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.81											
Intersection LOS	D											
Intersection V/C	0.904											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.940			2.788			3.215			3.096		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			650			633			767		
d_b, Bicycle Delay [s]	30.10			27.34			28.02			22.82		
I_b,int, Bicycle LOS Score for Intersection	2.178			2.684			2.638			2.554		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 3: State College Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.866

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	188	197	219	858	709	9	15	1350	266	490	1752	550
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	197	219	858	709	9	15	1350	266	490	1752	550
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	49	55	215	177	2	4	338	67	123	438	138
Total Analysis Volume [veh/h]	188	197	219	858	709	9	15	1350	266	490	1752	550
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	16	0	41	44	0	11	39	0	24	52	52
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	12	12	12	35	38	38	2	37	37	20	55	93
g / C, Green / Cycle	0.07	0.10	0.10	0.10	0.29	0.32	0.32	0.02	0.31	0.31	0.16	0.45	0.78
(v / s)_i Volume / Saturation Flow Rate	0.06	0.08	0.09	0.09	0.26	0.20	0.20	0.00	0.25	0.25	0.15	0.36	0.37
s, saturation flow rate [veh/h]	3277	1772	1589	1506	3277	1772	1764	3277	4826	1586	3277	4826	1506
c, Capacity [veh/h]	241	185	166	157	944	565	562	68	1495	491	539	2190	1167
d1, Uniform Delay [s]	54.65	52.62	52.69	52.73	41.21	34.96	34.97	57.85	38.23	38.26	49.26	28.12	4.78
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.17	0.17	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	8.24	9.75	10.56	3.76	1.88	1.90	1.64	4.95	13.87	6.22	3.18	1.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.81	0.82	0.83	0.91	0.64	0.64	0.22	0.81	0.82	0.91	0.80	0.47
d, Delay for Lane Group [s/veh]	60.04	60.86	62.44	63.29	44.97	36.84	36.88	59.48	43.18	52.13	55.48	31.30	6.14
Lane Group LOS	E	E	E	E	D	D	D	E	D	D	E	C	A
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.97	4.84	4.47	4.30	12.61	9.24	9.22	0.24	11.58	12.67	7.66	14.68	4.42
50th-Percentile Queue Length [ft/ln]	74.35	120.9	111.7	107.5	315.31	230.98	230.53	5.99	289.45	316.75	191.52	366.88	110.44
95th-Percentile Queue Length [veh/ln]	5.35	8.44	7.94	7.70	18.44	14.22	14.20	0.43	17.16	18.51	12.20	20.96	7.86
95th-Percentile Queue Length [ft/ln]	133.8	211.0	198.4	192.6	460.92	355.60	355.03	10.79	428.96	462.69	305.00	523.94	196.62

Movement, Approach, & Intersection Results

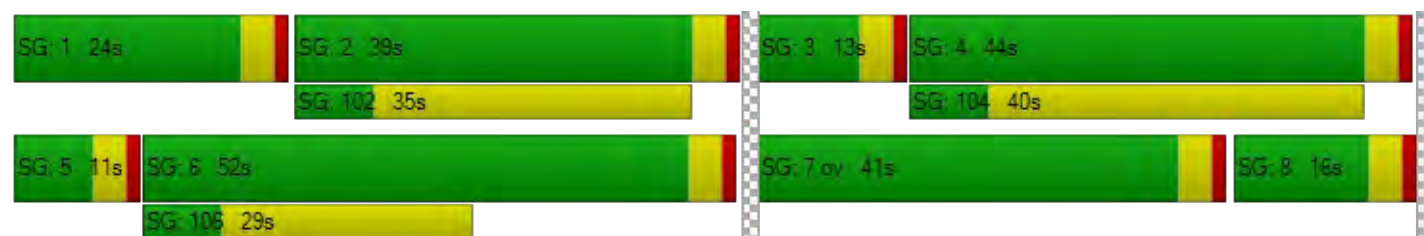
d_M, Delay for Movement [s/veh]	60.04	61.24	62.97	44.97	36.86	36.88	59.48	44.07	52.13	55.48	31.30	6.14
Movement LOS	E	E	E	D	D	D	E	D	D	E	C	A
d_A, Approach Delay [s/veh]	61.49			41.27			45.53			30.59		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	39.65											
Intersection LOS	D											
Intersection V/C	0.866											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.896			2.847			3.251			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	200			667			583			800		
d_b, Bicycle Delay [s]	48.60			26.67			30.10			21.60		
I_b,int, Bicycle LOS Score for Intersection	2.058			2.860			2.232			3.095		
Bicycle LOS	B			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	31.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1090	0	690	0	1862	606	234	2149	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1090	0	690	0	1862	606	234	2149	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	273	0	173	0	466	152	59	537	0
Total Analysis Volume [veh/h]	0	0	0	1090	0	690	0	1862	606	234	2149	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	54	0	0	0	47	0	14	61	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		115	115	115	115	115	115
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		43	43	50	50	10	64
g / C, Green / Cycle		0.37	0.37	0.43	0.43	0.09	0.56
(v / s)_i Volume / Saturation Flow Rate		0.33	0.26	0.39	0.23	0.07	0.45
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1226	997	2095	1157	287	2685
d1, Uniform Delay [s]		33.74	30.38	29.97	23.83	51.54	20.40
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.43	0.87	6.13	1.70	5.66	2.61
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.89	0.69	0.89	0.52	0.82	0.80
d, Delay for Lane Group [s/veh]		36.17	31.25	36.10	25.52	57.20	23.01
Lane Group LOS		D	C	D	C	E	C
Critical Lane Group		Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		14.38	8.08	16.54	6.23	3.53	15.23
50th-Percentile Queue Length [ft/ln]		359.49	202.03	413.40	155.71	88.37	380.77
95th-Percentile Queue Length [veh/ln]		20.60	12.74	23.20	10.32	6.36	21.63
95th-Percentile Queue Length [ft/ln]		514.96	318.58	580.12	258.04	159.07	540.78

Movement, Approach, & Intersection Results

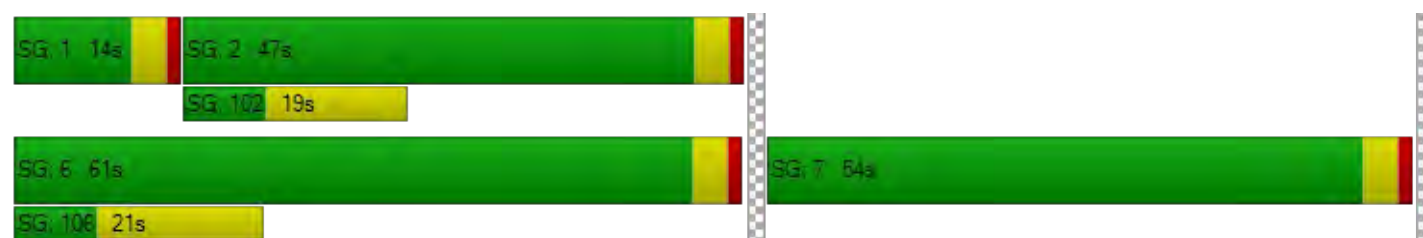
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	36.17	0.00	31.25	0.00	36.10	25.52	57.20	23.01	0.00
Movement LOS				D		C		D	C	E	C	
d_A, Approach Delay [s/veh]	0.00			34.26			33.50			26.37		
Approach LOS	A			C			C			C		
d_I, Intersection Delay [s/veh]	31.14											
Intersection LOS	C											
Intersection V/C	0.882											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.136			2.577			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			748			991		
d_b, Bicycle Delay [s]	57.50			57.50			22.54			14.63		
I_b,int, Bicycle LOS Score for Intersection	4.132			4.132			2.917			2.870		
Bicycle LOS	D			D			C			C		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.954

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1080	0	500	0	0	0	0	2614	398	0	1347	518
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1080	0	500	0	0	0	0	2614	398	0	1347	518
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	0	125	0	0	0	0	654	100	0	337	130
Total Analysis Volume [veh/h]	1080	0	500	0	0	0	0	2614	398	0	1347	518
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	51	0	0	0	0	0	0	69	0	0	69	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	21	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	43	43		69	69	69	69
g / C, Green / Cycle	0.36	0.36		0.57	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.33	0.33		0.52	0.53	0.26	0.28
s, saturation flow rate [veh/h]	3277	1506		3373	1656	1506	4826
c, Capacity [veh/h]	1181	543		1932	948	862	2764
d1, Uniform Delay [s]	36.54	36.67		22.62	23.08	14.86	15.17
k, delay calibration	0.11	0.35		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.24	18.08		7.36	15.18	1.78	0.62
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.92		0.90	0.92	0.46	0.49
d, Delay for Lane Group [s/veh]	39.78	54.75		29.98	38.26	16.64	15.79
Lane Group LOS	D	D		C	D	B	B
Critical Lane Group	No	Yes		No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.35	16.50		22.45	24.90	6.57	7.23
50th-Percentile Queue Length [ft/ln]	383.79	412.44		561.35	622.38	164.29	180.86
95th-Percentile Queue Length [veh/ln]	21.78	23.16		30.23	33.08	10.78	11.65
95th-Percentile Queue Length [ft/ln]	544.43	578.97		755.63	826.94	269.39	291.14

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.78	0.00	54.75	0.00	0.00	0.00	0.00	31.90	16.64	0.00	15.79	0.00
Movement LOS	D		D					C	B		B	
d_A, Approach Delay [s/veh]	44.52			0.00			30.61			15.79		
Approach LOS	D			A			C			B		
d_I, Intersection Delay [s/veh]	30.95											
Intersection LOS	C											
Intersection V/C	0.954											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.699	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	1083	1083
d_b, Bicycle Delay [s]	60.00	60.00	12.60	12.60
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	3.216	2.300
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	36.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.956

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	292	113	48	19	231	327	135	711	1252	342	833	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	292	113	48	19	231	327	135	711	1252	342	833	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	28	12	5	58	82	34	178	313	86	208	4
Total Analysis Volume [veh/h]	292	113	48	19	231	327	135	711	1252	342	833	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	50	50	10	44	0	23	37	37	18	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	37	55	3	28	28	11	46	62	14	48	48
g / C, Green / Cycle	0.10	0.32	0.48	0.02	0.24	0.24	0.10	0.40	0.54	0.12	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.09	0.06	0.03	0.01	0.13	0.22	0.08	0.21	0.47	0.10	0.17	0.17
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1753
c, Capacity [veh/h]	344	567	716	42	425	361	163	1334	1426	396	1415	736
d1, Uniform Delay [s]	50.61	28.41	16.34	55.35	38.22	42.46	51.04	26.65	23.46	49.67	23.25	23.25
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.18	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.88	0.17	0.04	7.56	1.08	13.32	10.14	1.53	7.93	5.73	0.83	1.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.20	0.07	0.46	0.54	0.91	0.83	0.53	0.88	0.86	0.40	0.40
d, Delay for Lane Group [s/veh]	56.50	28.58	16.38	62.91	39.31	55.78	61.18	28.18	31.39	55.40	24.07	24.84
Lane Group LOS	E	C	B	E	D	E	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.40	2.30	0.70	0.63	5.82	10.28	4.27	7.68	15.69	5.13	5.41	5.78
50th-Percentile Queue Length [ft/ln]	110.12	57.52	17.40	15.78	145.38	257.00	106.84	191.94	392.31	128.26	135.16	144.48
95th-Percentile Queue Length [veh/ln]	7.85	4.14	1.25	1.14	9.77	15.54	7.66	12.22	22.19	8.85	9.22	9.72
95th-Percentile Queue Length [ft/ln]	196.17	103.54	31.32	28.41	244.24	388.45	191.59	305.55	554.72	221.13	230.49	243.04

Movement, Approach, & Intersection Results

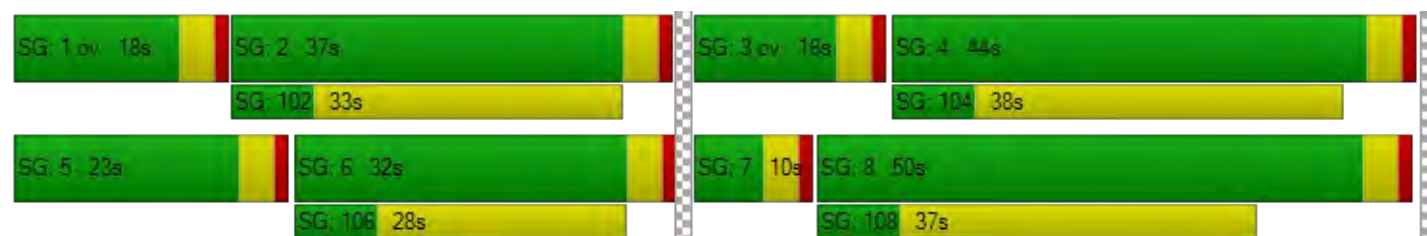
d_M, Delay for Movement [s/veh]	56.50	28.58	16.38	62.91	39.31	55.78	61.18	28.18	31.39	55.40	24.33	24.84
Movement LOS	E	C	B	E	D	E	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	45.28			49.42			32.22			33.25		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	36.17											
Intersection LOS	D											
Intersection V/C	0.956											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.835			2.348			3.170			2.880		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			696			574			487		
d_b, Bicycle Delay [s]	20.70			24.46			29.23			32.91		
I_b,int, Bicycle LOS Score for Intersection	2.307			2.512			3.290			2.215		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.546

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	30	480	253	477	1086	60	49	78	12	333	77	236
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	480	253	477	1086	60	49	78	12	333	77	236
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	120	63	119	272	15	12	20	3	83	19	59
Total Analysis Volume [veh/h]	30	480	253	477	1086	60	49	78	12	333	77	236
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	20	29	0	29	38	0	16	37	0	20	41	41
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	58	58	20	74	74	5	8	14	17	40
g / C, Green / Cycle	0.03	0.50	0.50	0.17	0.64	0.64	0.04	0.07	0.12	0.14	0.35
(v / s)_i Volume / Saturation Flow Rate	0.02	0.14	0.17	0.15	0.22	0.22	0.03	0.05	0.10	0.04	0.16
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1724	1687	1731	3277	1772	1506
c, Capacity [veh/h]	56	1697	758	561	2163	1106	71	116	393	256	528
d1, Uniform Delay [s]	54.77	16.56	17.07	46.27	9.56	9.56	54.37	52.86	49.61	44.02	28.80
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.77	0.42	1.19	3.75	0.45	0.88	11.19	10.66	5.13	0.65	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.28	0.33	0.85	0.35	0.35	0.69	0.78	0.85	0.30	0.45
d, Delay for Lane Group [s/veh]	62.54	16.98	18.26	50.03	10.01	10.44	65.56	63.52	54.74	44.68	29.39
Lane Group LOS	E	B	B	D	B	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.98	3.73	4.19	6.88	4.32	4.55	1.62	2.90	4.96	2.02	5.09
50th-Percentile Queue Length [ft/ln]	24.42	93.17	104.82	172.08	107.91	113.67	40.52	72.52	123.98	50.38	127.33
95th-Percentile Queue Length [veh/ln]	1.76	6.71	7.55	11.19	7.72	8.04	2.92	5.22	8.61	3.63	8.79
95th-Percentile Queue Length [ft/ln]	43.95	167.70	188.67	279.64	193.09	201.09	72.94	130.54	215.28	90.69	219.86

Movement, Approach, & Intersection Results

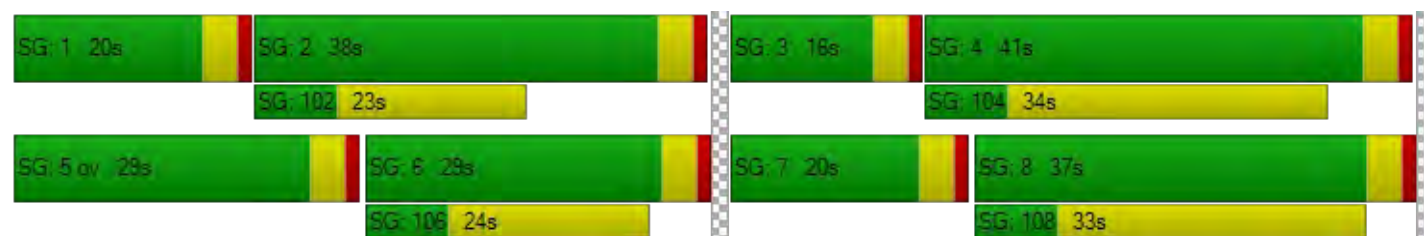
d_M, Delay for Movement [s/veh]	62.54	16.98	18.26	50.03	10.14	10.44	65.56	63.52	63.52	54.74	44.68	29.39
Movement LOS	E	B	B	D	B	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	19.19			21.87			64.24			44.28		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	27.65											
Intersection LOS	C											
Intersection V/C	0.546											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.911			3.028			2.051			2.701		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	435			591			574			643		
d_b, Bicycle Delay [s]	35.22			28.53			29.23			26.45		
I_b,int, Bicycle LOS Score for Intersection	1.979			2.452			1.789			2.626		
Bicycle LOS	A			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.3
 Level Of Service: B
 Volume to Capacity (v/c): 0.429

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	24	41	87	38	51	26	40	647	208	105	557	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	24	41	87	38	51	26	40	647	208	105	557	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	10	22	10	13	7	10	162	52	26	139	11
Total Analysis Volume [veh/h]	24	41	87	38	51	26	40	647	208	105	557	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	10	30	0	22	42	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10	10	10	4	61	61	7	64	64
g / C, Green / Cycle	0.11	0.11	0.11	0.11	0.11	0.04	0.68	0.68	0.08	0.72	0.72
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.06	0.03	0.05	0.02	0.25	0.25	0.06	0.17	0.03
s, saturation flow rate [veh/h]	1322	1772	1506	1366	1672	1687	1772	1626	1687	3373	1506
c, Capacity [veh/h]	134	193	164	166	182	71	1203	1104	133	2413	1077
d1, Uniform Delay [s]	42.15	36.58	37.92	40.64	37.46	42.28	6.20	6.20	40.73	4.36	3.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.63	0.54	2.65	0.69	1.56	6.72	0.88	0.96	9.97	0.22	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.18	0.21	0.53	0.23	0.42	0.56	0.37	0.37	0.79	0.23	0.04
d, Delay for Lane Group [s/veh]	42.78	37.12	40.57	41.33	39.01	49.00	7.07	7.15	50.70	4.59	3.82
Lane Group LOS	D	D	D	D	D	D	A	A	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.54	0.84	1.91	0.83	1.64	1.00	3.36	3.11	2.62	1.49	0.21
50th-Percentile Queue Length [ft/ln]	13.47	21.07	47.78	20.87	41.10	24.90	83.90	77.65	65.60	37.15	5.32
95th-Percentile Queue Length [veh/ln]	0.97	1.52	3.44	1.50	2.96	1.79	6.04	5.59	4.72	2.67	0.38
95th-Percentile Queue Length [ft/ln]	24.25	37.93	86.00	37.57	73.98	44.83	151.02	139.77	118.08	66.87	9.58

Movement, Approach, & Intersection Results

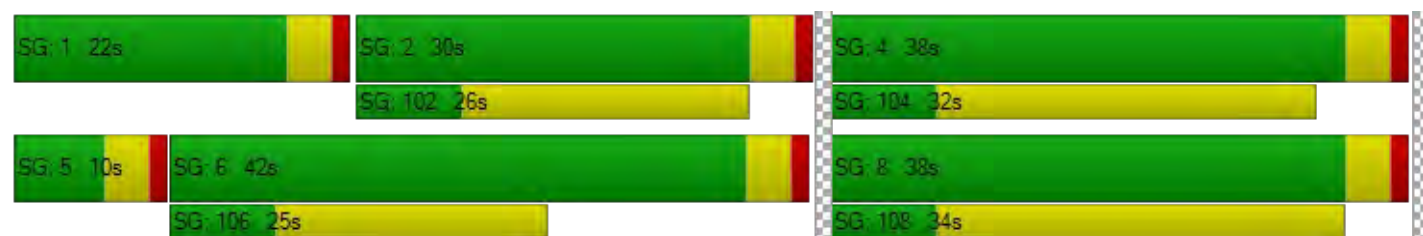
d_M, Delay for Movement [s/veh]	42.78	37.12	40.57	41.33	39.01	39.01	49.00	7.10	7.15	50.70	4.59	3.82
Movement LOS	D	D	D	D	D	D	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	39.99			39.78			8.98			11.40		
Approach LOS	D			D			A			B		
d_I, Intersection Delay [s/veh]	14.32											
Intersection LOS	B											
Intersection V/C	0.429											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.256			2.018			2.626			2.747		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			844		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			15.02		
I_b,int, Bicycle LOS Score for Intersection	1.810			1.749			2.298			2.142		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.683

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	78	177	101	792	932	214	104	580	48	83	582	289
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	177	101	792	932	214	104	580	48	83	582	289
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	44	25	198	233	54	26	145	12	21	146	72
Total Analysis Volume [veh/h]	78	177	101	792	932	214	104	580	48	83	582	289
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	32	61	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	22	22	28	45	45	6	48	48	6	48	48
g / C, Green / Cycle	0.05	0.18	0.18	0.23	0.37	0.37	0.05	0.40	0.40	0.05	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.02	0.05	0.07	0.24	0.32	0.34	0.03	0.17	0.03	0.03	0.17	0.19
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1662	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	154	624	279	764	658	617	161	1352	604	156	1347	601
d1, Uniform Delay [s]	55.84	42.09	42.75	46.03	35.10	36.22	56.05	26.03	22.26	55.86	26.18	26.81
k, delay calibration	0.11	0.11	0.11	0.11	0.23	0.26	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	0.25	0.79	25.56	7.58	13.93	4.27	1.00	0.26	2.79	1.01	2.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.28	0.36	1.04	0.87	0.93	0.64	0.43	0.08	0.53	0.43	0.48
d, Delay for Lane Group [s/veh]	58.39	42.33	43.54	71.59	42.68	50.15	60.31	27.02	22.52	58.65	27.19	29.55
Lane Group LOS	E	D	D	F	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.21	2.29	2.69	14.02	16.70	18.18	1.64	6.17	0.89	1.29	6.21	6.58
50th-Percentile Queue Length [ft/ln]	30.23	57.26	67.28	350.45	417.57	454.44	41.10	154.21	22.25	32.26	155.35	164.60
95th-Percentile Queue Length [veh/ln]	2.18	4.12	4.84	20.57	23.41	25.17	2.96	10.24	1.60	2.32	10.30	10.79
95th-Percentile Queue Length [ft/ln]	54.41	103.07	121.11	514.19	585.14	629.24	73.97	256.04	40.05	58.06	257.56	269.81

Movement, Approach, & Intersection Results

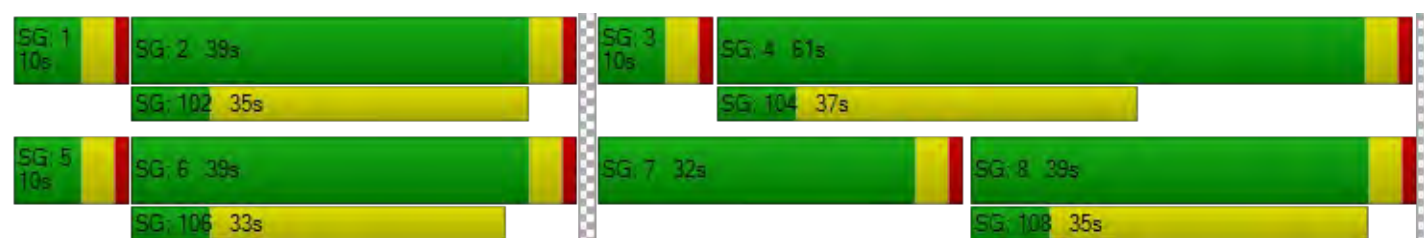
d_M, Delay for Movement [s/veh]	58.39	42.33	43.54	71.59	45.56	50.15	60.31	27.02	22.52	58.65	27.19	29.55
Movement LOS	E	D	D	F	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	46.19			56.70			31.46			30.64		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	44.87											
Intersection LOS	D											
Intersection V/C	0.683											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.805			2.874			2.831			2.946		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			950			583			583		
d_b, Bicycle Delay [s]	30.10			16.54			30.10			30.10		
I_b,int, Bicycle LOS Score for Intersection	1.853			3.158			2.164			2.347		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	242	6	325	57	30	8	2	1041	393	446	765	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	6	325	57	30	8	2	1041	393	446	765	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	2	81	14	8	2	1	260	98	112	191	3
Total Analysis Volume [veh/h]	242	6	325	57	30	8	2	1041	393	446	765	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	55	55	0	37	0	10	40	0	25	55	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	24	49	9	9	0	63	63	21	84	84
g / C, Green / Cycle	0.09	0.20	0.41	0.07	0.07	0.00	0.53	0.53	0.17	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.07	0.00	0.22	0.04	0.02	0.00	0.42	0.43	0.14	0.22	0.22
s, saturation flow rate [veh/h]	3277	1772	1506	1410	1708	1687	1772	1610	3277	1772	1764
c, Capacity [veh/h]	298	351	612	135	126	6	933	848	573	1237	1231
d1, Uniform Delay [s]	53.53	38.70	26.94	56.06	52.63	59.66	23.17	23.53	47.28	7.00	7.00
k, delay calibration	0.11	0.11	0.35	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.27	0.02	2.31	2.09	1.32	31.21	7.04	8.44	2.32	0.66	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.02	0.53	0.42	0.30	0.34	0.80	0.81	0.78	0.31	0.31
d, Delay for Lane Group [s/veh]	58.80	38.72	29.25	58.14	53.95	90.87	30.21	31.97	49.60	7.66	7.67
Lane Group LOS	E	D	C	E	D	F	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.80	0.15	7.39	1.78	1.13	0.11	18.39	17.59	6.54	3.81	3.79
50th-Percentile Queue Length [ft/ln]	95.02	3.63	184.63	44.51	28.32	2.79	459.64	439.83	163.49	95.17	94.80
95th-Percentile Queue Length [veh/ln]	6.84	0.26	11.84	3.20	2.04	0.20	25.42	24.47	10.73	6.85	6.83
95th-Percentile Queue Length [ft/ln]	171.03	6.54	296.05	80.11	50.98	5.02	635.45	611.80	268.34	171.30	170.63

Movement, Approach, & Intersection Results

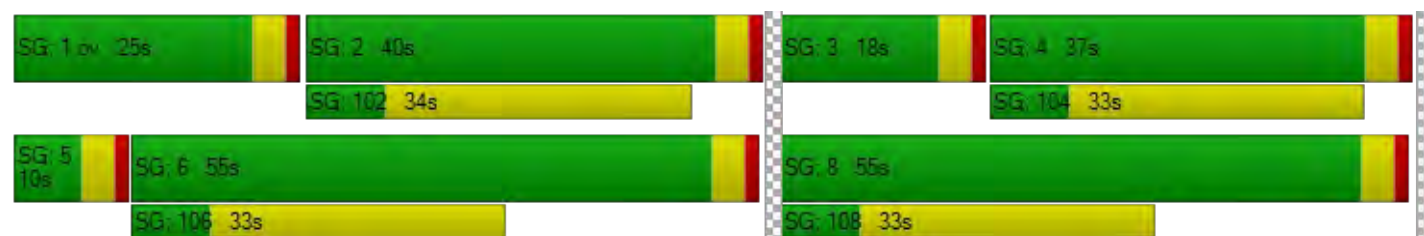
d_M, Delay for Movement [s/veh]	58.80	38.72	29.25	58.14	53.95	53.95	90.87	30.71	31.97	49.60	7.67	7.67
Movement LOS	E	D	C	E	D	D	F	C	C	D	A	A
d_A, Approach Delay [s/veh]	41.83			56.47			31.14			22.98		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.71											
Intersection LOS	C											
Intersection V/C	0.853											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.701			1.991			2.792			2.977		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	850			550			600			850		
d_b, Bicycle Delay [s]	19.84			31.54			29.40			19.84		
I_b,int, Bicycle LOS Score for Intersection	2.505			1.716			2.744			2.567		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 11: N Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.778

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	6	261	2	489	328	1006	17	10	796	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	6	261	2	489	328	1006	17	10	796	101
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	2	65	1	122	82	252	4	3	199	25
Total Analysis Volume [veh/h]	3	3	6	261	2	489	328	1006	17	10	796	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	44	39	0	37	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	2	2	28	28	67	29	72	72	2	45	45
g / C, Green / Cycle	0.02	0.02	0.02	0.23	0.23	0.56	0.24	0.60	0.60	0.01	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.08	0.08	0.32	0.19	0.29	0.29	0.01	0.24	0.07
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1688	1506	1687	1772	1761	1687	3373	1506
c, Capacity [veh/h]	65	31	26	394	394	846	412	1064	1058	26	1254	560
d1, Uniform Delay [s]	59.69	58.05	58.18	38.27	38.27	17.08	42.56	13.46	13.47	58.58	31.02	25.40
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.15	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	1.34	4.29	0.49	0.49	2.87	4.91	1.56	1.57	9.48	2.46	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.10	0.23	0.33	0.33	0.58	0.80	0.48	0.48	0.39	0.63	0.18
d, Delay for Lane Group [s/veh]	59.98	59.38	62.47	38.77	38.76	19.95	47.47	15.02	15.04	68.06	33.48	26.11
Lane Group LOS	E	E	E	D	D	B	D	B	B	E	C	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.10	0.10	0.21	3.29	3.29	9.17	9.64	7.97	7.93	0.37	9.84	2.07
50th-Percentile Queue Length [ft/ln]	2.41	2.53	5.29	82.17	82.21	229.31	241.11	199.18	198.33	9.22	245.93	51.63
95th-Percentile Queue Length [veh/ln]	0.17	0.18	0.38	5.92	5.92	14.14	14.74	12.60	12.55	0.66	14.98	3.72
95th-Percentile Queue Length [ft/ln]	4.34	4.56	9.52	147.90	147.98	353.48	368.43	314.90	313.81	16.59	374.53	92.94

Movement, Approach, & Intersection Results

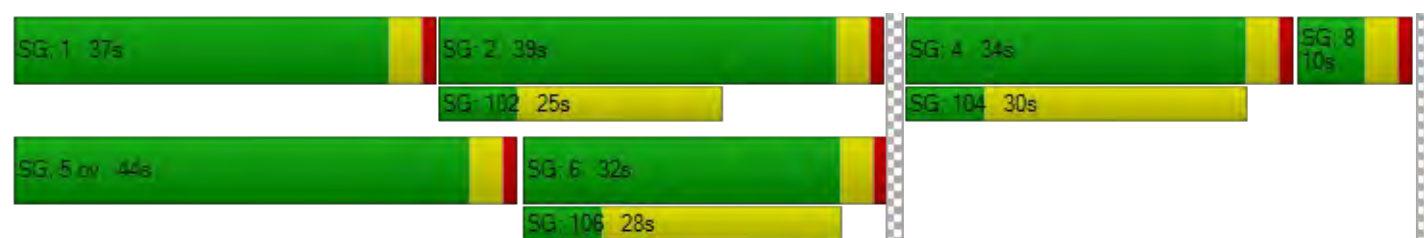
d_M, Delay for Movement [s/veh]	59.98	59.38	62.47	38.77	38.76	19.95	47.47	15.03	15.04	68.06	33.48	26.11
Movement LOS	E	E	E	D	D	B	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	61.08			26.53			22.91			33.04		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	27.00											
Intersection LOS	C											
Intersection V/C	0.778											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.155			2.433			2.833			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			500			583			467		
d_b, Bicycle Delay [s]	54.15			33.75			30.10			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.579			2.800			2.674			2.308		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	41.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.866

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	138	230	95	450	1307	263	46	673	533	64	451	220
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	230	95	450	1307	263	46	673	533	64	451	220
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	58	24	113	327	66	12	168	133	16	113	55
Total Analysis Volume [veh/h]	138	230	95	450	1307	263	46	673	533	64	451	220
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	37	0	22	49	0	13	51	0	10	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	35	18	47	47	5	45	45	6	46	46
g / C, Green / Cycle	0.05	0.30	0.30	0.15	0.40	0.40	0.04	0.37	0.37	0.05	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.07	0.14	0.31	0.32	0.03	0.20	0.35	0.04	0.13	0.15
s, saturation flow rate [veh/h]	3277	3373	1530	3277	3373	1625	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	164	999	453	492	1336	644	66	1257	561	81	1286	574
d1, Uniform Delay [s]	56.52	31.79	31.94	50.25	31.84	32.02	56.93	29.51	36.57	56.54	26.53	26.91
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.39	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.86	0.50	1.21	7.20	4.82	10.04	12.18	0.36	23.45	15.71	0.16	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.22	0.23	0.92	0.79	0.80	0.69	0.54	0.95	0.79	0.35	0.38
d, Delay for Lane Group [s/veh]	67.39	32.29	33.15	57.45	36.66	42.06	69.11	29.87	60.01	72.25	26.69	27.34
Lane Group LOS	E	C	C	E	D	D	E	C	E	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.32	2.48	2.50	7.13	14.15	14.80	1.60	7.63	18.51	2.27	4.64	4.63
50th-Percentile Queue Length [ft/ln]	58.02	62.03	62.47	178.23	353.70	369.91	40.06	190.86	462.87	56.80	116.09	115.86
95th-Percentile Queue Length [veh/ln]	4.18	4.47	4.50	11.51	20.32	21.10	2.88	12.17	25.57	4.09	8.18	8.16
95th-Percentile Queue Length [ft/ln]	104.44	111.65	112.44	287.70	507.92	527.62	72.12	304.14	639.29	102.25	204.44	204.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.39	32.33	33.15	57.45	37.70	42.06	69.11	29.87	60.01	72.25	26.69	27.34
Movement LOS	E	C	C	E	D	D	E	C	E	E	C	C
d_A, Approach Delay [s/veh]	42.95			42.66			44.14			30.85		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	41.17											
Intersection LOS	D											
Intersection V/C	0.866											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.028			3.046			2.809			2.784		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			750			783			733		
d_b, Bicycle Delay [s]	31.54			23.44			22.20			24.07		
I_b,int, Bicycle LOS Score for Intersection	1.814			2.671			2.593			2.166		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	12.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.166

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	26	134	8	9	285	19	33	2	61	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	134	8	9	285	19	33	2	61	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	34	2	2	71	5	8	1	15	0	0	0
Total Analysis Volume [veh/h]	26	134	8	9	285	19	33	2	61	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	12	50	0	10	48	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	71	71	1	70	70	6	6	6	6
g / C, Green / Cycle	0.03	0.79	0.79	0.01	0.77	0.77	0.06	0.06	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.02	0.04	0.04	0.01	0.09	0.09	0.02	0.04	0.00	0.00
s, saturation flow rate [veh/h]	1687	1772	1737	1687	1772	1733	1417	1513	1339	1772
c, Capacity [veh/h]	56	1400	1373	25	1368	1338	141	93	85	109
d1, Uniform Delay [s]	42.75	2.06	2.06	43.94	2.56	2.57	42.23	41.36	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.92	0.07	0.07	8.64	0.17	0.17	0.84	8.19	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.05	0.05	0.36	0.11	0.11	0.23	0.67	0.00	0.00
d, Delay for Lane Group [s/veh]	48.67	2.13	2.13	52.59	2.73	2.74	43.07	49.55	0.00	0.00
Lane Group LOS	D	A	A	D	A	A	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.65	0.20	0.20	0.26	0.53	0.53	0.74	1.57	0.00	0.00
50th-Percentile Queue Length [ft/ln]	16.36	4.99	4.98	6.41	13.25	13.14	18.62	39.15	0.00	0.00
95th-Percentile Queue Length [veh/ln]	1.18	0.36	0.36	0.46	0.95	0.95	1.34	2.82	0.00	0.00
95th-Percentile Queue Length [ft/ln]	29.45	8.99	8.96	11.55	23.85	23.65	33.51	70.47	0.00	0.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	48.67	2.13	2.13	52.59	2.73	2.74	43.07	49.55	49.55	0.00	0.00	0.00
Movement LOS	D	A	A	D	A	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	9.34			4.17			47.32			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	12.85											
Intersection LOS	B											
Intersection V/C	0.166											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.400			2.440			1.986			1.946		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1022			978			578			578		
d_b, Bicycle Delay [s]	10.76			11.76			22.76			22.76		
I_b,int, Bicycle LOS Score for Intersection	1.698			1.818			1.718			1.560		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	7.0
Analysis Method:	HCM 6th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.100

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	13	168	68	21	145	8	1	0	3	32	0	5
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	168	68	21	145	8	1	0	3	32	0	5
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	42	17	5	36	2	0	0	1	8	0	1
Total Analysis Volume [veh/h]	13	168	68	21	145	8	1	0	3	32	0	5
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	30	0	10	30	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	83	77	77	83	78	78	1	1	4	4
g / C, Green / Cycle	0.83	0.77	0.77	0.83	0.78	0.78	0.01	0.01	0.04	0.04
(v / s)_i Volume / Saturation Flow Rate	0.01	0.07	0.07	0.02	0.04	0.04	0.00	0.00	0.01	0.01
s, saturation flow rate [veh/h]	1255	1772	1605	1175	1772	1739	1687	1506	1687	1634
c, Capacity [veh/h]	1133	1359	1231	1058	1373	1348	12	10	66	64
d1, Uniform Delay [s]	1.40	2.92	2.93	1.42	2.64	2.64	49.38	49.44	46.71	46.72
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.13	0.15	0.03	0.08	0.08	3.10	14.48	2.28	2.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.09	0.09	0.02	0.06	0.06	0.09	0.29	0.28	0.29
d, Delay for Lane Group [s/veh]	1.41	3.05	3.08	1.46	2.72	2.72	52.48	63.92	48.99	49.17
Lane Group LOS	A	A	A	A	A	A	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.02	0.51	0.50	0.05	0.30	0.30	0.03	0.12	0.49	0.49
50th-Percentile Queue Length [ft/ln]	0.59	12.77	12.38	1.16	7.43	7.40	0.87	2.90	12.22	12.20
95th-Percentile Queue Length [veh/ln]	0.04	0.92	0.89	0.08	0.54	0.53	0.06	0.21	0.88	0.88
95th-Percentile Queue Length [ft/ln]	1.07	22.99	22.28	2.09	13.38	13.33	1.57	5.23	21.99	21.97

Movement, Approach, & Intersection Results

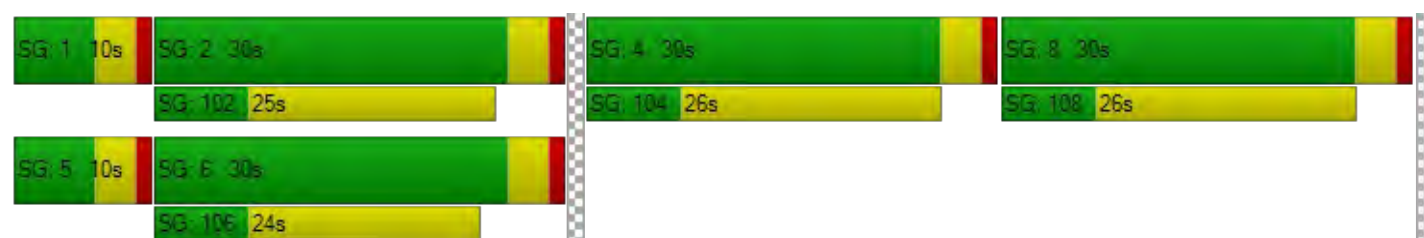
d_M, Delay for Movement [s/veh]	1.41	3.06	3.08	1.46	2.72	2.72	52.48	52.48	63.92	49.07	49.17	49.17
Movement LOS	A	A	A	A	A	A	D	D	E	D	D	D
d_A, Approach Delay [s/veh]	2.98			2.57			61.06			49.08		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	7.00											
Intersection LOS	A											
Intersection V/C	0.100											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.388			2.373			1.968			2.010		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			520			520			520		
d_b, Bicycle Delay [s]	27.38			27.38			27.38			27.38		
I_b,int, Bicycle LOS Score for Intersection	1.765			1.703			1.566			1.621		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	12.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.234

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	32	5	15	3	2	27	79	300	15	28	459	13
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	5	15	3	2	27	79	300	15	28	459	13
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	4	1	1	7	20	75	4	7	115	3
Total Analysis Volume [veh/h]	32	5	15	3	2	27	79	300	15	28	459	13
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	10	33	0	10	33	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	4	4	3	3	21	5	63	63	3	61	61
g / C, Green / Cycle	0.05	0.05	0.05	0.04	0.04	0.23	0.06	0.70	0.70	0.03	0.68	0.68
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.01	0.00	0.00	0.02	0.02	0.09	0.09	0.02	0.13	0.13
s, saturation flow rate [veh/h]	1417	1571	1506	1687	1612	1506	3277	1772	1742	1687	1772	1754
c, Capacity [veh/h]	121	150	74	63	60	352	190	1243	1222	58	1201	1189
d1, Uniform Delay [s]	40.99	41.40	41.13	41.81	41.79	26.95	40.96	4.41	4.41	42.72	5.40	5.40
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.25	0.60	1.33	0.31	0.22	0.09	1.45	0.21	0.22	6.14	0.37	0.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.07	0.19	0.20	0.05	0.03	0.08	0.42	0.13	0.13	0.48	0.20	0.20
d, Delay for Lane Group [s/veh]	41.24	42.00	42.46	42.12	42.01	27.04	42.40	4.62	4.63	48.86	5.77	5.77
Lane Group LOS	D	D	D	D	D	C	D	A	A	D	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	0.63	0.34	0.07	0.05	0.46	0.88	0.87	0.86	0.70	1.53	1.52
50th-Percentile Queue Length [ft/ln]	4.81	15.64	8.60	1.73	1.15	11.44	21.88	21.64	21.45	17.61	38.30	38.06
95th-Percentile Queue Length [veh/ln]	0.35	1.13	0.62	0.12	0.08	0.82	1.58	1.56	1.54	1.27	2.76	2.74
95th-Percentile Queue Length [ft/ln]	8.66	28.15	15.48	3.11	2.08	20.59	39.39	38.96	38.62	31.71	68.94	68.51

Movement, Approach, & Intersection Results

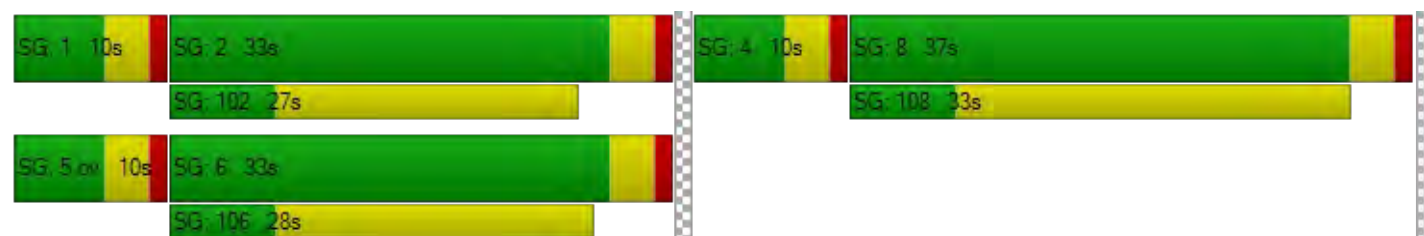
d_M, Delay for Movement [s/veh]	41.77	42.00	42.46	42.12	42.01	27.04	42.40	4.62	4.63	48.86	5.77	5.77
Movement LOS	D	D	D	D	D	C	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	42.00			29.39			12.20			8.18		
Approach LOS	D			C			B			A		
d_I, Intersection Delay [s/veh]	12.29											
Intersection LOS	B											
Intersection V/C	0.234											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	34.67
I_p,int, Pedestrian LOS Score for Intersection	2.318	2.325	0.000	2.459
Crosswalk LOS	B	B	F	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	733	133	644	644
d_b, Bicycle Delay [s]	18.05	39.20	20.67	20.67
I_b,int, Bicycle LOS Score for Intersection	1.645	1.586	1.885	1.972
Bicycle LOS	A	A	A	A

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	56.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.028

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	312	721	282	244	1395	314	308	1636	372	312	1233	170
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	721	282	244	1395	314	308	1636	372	312	1233	170
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	180	71	61	349	79	77	409	93	78	308	43
Total Analysis Volume [veh/h]	312	721	282	244	1395	314	308	1636	372	312	1233	170
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	42	0	13	40	0	17	50	0	15	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	38	38	9	36	36	13	46	46	11	44	44
g / C, Green / Cycle	0.09	0.32	0.32	0.08	0.30	0.30	0.11	0.38	0.38	0.09	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.10	0.15	0.19	0.07	0.29	0.21	0.09	0.40	0.41	0.10	0.26	0.11
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1612	3277	4826	1506
c, Capacity [veh/h]	301	1523	475	246	1442	450	355	1296	620	301	1774	554
d1, Uniform Delay [s]	54.50	33.05	34.59	55.46	41.49	37.27	52.65	36.94	36.94	54.50	32.23	27.05
k, delay calibration	0.11	0.11	0.16	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.57	0.23	1.72	24.79	5.73	4.17	6.45	35.21	56.51	34.57	2.27	1.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.47	0.59	0.99	0.97	0.70	0.87	1.04	1.07	1.04	0.69	0.31
d, Delay for Lane Group [s/veh]	89.07	33.28	36.31	80.26	47.22	41.43	59.10	72.15	93.45	89.07	34.50	28.48
Lane Group LOS	F	C	D	F	D	D	E	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.98	5.66	7.14	4.53	14.15	8.64	4.88	24.93	27.49	5.98	10.43	3.71
50th-Percentile Queue Length [ft/ln]	149.40	141.48	178.42	113.28	353.86	216.05	122.01	623.14	687.26	149.40	260.65	92.75
95th-Percentile Queue Length [veh/ln]	10.12	9.56	11.52	8.02	20.32	13.46	8.50	34.00	37.87	10.12	15.72	6.68
95th-Percentile Queue Length [ft/ln]	252.99	239.01	287.95	200.56	508.11	336.57	212.58	849.92	946.77	252.99	393.04	166.96

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	89.07	33.28	36.31	80.26	47.22	41.43	59.10	75.94	93.45	89.07	34.50	28.48
Movement LOS	F	C	D	F	D	D	E	E	F	F	C	C
d_A, Approach Delay [s/veh]	47.17			50.42			76.52			43.83		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	56.57											
Intersection LOS	E											
Intersection V/C	1.028											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.231			3.204			3.248			3.283		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			600			767			733		
d_b, Bicycle Delay [s]	28.02			29.40			22.82			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.283			2.634			2.833			2.503		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.692

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	132	164	170	96	198	285	1589	80	56	1492	172
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	132	164	170	96	198	285	1589	80	56	1492	172
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	33	41	43	24	50	71	397	20	14	373	43
Total Analysis Volume [veh/h]	66	132	164	170	96	198	285	1589	80	56	1492	172
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	33	37	0	30	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	26	26	26	20	62	62	5	48	48
g / C, Green / Cycle	0.24	0.24	0.24	0.24	0.24	0.24	0.19	0.60	0.60	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.11	0.14	0.03	0.13	0.17	0.33	0.33	0.03	0.31	0.11
s, saturation flow rate [veh/h]	1299	1772	1506	1258	3373	1506	1687	3373	1728	1687	4826	1506
c, Capacity [veh/h]	325	432	367	268	822	367	318	2007	1028	79	2188	683
d1, Uniform Delay [s]	35.61	32.44	33.69	43.00	30.90	34.56	41.59	12.79	12.81	49.32	22.70	17.71
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.15	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.30	0.40	0.85	2.49	0.06	1.23	11.74	1.09	2.12	10.97	1.74	0.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.31	0.45	0.64	0.12	0.54	0.90	0.55	0.55	0.71	0.68	0.25
d, Delay for Lane Group [s/veh]	35.92	32.83	34.54	45.49	30.96	35.80	53.33	13.88	14.93	60.29	24.45	18.59
Lane Group LOS	D	C	C	D	C	D	D	B	B	E	C	B
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.45	2.78	3.61	4.44	0.95	4.49	8.16	7.61	8.13	1.69	9.76	2.71
50th-Percentile Queue Length [ft/ln]	36.34	69.50	90.33	111.03	23.84	112.34	204.10	190.30	203.22	42.13	244.04	67.64
95th-Percentile Queue Length [veh/ln]	2.62	5.00	6.50	7.90	1.72	7.97	12.85	12.14	12.80	3.03	14.89	4.87
95th-Percentile Queue Length [ft/ln]	65.41	125.10	162.59	197.44	42.92	199.25	321.25	303.42	320.12	75.83	372.14	121.76

Movement, Approach, & Intersection Results

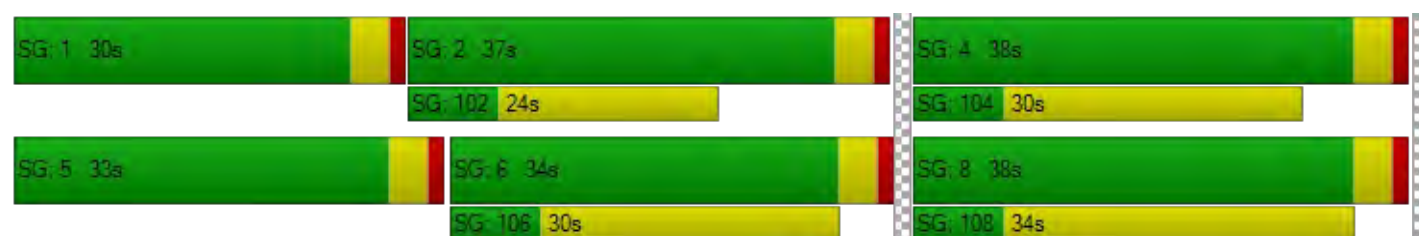
d_M, Delay for Movement [s/veh]	35.92	32.83	34.54	45.49	30.96	35.80	53.33	14.20	14.93	60.29	24.45	18.59
Movement LOS	D	C	C	D	C	D	D	B	B	E	C	B
d_A, Approach Delay [s/veh]	34.17			38.35			19.94			25.03		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	24.93											
Intersection LOS	C											
Intersection V/C	0.692											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.423			2.512			3.212			3.419		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	648			648			629			571		
d_b, Bicycle Delay [s]	24.00			24.00			24.69			26.79		
I_b,int, Bicycle LOS Score for Intersection	2.157			1.942			2.634			2.506		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	49.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.973

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	440	497	146	148	1029	210	165	1633	391	169	1678	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	497	146	148	1029	210	165	1633	391	169	1678	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	124	37	37	257	53	41	408	98	42	420	19
Total Analysis Volume [veh/h]	440	497	146	148	1029	210	165	1633	391	169	1678	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	42	0	18	40	0	10	44	0	11	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	45	45	7	36	36	6	40	40	7	41	41
g / C, Green / Cycle	0.14	0.39	0.39	0.06	0.31	0.31	0.05	0.35	0.35	0.06	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.10	0.10	0.05	0.31	0.14	0.05	0.34	0.26	0.05	0.35	0.05
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	456	1874	585	206	1053	470	171	1683	525	200	1725	538
d1, Uniform Delay [s]	49.22	23.99	23.83	52.89	39.16	31.63	54.39	36.87	32.95	53.47	36.41	25.03
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.90	0.07	0.22	4.64	8.67	0.67	24.20	15.97	9.25	9.42	16.14	0.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.96	0.27	0.25	0.72	0.98	0.45	0.96	0.97	0.74	0.85	0.97	0.14
d, Delay for Lane Group [s/veh]	62.12	24.06	24.05	57.52	47.83	32.29	78.59	52.84	42.20	62.89	52.55	25.58
Lane Group LOS	E	C	C	E	D	C	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.07	3.09	2.73	2.23	15.39	4.74	2.96	17.24	10.82	2.68	17.72	1.52
50th-Percentile Queue Length [ft/ln]	176.81	77.16	68.16	55.73	384.80	118.57	73.89	431.11	270.55	66.93	442.99	37.91
95th-Percentile Queue Length [veh/ln]	11.43	5.56	4.91	4.01	21.83	8.31	5.32	24.05	16.22	4.82	24.62	2.73
95th-Percentile Queue Length [ft/ln]	285.85	138.89	122.68	100.32	545.65	207.86	133.00	601.36	405.42	120.48	615.57	68.23

Movement, Approach, & Intersection Results

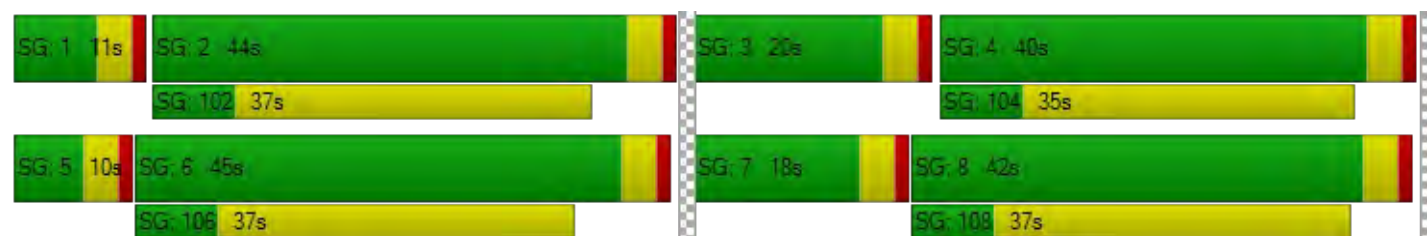
d_M, Delay for Movement [s/veh]	62.12	24.06	24.05	57.52	47.83	32.29	78.59	52.84	42.20	62.89	52.55	25.58
Movement LOS	E	C	C	E	D	C	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	39.52			46.51			52.88			52.38		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	49.20											
Intersection LOS	D											
Intersection V/C	0.973											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	3.063			2.996			3.350			3.278		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	661			626			696			713		
d_b, Bicycle Delay [s]	25.78			27.13			24.46			23.81		
I_b,int, Bicycle LOS Score for Intersection	2.155			2.704			2.764			2.618		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	13.1
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.561

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	15	14	64	138	14	30	60	1817	9	33	1758	147
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	14	64	138	14	30	60	1817	9	33	1758	147
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	4	16	35	4	8	15	454	2	8	440	37
Total Analysis Volume [veh/h]	15	14	64	138	14	30	60	1817	9	33	1758	147
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	40	0	10	40	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	7	7	5	67	67	4	66	66
g / C, Green / Cycle	0.06	0.06	0.06	0.07	0.07	0.05	0.67	0.67	0.04	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.05	0.04	0.03	0.02	0.36	0.36	0.02	0.36	0.10
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1581	3277	3373	1767	1687	4826	1506
c, Capacity [veh/h]	108	113	88	218	105	163	2269	1189	63	3186	994
d1, Uniform Delay [s]	44.27	44.23	46.03	45.56	44.89	46.05	8.32	8.32	47.34	9.09	6.41
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.58	0.48	11.09	3.04	2.65	1.38	0.88	1.68	6.66	0.69	0.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.12	0.73	0.63	0.42	0.37	0.53	0.53	0.53	0.55	0.15
d, Delay for Lane Group [s/veh]	44.86	44.71	57.12	48.61	47.54	47.44	9.20	10.00	54.00	9.79	6.72
Lane Group LOS	D	D	E	D	D	D	A	A	D	A	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.37	0.34	1.82	1.75	1.12	0.75	6.01	6.57	0.92	6.22	1.15
50th-Percentile Queue Length [ft/ln]	9.20	8.55	45.60	43.86	28.04	18.77	150.31	164.13	23.01	155.41	28.73
95th-Percentile Queue Length [veh/ln]	0.66	0.62	3.28	3.16	2.02	1.35	10.03	10.77	1.66	10.31	2.07
95th-Percentile Queue Length [ft/ln]	16.55	15.39	82.07	78.96	50.48	33.79	250.85	269.18	41.42	257.64	51.71

Movement, Approach, & Intersection Results

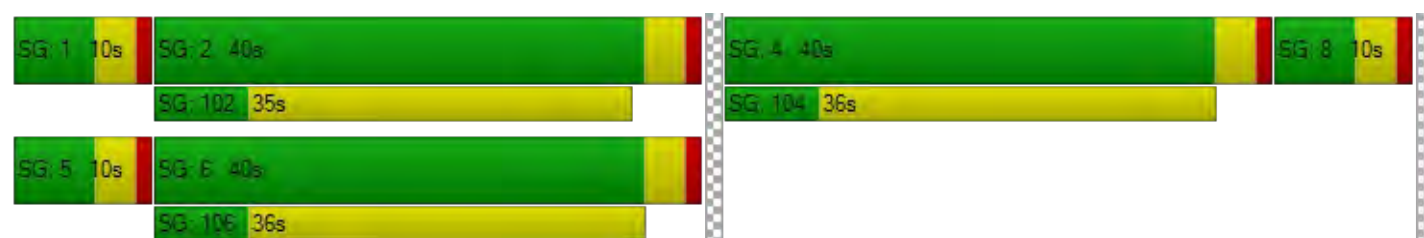
d_M, Delay for Movement [s/veh]	44.86	44.71	57.12	48.61	47.54	47.54	47.44	9.47	10.00	54.00	9.79	6.72
Movement LOS	D	D	E	D	D	D	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	53.27			48.35			10.68			10.31		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	13.14											
Intersection LOS	B											
Intersection V/C	0.561											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	39.61	39.61	39.61	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.172	2.383	3.180	0.000
Crosswalk LOS	B	B	C	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	120	720	720	720
d_b, Bicycle Delay [s]	44.18	20.48	20.48	20.48
I_b,int, Bicycle LOS Score for Intersection	1.636	1.860	2.597	2.626
Bicycle LOS	A	A	B	B

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 20: State College Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	42.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.915

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	136	154	398	184	397	33	33	1746	256	443	1801	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	154	398	184	397	33	33	1746	256	443	1801	180
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	39	100	46	99	8	8	437	64	111	450	45
Total Analysis Volume [veh/h]	136	154	398	184	397	33	33	1746	256	443	1801	180
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	21	46	0	14	39	0	10	34	0	21	45	45
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	33	33	10	36	36	4	39	39	17	52	66
g / C, Green / Cycle	0.06	0.28	0.28	0.09	0.31	0.31	0.03	0.34	0.34	0.15	0.45	0.58
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.26	0.08	0.12	0.12	0.01	0.31	0.31	0.14	0.37	0.12
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1724	3277	4826	1626	3277	4826	1506
c, Capacity [veh/h]	197	960	429	207	553	538	115	1643	554	485	2190	868
d1, Uniform Delay [s]	53.04	30.85	40.02	51.94	31.03	31.04	54.13	36.28	36.28	48.28	27.39	11.74
k, delay calibration	0.11	0.11	0.26	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.30	0.08	18.12	12.01	0.45	0.47	1.37	9.14	21.65	7.08	3.64	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.16	0.93	0.89	0.39	0.39	0.29	0.91	0.91	0.91	0.82	0.21
d, Delay for Lane Group [s/veh]	57.35	30.93	58.15	63.95	31.48	31.51	55.50	45.42	57.93	55.36	31.03	12.29
Lane Group LOS	E	C	E	E	C	C	E	D	E	E	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.04	1.62	12.96	2.97	4.80	4.70	0.49	14.55	16.63	6.71	14.67	2.31
50th-Percentile Queue Length [ft/ln]	51.12	40.54	324.07	74.19	120.08	117.42	12.20	363.64	415.76	167.81	366.86	57.70
95th-Percentile Queue Length [veh/ln]	3.68	2.92	18.87	5.34	8.40	8.25	0.88	20.80	23.32	10.96	20.96	4.15
95th-Percentile Queue Length [ft/ln]	92.01	72.98	471.68	133.54	209.94	206.27	21.96	520.01	582.96	274.03	523.92	103.86

Movement, Approach, & Intersection Results

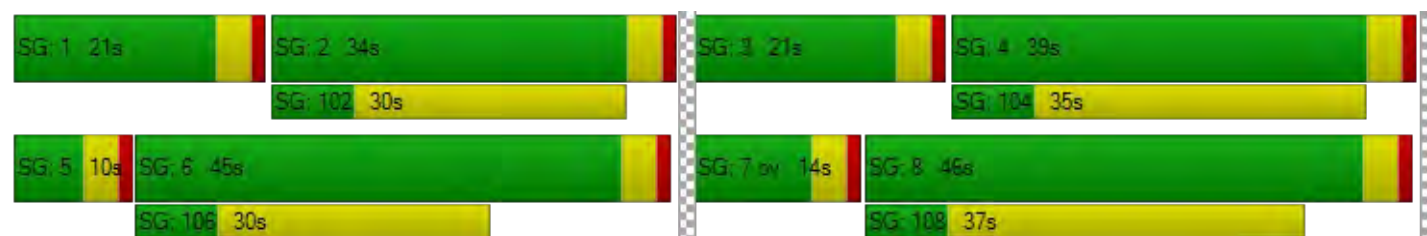
d_M, Delay for Movement [s/veh]	57.35	30.93	58.15	63.95	31.50	31.51	55.50	47.20	57.93	55.36	31.03	12.29
Movement LOS	E	C	E	E	C	C	E	D	E	E	C	B
d_A, Approach Delay [s/veh]	51.90			41.22			48.69			34.09		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	42.13											
Intersection LOS	D											
Intersection V/C	0.915											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.854			2.624			3.295			3.441		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	730			609			522			713		
d_b, Bicycle Delay [s]	23.17			27.83			31.41			23.81		
I_b,int, Bicycle LOS Score for Intersection	2.127			2.066			2.399			2.893		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	18.4
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.757

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	792	0	508	0	1689	783	0	1939	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	792	0	508	0	1689	783	0	1939	205
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	198	0	127	0	422	196	0	485	51
Total Analysis Volume [veh/h]	0	0	0	792	0	508	0	1689	783	0	1939	205
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		30	30	30	52	52
g / C, Green / Cycle		0.33	0.33	0.33	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate		0.26	0.26	0.29	0.35	0.40
s, saturation flow rate [veh/h]		1687	1653	1506	4826	4826
c, Capacity [veh/h]		562	551	502	2788	2788
d1, Uniform Delay [s]		26.88	27.07	28.05	12.32	13.38
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.28	2.54	4.58	0.99	1.46
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.79	0.86	0.61	0.70
d, Delay for Lane Group [s/veh]		29.16	29.61	32.62	13.30	14.84
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		8.38	8.47	9.01	6.90	8.67
50th-Percentile Queue Length [ft/ln]		209.43	211.70	225.19	172.52	216.68
95th-Percentile Queue Length [veh/ln]		13.12	13.24	13.93	11.21	13.50
95th-Percentile Queue Length [ft/ln]		328.10	331.01	348.24	280.23	337.39

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	29.36	0.00	32.18	0.00	13.30	0.00	0.00	14.84	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			30.46			13.30			14.84		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	18.43											
Intersection LOS	B											
Intersection V/C	0.757											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.447			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.277			2.489			2.626		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	31.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1053	198	848	0	0	142	187	1790	532	0	1413	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1053	198	848	0	0	142	187	1790	532	0	1413	21
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	263	50	212	0	0	36	47	448	133	0	353	5
Total Analysis Volume [veh/h]	1053	198	848	0	0	142	187	1790	532	0	1413	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	69	0	0	0	19	19	51	0	0	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	49	49	15	15	63	44	44
g / C, Green / Cycle	0.41	0.41	0.41	0.13	0.13	0.53	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.32	0.33	0.35	0.05	0.11	0.37	0.22	0.20
s, saturation flow rate [veh/h]	3277	1601	1506	2665	1687	4826	4826	1753
c, Capacity [veh/h]	1332	651	612	334	211	2542	1777	646
d1, Uniform Delay [s]	30.85	31.63	32.66	48.48	51.61	21.36	30.81	30.09
k, delay calibration	0.11	0.18	0.21	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	4.31	7.39	0.86	11.62	1.67	1.54	3.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.82	0.87	0.43	0.89	0.70	0.61	0.56
d, Delay for Lane Group [s/veh]	31.85	35.94	40.06	49.34	63.23	23.02	32.35	33.52
Lane Group LOS	C	D	D	D	E	C	C	C
Critical Lane Group	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	12.94	14.25	15.17	2.01	6.21	12.62	8.64	8.80
50th-Percentile Queue Length [ft/ln]	323.49	356.19	379.13	50.25	155.17	315.55	215.93	220.09
95th-Percentile Queue Length [veh/ln]	18.84	20.44	21.55	3.62	10.29	18.45	13.46	13.67
95th-Percentile Queue Length [ft/ln]	470.98	510.95	538.79	90.46	257.31	461.21	336.42	341.74

Movement, Approach, & Intersection Results

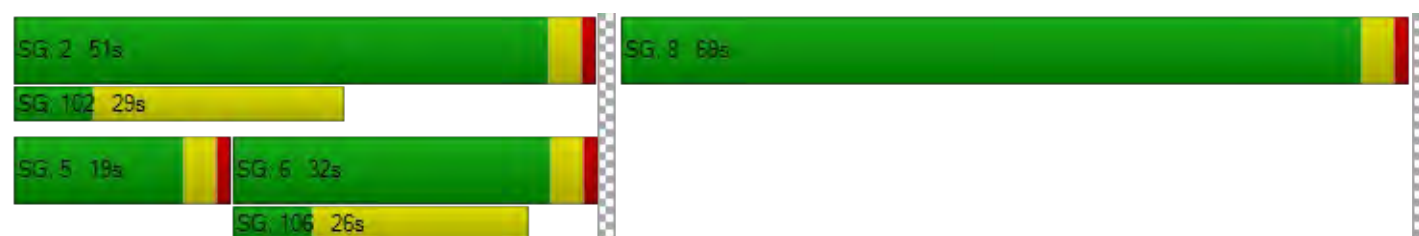
d_M, Delay for Movement [s/veh]	31.87	35.94	38.49	0.00	0.00	49.34	63.23	23.02	0.00	0.00	32.63	33.52
Movement LOS	C	D	D			D	E	C			C	C
d_A, Approach Delay [s/veh]	34.97			49.34			26.83			32.64		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	31.89											
Intersection LOS	C											
Intersection V/C	0.805											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.723	2.132	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1083	0	783	467
d_b, Bicycle Delay [s]	12.60	60.00	22.20	35.27
I_b,int, Bicycle LOS Score for Intersection	5.023	4.132	2.647	2.151
Bicycle LOS	F	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	60.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.022

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	148	221	68	166	497	158	172	2278	164	123	1637	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	148	221	68	166	497	158	172	2278	164	123	1637	84
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	55	17	42	124	40	43	570	41	31	409	21
Total Analysis Volume [veh/h]	148	221	68	166	497	158	172	2278	164	123	1637	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	11	40	0	17	57	0	13	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	34	7	35	35	13	54	54	9	50	50
g / C, Green / Cycle	0.05	0.29	0.29	0.06	0.29	0.29	0.11	0.45	0.45	0.08	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.09	0.05	0.28	0.10	0.10	0.48	0.49	0.07	0.26	0.26
s, saturation flow rate [veh/h]	3277	1772	1632	3277	1772	1506	1687	3373	1712	1687	4826	1715
c, Capacity [veh/h]	164	505	465	191	520	442	183	1512	768	127	2002	712
d1, Uniform Delay [s]	56.71	33.48	33.56	56.04	41.65	33.48	53.12	33.10	33.10	55.37	27.87	27.87
k, delay calibration	0.11	0.11	0.11	0.11	0.41	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	16.13	0.32	0.36	11.26	26.53	0.49	19.53	42.12	58.47	30.85	1.54	4.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.29	0.30	0.87	0.96	0.36	0.94	1.06	1.09	0.97	0.63	0.63
d, Delay for Lane Group [s/veh]	72.83	33.80	33.92	67.30	68.18	33.96	72.65	75.23	91.57	86.22	29.41	32.14
Lane Group LOS	E	C	C	E	E	C	E	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.60	3.44	3.26	2.79	18.10	3.71	6.13	30.11	34.06	4.79	9.84	11.03
50th-Percentile Queue Length [ft/ln]	64.94	86.07	81.52	69.78	452.50	92.67	153.29	752.82	851.38	119.82	245.93	275.75
95th-Percentile Queue Length [veh/ln]	4.68	6.20	5.87	5.02	25.08	6.67	10.19	40.98	46.43	8.38	14.98	16.48
95th-Percentile Queue Length [ft/ln]	116.90	154.93	146.73	125.60	626.94	166.80	254.82	1024.39	1160.64	209.58	374.52	411.92

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	72.83	33.84	33.92	67.30	68.18	33.96	72.65	80.03	91.57	86.22	30.02	32.14
Movement LOS	E	C	C	E	E	C	E	F	F	F	C	C
d_A, Approach Delay [s/veh]	47.06			61.41			80.27			33.87		
Approach LOS	D			E			F			C		
d_I, Intersection Delay [s/veh]	60.05											
Intersection LOS	E											
Intersection V/C	1.022											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.552			2.678			3.295			3.270		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			600			883			817		
d_b, Bicycle Delay [s]	30.10			29.40			18.70			21.00		
I_b,int, Bicycle LOS Score for Intersection	1.920			2.914			2.997			2.320		
Bicycle LOS	A			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.821

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	176	12	145	25	28	14	13	2145	461	209	1467	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	12	145	25	28	14	13	2145	461	209	1467	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	3	36	6	7	4	3	536	115	52	367	8
Total Analysis Volume [veh/h]	176	12	145	25	28	14	13	2145	461	209	1467	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	32	0	32	54	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	5	5	2	52	52	14	65	65
g / C, Green / Cycle	0.12	0.12	0.12	0.05	0.05	0.02	0.52	0.52	0.14	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.10	0.01	0.03	0.01	0.44	0.31	0.12	0.29	0.29
s, saturation flow rate [veh/h]	1687	1697	1506	1687	1673	1687	4826	1506	1687	3373	1753
c, Capacity [veh/h]	204	205	182	87	87	33	2522	787	245	2187	1137
d1, Uniform Delay [s]	41.00	40.99	42.84	45.70	46.18	48.52	20.54	16.45	41.75	8.74	8.74
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.62	1.61	7.80	1.78	4.16	7.61	3.84	3.18	8.17	0.67	1.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.46	0.80	0.29	0.49	0.40	0.85	0.59	0.85	0.45	0.45
d, Delay for Lane Group [s/veh]	42.62	42.60	50.64	47.48	50.34	56.13	24.39	19.63	49.93	9.42	10.04
Lane Group LOS	D	D	D	D	D	E	C	B	D	A	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.23	2.24	3.85	0.64	1.11	0.39	14.23	7.58	5.54	4.98	5.37
50th-Percentile Queue Length [ft/ln]	55.80	56.09	96.34	15.98	27.80	9.72	355.75	189.44	138.48	124.44	134.28
95th-Percentile Queue Length [veh/ln]	4.02	4.04	6.94	1.15	2.00	0.70	20.42	12.09	9.40	8.64	9.17
95th-Percentile Queue Length [ft/ln]	100.44	100.97	173.41	28.76	50.04	17.49	510.41	302.30	234.97	215.91	229.30

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	42.61	42.60	50.64	47.48	50.34	50.34	56.13	24.39	19.63	49.93	9.62	10.04
Movement LOS	D	D	D	D	D	D	E	C	B	D	A	B
d_A, Approach Delay [s/veh]	46.11			49.27			23.71			14.56		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	22.35											
Intersection LOS	C											
Intersection V/C	0.821											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			0.00			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.387			1.985			0.000			3.159		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	440			120			560			1000		
d_b, Bicycle Delay [s]	30.42			44.18			25.92			12.50		
I_b,int, Bicycle LOS Score for Intersection	2.109			1.670			3.000			2.498		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	35.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	176	252	85	437	900	181	168	1536	298	71	1097	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	252	85	437	900	181	168	1536	298	71	1097	88
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	63	21	109	225	45	42	384	75	18	274	22
Total Analysis Volume [veh/h]	176	252	85	437	900	181	168	1536	298	71	1097	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	30	0	21	41	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	21	21	15	30	30	6	43	43	5	42	42
g / C, Green / Cycle	0.06	0.21	0.21	0.15	0.30	0.30	0.06	0.43	0.43	0.05	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.05	0.10	0.10	0.13	0.27	0.12	0.05	0.37	0.37	0.02	0.23	0.23
s, saturation flow rate [veh/h]	3277	1772	1622	3277	3373	1506	3277	3373	1629	3277	3373	1705
c, Capacity [veh/h]	199	365	335	505	1011	451	199	1440	696	173	1413	714
d1, Uniform Delay [s]	46.67	34.99	35.06	41.33	33.50	27.91	46.55	25.90	26.07	45.93	22.05	22.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.97	0.97	1.10	4.57	2.95	0.58	9.24	6.71	13.56	1.56	1.59	3.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.48	0.49	0.86	0.89	0.40	0.84	0.86	0.87	0.41	0.56	0.56
d, Delay for Lane Group [s/veh]	58.64	35.96	36.16	45.90	36.45	28.49	55.79	32.61	39.63	47.49	23.64	25.18
Lane Group LOS	E	D	D	D	D	C	E	C	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.49	3.81	3.57	5.52	10.59	3.48	2.31	13.98	15.05	0.89	7.11	7.50
50th-Percentile Queue Length [ft/ln]	62.30	95.17	89.25	138.10	264.82	87.10	57.82	349.48	376.15	22.22	177.77	187.50
95th-Percentile Queue Length [veh/ln]	4.49	6.85	6.43	9.38	15.93	6.27	4.16	20.11	21.41	1.60	11.48	11.99
95th-Percentile Queue Length [ft/ln]	112.14	171.31	160.64	234.46	398.27	156.78	104.08	502.77	535.19	40.00	287.10	299.79

Movement, Approach, & Intersection Results

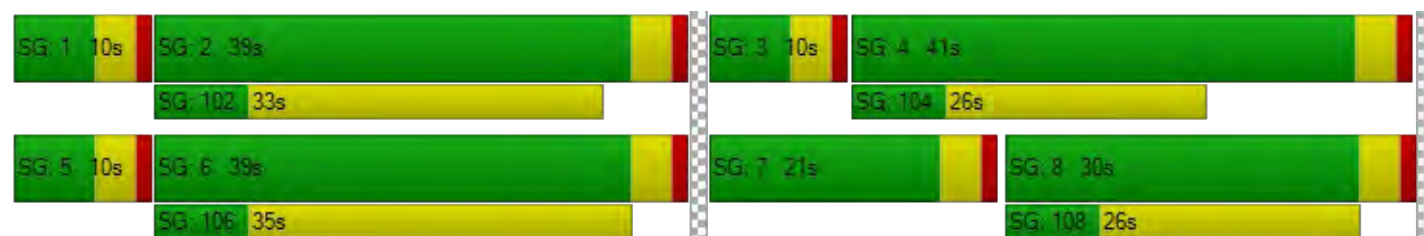
d_M, Delay for Movement [s/veh]	58.64	36.02	36.16	45.90	36.45	28.49	55.79	33.99	39.63	47.49	24.08	25.18
Movement LOS	E	D	D	D	D	C	E	C	D	D	C	C
d_A, Approach Delay [s/veh]	43.80			38.22			36.66			25.48		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	35.15											
Intersection LOS	D											
Intersection V/C	0.847											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.747			2.881			3.151			3.134		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			740			700			700		
d_b, Bicycle Delay [s]	27.38			19.85			21.13			21.13		
I_b,int, Bicycle LOS Score for Intersection	1.983			2.812			2.661			2.250		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	44.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.853

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	149	603	255	248	1008	411	256	1200	165	339	1177	140
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	603	255	248	1008	411	256	1200	165	339	1177	140
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	151	64	62	252	103	64	300	41	85	294	35
Total Analysis Volume [veh/h]	149	603	255	248	1008	411	256	1200	165	339	1177	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	41	41	18	45	45	15	46	0	15	46	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	38	53	11	39	54	11	44	44	11	44	44
g / C, Green / Cycle	0.08	0.31	0.44	0.09	0.32	0.45	0.09	0.37	0.37	0.09	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.17	0.08	0.30	0.27	0.08	0.25	0.11	0.10	0.26	0.26
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1677
c, Capacity [veh/h]	141	1053	659	305	1085	673	301	1784	557	301	1247	620
d1, Uniform Delay [s]	55.00	34.57	22.86	53.42	39.40	25.26	53.68	31.75	26.79	54.50	32.26	32.27
k, delay calibration	0.11	0.11	0.21	0.11	0.11	0.31	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	50.89	0.49	0.74	5.27	4.18	2.60	6.64	2.05	1.36	66.20	3.37	6.64
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.57	0.39	0.81	0.93	0.61	0.85	0.67	0.30	1.13	0.71	0.71
d, Delay for Lane Group [s/veh]	105.88	35.06	23.60	58.69	43.58	27.86	60.32	33.79	28.14	120.70	35.63	38.92
Lane Group LOS	F	D	C	E	D	C	E	C	C	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.26	7.42	5.00	3.89	14.80	9.27	4.08	10.00	3.57	7.31	11.38	11.89
50th-Percentile Queue Length [ft/ln]	156.39	185.58	125.02	97.33	369.94	231.77	102.04	249.97	89.31	182.87	284.41	297.22
95th-Percentile Queue Length [veh/ln]	10.55	11.89	8.67	7.01	21.11	14.26	7.35	15.18	6.43	12.25	16.91	17.54
95th-Percentile Queue Length [ft/ln]	263.86	297.29	216.71	175.19	527.66	356.61	183.67	379.61	160.76	306.20	422.69	438.58

Movement, Approach, & Intersection Results

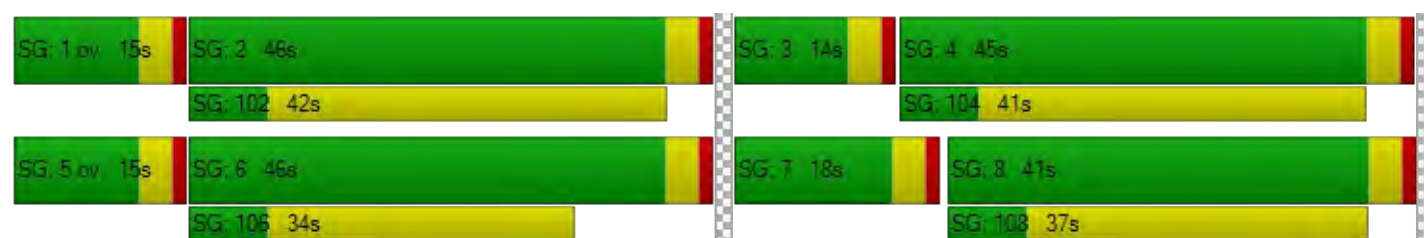
d_M, Delay for Movement [s/veh]	105.88	35.06	23.60	58.69	43.58	27.86	60.32	33.79	28.14	120.70	36.46	38.92
Movement LOS	F	D	C	E	D	C	E	C	C	F	D	D
d_A, Approach Delay [s/veh]	42.64			41.95			37.41			53.92		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.16											
Intersection LOS	D											
Intersection V/C	0.853											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.876			2.979			3.227			3.149		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			683			700			700		
d_b, Bicycle Delay [s]	28.70			26.00			25.35			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.390			2.935			2.451			2.470		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	37.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	278	282	15	155	1137	226	264	899	788	40	1046	107
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	278	282	15	155	1137	226	264	899	788	40	1046	107
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	71	4	39	284	57	66	225	197	10	262	27
Total Analysis Volume [veh/h]	278	282	15	155	1137	226	264	899	788	40	1046	107
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	38	0	22	44	44	16	50	50	10	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	37	8	33	49	12	55	71	4	47	47
g / C, Green / Cycle	0.10	0.31	0.07	0.27	0.41	0.10	0.46	0.59	0.04	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.08	0.08	0.05	0.24	0.15	0.08	0.27	0.52	0.01	0.23	0.23
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1689
c, Capacity [veh/h]	329	1039	215	1318	613	329	1536	887	124	1324	663
d1, Uniform Delay [s]	53.07	31.36	55.02	41.49	24.84	52.82	24.28	21.25	56.28	28.68	28.70
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.89	0.14	4.52	1.80	0.37	4.54	1.64	12.83	1.50	1.86	3.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.27	0.72	0.86	0.37	0.80	0.59	0.89	0.32	0.58	0.58
d, Delay for Lane Group [s/veh]	58.96	31.50	59.54	43.29	25.21	57.36	25.92	34.08	57.78	30.54	32.39
Lane Group LOS	E	C	E	D	C	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.39	3.12	2.44	10.80	4.55	4.10	9.70	21.02	0.62	8.97	9.34
50th-Percentile Queue Length [ft/ln]	109.70	78.12	60.89	270.09	113.87	102.51	242.50	525.52	15.43	224.28	233.45
95th-Percentile Queue Length [veh/ln]	7.82	5.62	4.38	16.19	8.05	7.38	14.81	28.54	1.11	13.88	14.35
95th-Percentile Queue Length [ft/ln]	195.58	140.62	109.60	404.85	201.37	184.51	370.19	713.50	27.78	347.09	358.74

Movement, Approach, & Intersection Results

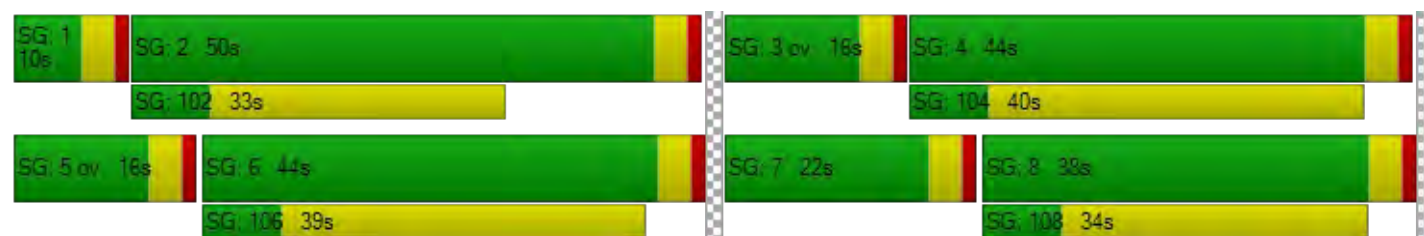
d_M, Delay for Movement [s/veh]	58.96	31.50	0.00	59.54	43.29	25.21	57.36	25.92	34.08	57.78	31.03	32.39
Movement LOS	E	C		E	D	C	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	45.13			42.26			33.47			32.05		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	36.95											
Intersection LOS	D											
Intersection V/C	0.917											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.047			3.004			3.166			2.921		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	567			667			767			667		
d_b, Bicycle Delay [s]	30.82			26.67			22.82			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.022			2.395			3.169			2.216		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.776

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	119	437	140	104	189	155	100	1461	71	84	1546	198
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	119	437	140	104	189	155	100	1461	71	84	1546	198
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	109	35	26	47	39	25	365	18	21	387	50
Total Analysis Volume [veh/h]	119	437	140	104	189	155	100	1461	71	84	1546	198
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	33	0	11	32	0	11	36	0	10	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	18	18	7	17	17	7	43	43	6	42	42
g / C, Green / Cycle	0.09	0.20	0.20	0.08	0.19	0.19	0.07	0.48	0.48	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.07	0.17	0.17	0.06	0.10	0.11	0.06	0.30	0.30	0.05	0.35	0.35
s, saturation flow rate [veh/h]	1687	1772	1627	1687	1772	1516	1687	3373	1730	1687	3373	1671
c, Capacity [veh/h]	149	356	327	131	338	289	127	1619	830	108	1581	783
d1, Uniform Delay [s]	40.34	34.67	34.72	40.85	32.91	33.08	40.99	17.43	17.43	41.58	19.45	19.49
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.51	5.45	6.13	10.11	1.33	1.71	10.24	1.84	3.55	11.36	3.11	6.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.84	0.85	0.79	0.54	0.56	0.79	0.63	0.63	0.78	0.74	0.74
d, Delay for Lane Group [s/veh]	49.85	40.12	40.84	50.96	34.25	34.79	51.23	19.27	20.98	52.93	22.56	25.69
Lane Group LOS	D	D	D	D	C	C	D	B	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.95	6.72	6.28	2.61	3.64	3.30	2.52	7.72	8.31	2.16	9.92	10.55
50th-Percentile Queue Length [ft/ln]	73.67	168.01	156.93	65.21	91.10	82.41	62.91	192.90	207.82	53.94	247.91	263.69
95th-Percentile Queue Length [veh/ln]	5.30	10.97	10.39	4.70	6.56	5.93	4.53	12.27	13.04	3.88	15.08	15.87
95th-Percentile Queue Length [ft/ln]	132.61	274.30	259.65	117.38	163.97	148.33	113.23	306.79	326.03	97.10	377.02	396.85

Movement, Approach, & Intersection Results

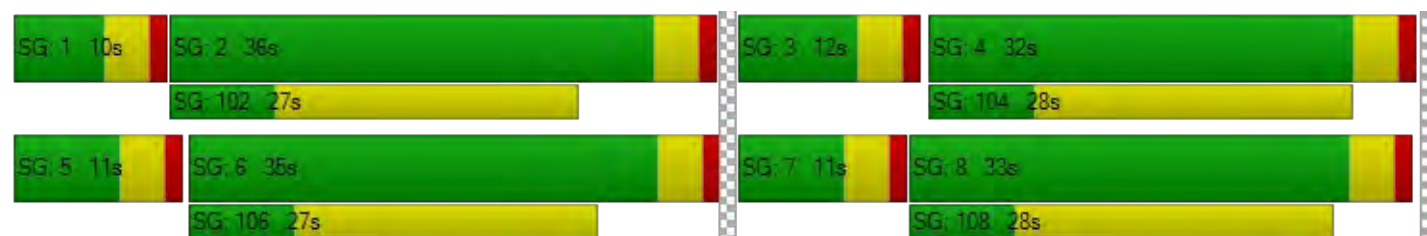
d_M, Delay for Movement [s/veh]	49.85	40.35	40.84	50.96	34.27	34.79	51.23	19.79	20.98	52.93	23.33	25.69
Movement LOS	D	D	D	D	C	C	D	B	C	D	C	C
d_A, Approach Delay [s/veh]	42.07			38.32			21.77			24.95		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	27.71											
Intersection LOS	C											
Intersection V/C	0.776											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.502			2.530			3.074			3.086		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	644			622			711			689		
d_b, Bicycle Delay [s]	20.67			21.36			18.69			19.34		
I_b,int, Bicycle LOS Score for Intersection	2.134			1.929			2.457			2.565		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	40.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.848

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	456	761	195	84	321	115	164	1543	386	236	1438	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	456	761	195	84	321	115	164	1543	386	236	1438	93
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	190	49	21	80	29	41	386	97	59	360	23
Total Analysis Volume [veh/h]	456	761	195	84	321	115	164	1543	386	236	1438	93
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	43	0	12	33	0	17	42	0	23	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	30	30	8	20	20	13	48	48	19	53	53
g / C, Green / Cycle	0.15	0.25	0.25	0.06	0.16	0.16	0.11	0.40	0.40	0.15	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.14	0.23	0.13	0.05	0.10	0.08	0.10	0.32	0.26	0.14	0.30	0.30
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1717
c, Capacity [veh/h]	494	852	380	107	557	249	184	1910	596	262	1490	758
d1, Uniform Delay [s]	50.34	43.32	38.54	55.47	46.26	45.32	52.78	32.23	29.48	49.84	26.77	26.79
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.13	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.80	3.55	1.07	12.04	0.94	1.34	13.34	3.79	5.37	12.53	2.53	4.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.89	0.51	0.79	0.58	0.46	0.89	0.81	0.65	0.90	0.68	0.68
d, Delay for Lane Group [s/veh]	58.14	46.87	39.61	67.52	47.20	46.65	66.12	36.03	34.85	62.37	29.31	31.70
Lane Group LOS	E	D	D	E	D	D	E	D	C	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.28	11.25	5.05	2.87	4.50	3.20	5.56	13.70	9.83	7.85	11.91	12.65
50th-Percentile Queue Length [ft/ln]	181.90	281.21	126.24	71.64	112.54	80.02	138.96	342.56	245.87	196.36	297.71	316.21
95th-Percentile Queue Length [veh/ln]	11.70	16.75	8.74	5.16	7.98	5.76	9.43	19.77	14.98	12.45	17.57	18.48
95th-Percentile Queue Length [ft/ln]	292.50	418.72	218.38	128.95	199.53	144.04	235.63	494.32	374.44	311.26	439.19	462.02

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.14	46.87	39.61	67.52	47.20	46.65	66.12	36.03	34.85	62.37	30.01	31.70
Movement LOS	E	D	D	E	D	D	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	49.50			50.36			38.17			34.42		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	40.88											
Intersection LOS	D											
Intersection V/C	0.848											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.936			2.717			3.239			3.108		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			483			633			733		
d_b, Bicycle Delay [s]	27.34			34.50			28.02			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.725			1.989			2.711			2.531		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	42.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.877

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	350	597	316	562	383	16	39	1465	287	411	1211	732
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	350	597	316	562	383	16	39	1465	287	411	1211	732
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	149	79	141	96	4	10	366	72	103	303	183
Total Analysis Volume [veh/h]	350	597	316	562	383	16	39	1465	287	411	1211	732
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	36	0	25	44	0	10	39	0	20	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	25	25	25	21	33	33	4	42	42	16	53	78
g / C, Green / Cycle	0.11	0.21	0.21	0.21	0.18	0.28	0.28	0.04	0.35	0.35	0.13	0.45	0.65
(v / s)_i Volume / Saturation Flow Rate	0.11	0.18	0.18	0.18	0.17	0.11	0.11	0.01	0.27	0.27	0.13	0.25	0.49
s, saturation flow rate [veh/h]	3277	1772	1733	1506	3277	1772	1747	3277	4826	1586	3277	4826	1506
c, Capacity [veh/h]	357	371	363	316	574	489	482	122	1680	552	438	2146	984
d1, Uniform Delay [s]	53.38	45.81	45.83	45.95	49.29	35.49	35.49	56.31	35.09	35.10	51.51	24.72	14.05
k, delay calibration	0.11	0.22	0.22	0.23	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.18	11.46	11.84	14.53	13.19	0.55	0.56	1.49	3.76	10.72	9.92	1.08	5.10
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.87	0.87	0.88	0.98	0.41	0.41	0.32	0.78	0.79	0.94	0.56	0.74
d, Delay for Lane Group [s/veh]	71.56	57.27	57.67	60.47	62.48	36.05	36.05	57.80	38.85	45.82	61.43	25.80	19.15
Lane Group LOS	E	E	E	E	E	D	D	E	D	D	E	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.16	10.39	10.23	9.23	9.40	4.89	4.82	0.60	11.97	12.89	6.71	8.63	13.73
50th-Percentile Queue Length [ft/ln]	153.9	259.8	255.7	230.8	235.04	122.29	120.60	15.05	299.35	322.16	167.85	215.71	343.33
95th-Percentile Queue Length [veh/ln]	10.23	15.68	15.47	14.22	14.43	8.52	8.43	1.08	17.65	18.77	10.96	13.45	19.81
95th-Percentile Queue Length [ft/ln]	255.7	392.0	386.8	355.4	360.76	212.97	210.64	27.09	441.22	469.35	274.09	336.14	495.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.56	57.45	60.36	62.48	36.05	36.05	57.80	39.55	45.82	61.43	25.80	19.15
Movement LOS	E	E	E	E	D	D	E	D	D	E	C	B
d_A, Approach Delay [s/veh]	62.03			51.51			40.95			29.95		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	42.66											
Intersection LOS	D											
Intersection V/C	0.877											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.934			2.845			3.228			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	533			667			583			750		
d_b, Bicycle Delay [s]	32.27			26.67			30.10			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.602			2.352			2.298			2.854		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	23.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	485	0	841	0	1414	848	249	1855	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	485	0	841	0	1414	848	249	1855	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	121	0	210	0	354	212	62	464	0
Total Analysis Volume [veh/h]	0	0	0	485	0	841	0	1414	848	249	1855	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	44	0	0	0	34	0	12	46	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		32	32	38	38	8	50
g / C, Green / Cycle		0.36	0.36	0.42	0.42	0.09	0.55
(v / s)_i Volume / Saturation Flow Rate		0.15	0.32	0.29	0.32	0.08	0.38
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1179	959	2012	1111	294	2660
d1, Uniform Delay [s]		21.65	26.95	21.64	22.44	40.37	14.73
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.23	2.75	2.08	4.98	6.64	1.54
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.41	0.88	0.70	0.76	0.85	0.70
d, Delay for Lane Group [s/veh]		21.88	29.69	23.73	27.42	47.01	16.27
Lane Group LOS		C	C	C	C	D	B
Critical Lane Group		No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.77	8.43	8.17	8.03	2.95	8.75
50th-Percentile Queue Length [ft/ln]		94.34	210.74	204.37	200.80	73.78	218.79
95th-Percentile Queue Length [veh/ln]		6.79	13.19	12.86	12.68	5.31	13.60
95th-Percentile Queue Length [ft/ln]		169.81	329.77	321.59	317.00	132.80	340.08

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	21.88	0.00	29.69	0.00	23.73	27.42	47.01	16.27	0.00
Movement LOS				C		C		C	C	D	B	
d_A, Approach Delay [s/veh]	0.00			26.84			25.11			19.91		
Approach LOS	A			C			C			B		
d_I, Intersection Delay [s/veh]	23.59											
Intersection LOS	C											
Intersection V/C	0.819											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.249	2.454	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	667	933
d_b, Bicycle Delay [s]	45.00	45.00	20.00	12.80
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.804	2.717
Bicycle LOS	D	D	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.654

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	709	0	310	0	0	0	0	1541	567	0	1229	541
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	709	0	310	0	0	0	0	1541	567	0	1229	541
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	177	0	78	0	0	0	0	385	142	0	307	135
Total Analysis Volume [veh/h]	709	0	310	0	0	0	0	1541	567	0	1229	541
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	58	0	0	0	0	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	21	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24		58	58	58	58
g / C, Green / Cycle	0.26	0.26		0.65	0.65	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.22	0.21		0.31	0.34	0.35	0.25
s, saturation flow rate [veh/h]	3277	1506		3373	1551	1506	4826
c, Capacity [veh/h]	857	394		2191	1007	978	3134
d1, Uniform Delay [s]	31.27	30.85		8.02	8.36	8.49	7.40
k, delay calibration	0.11	0.11		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	3.53		0.76	1.94	2.13	0.37
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.79		0.48	0.52	0.54	0.39
d, Delay for Lane Group [s/veh]	33.39	34.38		8.78	10.30	10.62	7.77
Lane Group LOS	C	C		A	B	B	A
Critical Lane Group	Yes	No		No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.29	6.46		4.74	5.24	5.35	3.34
50th-Percentile Queue Length [ft/ln]	182.17	161.40		118.47	130.96	133.65	83.49
95th-Percentile Queue Length [veh/ln]	11.71	10.62		8.31	8.99	9.14	6.01
95th-Percentile Queue Length [ft/ln]	292.85	265.57		207.72	224.80	228.45	150.29

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.39	0.00	34.38	0.00	0.00	0.00	0.00	8.92	10.59	0.00	7.77	0.00
Movement LOS	C		C					A	B		A	
d_A, Approach Delay [s/veh]	33.69			0.00			9.62			7.77		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	14.73											
Intersection LOS	B											
Intersection V/C	0.654											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	622	622
d_b, Bicycle Delay [s]	45.00	45.00	21.36	21.36
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.719	2.236
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	40.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.708

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	734	297	288	4	100	116	183	942	470	108	403	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	734	297	288	4	100	116	183	942	470	108	403	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	74	72	1	25	29	46	236	118	27	101	7
Total Analysis Volume [veh/h]	734	297	288	4	100	116	183	942	470	108	403	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	29	61	61	10	42	0	17	39	39	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	36	46	1	12	12	13	61	90	6	54	54
g / C, Green / Cycle	0.21	0.30	0.38	0.01	0.10	0.10	0.11	0.51	0.75	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.22	0.17	0.19	0.00	0.06	0.08	0.11	0.28	0.18	0.03	0.08	0.09
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1716
c, Capacity [veh/h]	683	528	575	12	171	146	184	1723	2006	166	1527	777
d1, Uniform Delay [s]	47.52	35.56	28.36	59.31	51.92	53.07	53.48	19.92	4.46	55.94	19.62	19.65
k, delay calibration	0.11	0.11	0.28	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	40.55	0.94	1.74	14.92	3.13	9.49	30.07	1.25	0.27	4.22	0.27	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.56	0.50	0.33	0.58	0.80	1.00	0.55	0.23	0.65	0.19	0.19
d, Delay for Lane Group [s/veh]	88.07	36.50	30.09	74.23	55.05	62.57	83.55	21.17	4.73	60.16	19.89	20.18
Lane Group LOS	F	D	C	E	E	E	F	C	A	E	B	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.98	7.46	6.59	0.17	3.04	3.81	7.04	9.06	1.60	1.70	2.43	2.57
50th-Percentile Queue Length [ft/ln]	349.61	186.51	164.77	4.29	75.91	95.19	176.07	226.45	40.03	42.61	60.86	64.19
95th-Percentile Queue Length [veh/ln]	20.90	11.94	10.80	0.31	5.47	6.85	11.39	13.99	2.88	3.07	4.38	4.62
95th-Percentile Queue Length [ft/ln]	522.54	298.49	270.02	7.72	136.63	171.35	284.87	349.85	72.05	76.70	109.54	115.55

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	88.07	36.50	30.09	74.23	55.05	62.57	83.55	21.17	4.73	60.16	19.98	20.18
Movement LOS	F	D	C	E	E	E	F	C	A	E	B	C
d_A, Approach Delay [s/veh]	63.80			59.36			23.49			28.05		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	40.79											
Intersection LOS	D											
Intersection V/C	0.708											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.791			2.322			3.086			2.855		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	950			633			583			467		
d_b, Bicycle Delay [s]	16.54			28.02			30.10			35.27		
I_b,int, Bicycle LOS Score for Intersection	3.736			1.923			2.875			1.856		
Bicycle LOS	D			A			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	36.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.527

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	77	848	373	410	693	58	68	97	31	399	154	581
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	848	373	410	693	58	68	97	31	399	154	581
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	212	93	103	173	15	17	24	8	100	39	145
Total Analysis Volume [veh/h]	77	848	373	410	693	58	68	97	31	399	154	581
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	28	28	0	30	30	0	10	41	0	21	52	52
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	50	50	26	69	69	6	12	16	22	52
g / C, Green / Cycle	0.06	0.41	0.41	0.22	0.57	0.57	0.05	0.10	0.14	0.19	0.44
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.25	0.13	0.15	0.15	0.04	0.08	0.12	0.09	0.39
s, saturation flow rate [veh/h]	1687	3373	1509	3277	3373	1702	1687	1699	3277	1772	1506
c, Capacity [veh/h]	99	1393	623	710	1926	972	86	169	451	330	657
d1, Uniform Delay [s]	55.76	27.59	27.60	42.10	12.96	12.96	56.36	52.63	50.85	43.52	31.05
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.45
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.41	1.96	4.35	0.75	0.33	0.65	15.06	6.72	5.97	1.03	14.55
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.61	0.61	0.58	0.26	0.26	0.79	0.76	0.89	0.47	0.88
d, Delay for Lane Group [s/veh]	68.17	29.55	31.95	42.85	13.29	13.61	71.43	59.36	56.82	44.55	45.60
Lane Group LOS	E	C	C	D	B	B	E	E	E	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.64	9.75	9.16	5.52	3.42	3.55	2.40	4.07	6.25	4.18	17.71
50th-Percentile Queue Length [ft/ln]	66.03	243.85	228.97	137.94	85.55	88.69	59.94	101.84	156.32	104.58	442.63
95th-Percentile Queue Length [veh/ln]	4.75	14.88	14.12	9.37	6.16	6.39	4.32	7.33	10.35	7.53	24.61
95th-Percentile Queue Length [ft/ln]	118.86	371.90	353.05	234.25	153.99	159.64	107.88	183.31	258.84	188.24	615.15

Movement, Approach, & Intersection Results

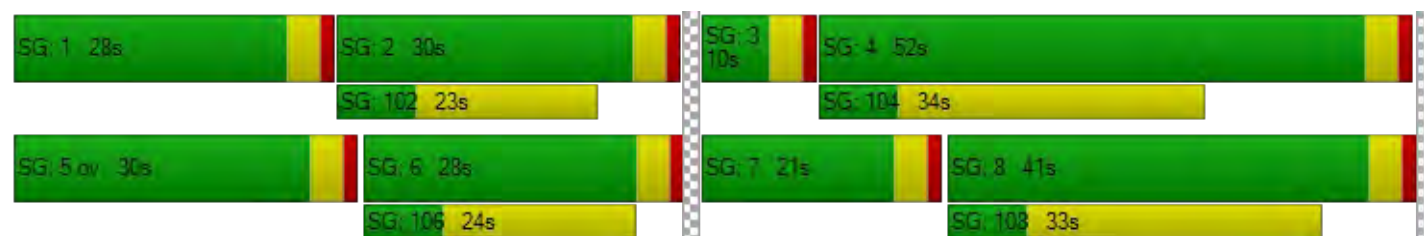
d_M, Delay for Movement [s/veh]	68.17	29.56	31.95	42.85	13.38	13.61	71.43	59.36	59.36	56.82	44.55	45.60
Movement LOS	E	C	C	D	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	32.54			23.80			63.54			49.40		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	36.51											
Intersection LOS	D											
Intersection V/C	0.527											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.945			3.063			2.112			2.794		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	400			433			617			800		
d_b, Bicycle Delay [s]	38.40			36.82			28.70			21.60		
I_b,int, Bicycle LOS Score for Intersection	2.274			2.198			1.883			3.431		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	22.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.549

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	129	57	170	50	47	109	79	703	97	194	1066	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	129	57	170	50	47	109	79	703	97	194	1066	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	32	14	43	13	12	27	20	176	24	49	267	10
Total Analysis Volume [veh/h]	129	57	170	50	47	109	79	703	97	194	1066	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	22	22	22	22	22	5	44	44	12	50	50
g / C, Green / Cycle	0.25	0.25	0.25	0.25	0.25	0.06	0.48	0.48	0.14	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.10	0.03	0.11	0.04	0.10	0.05	0.23	0.23	0.11	0.32	0.03
s, saturation flow rate [veh/h]	1230	1772	1506	1346	1577	1687	1772	1697	1687	3373	1506
c, Capacity [veh/h]	242	436	371	336	388	103	858	822	230	1888	843
d1, Uniform Delay [s]	37.92	26.44	28.85	30.64	28.40	41.67	15.56	15.56	37.95	12.75	8.96
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.82	0.13	0.89	0.20	0.67	11.44	1.89	1.97	8.17	1.23	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.53	0.13	0.46	0.15	0.40	0.77	0.48	0.48	0.84	0.56	0.05
d, Delay for Lane Group [s/veh]	39.74	26.57	29.73	30.84	29.07	53.10	17.45	17.54	46.12	13.98	9.07
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.83	0.96	3.15	0.92	2.83	2.03	5.77	5.55	4.63	6.65	0.36
50th-Percentile Queue Length [ft/ln]	70.85	23.90	78.72	22.99	70.87	50.86	144.22	138.72	115.64	166.32	8.97
95th-Percentile Queue Length [veh/ln]	5.10	1.72	5.67	1.66	5.10	3.66	9.71	9.41	8.15	10.88	0.65
95th-Percentile Queue Length [ft/ln]	127.54	43.02	141.70	41.38	127.56	91.55	242.69	235.29	203.83	272.08	16.14

Movement, Approach, & Intersection Results

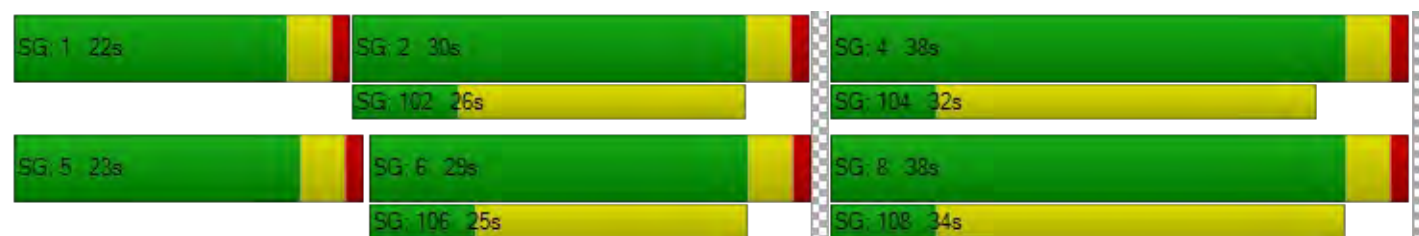
d_M, Delay for Movement [s/veh]	39.74	26.57	29.73	30.84	29.07	29.07	53.10	17.49	17.54	46.12	13.98	9.07
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	32.85			29.50			20.69			18.63		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	21.95											
Intersection LOS	C											
Intersection V/C	0.549											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.300			2.064			2.909			2.885		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.147			1.900			2.285			2.632		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	39.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.906

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	500	160	331	423	310	269	773	159	145	995	654
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	500	160	331	423	310	269	773	159	145	995	654
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	125	40	83	106	78	67	193	40	36	249	164
Total Analysis Volume [veh/h]	136	500	160	331	423	310	269	773	159	145	995	654
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	42	0	22	54	0	14	40	0	11	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	21	21	14	29	29	10	57	57	7	54	54
g / C, Green / Cycle	0.05	0.18	0.18	0.12	0.25	0.25	0.09	0.50	0.50	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.04	0.15	0.11	0.10	0.22	0.22	0.08	0.23	0.11	0.04	0.29	0.43
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1526	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	173	612	273	395	441	380	287	1679	750	200	1590	710
d1, Uniform Delay [s]	53.84	45.25	43.13	49.51	41.71	41.72	52.19	18.83	16.22	53.08	22.82	28.43
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.54	2.73	1.99	4.78	6.41	7.39	13.68	0.91	0.65	4.93	1.87	19.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.82	0.59	0.84	0.89	0.89	0.94	0.46	0.21	0.72	0.63	0.92
d, Delay for Lane Group [s/veh]	61.39	47.98	45.11	54.28	48.12	49.11	65.87	19.74	16.87	58.01	24.69	47.71
Lane Group LOS	E	D	D	D	D	D	E	B	B	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.13	7.07	4.32	4.91	11.47	10.00	4.40	6.80	2.47	2.20	10.28	19.97
50th-Percentile Queue Length [ft/ln]	53.13	176.63	107.96	122.67	286.80	249.92	109.91	169.96	61.73	54.88	257.05	499.18
95th-Percentile Queue Length [veh/ln]	3.83	11.42	7.73	8.54	17.03	15.18	7.83	11.07	4.44	3.95	15.54	27.30
95th-Percentile Queue Length [ft/ln]	95.63	285.61	193.16	213.48	425.66	379.56	195.87	276.86	111.12	98.78	388.52	682.39

Movement, Approach, & Intersection Results

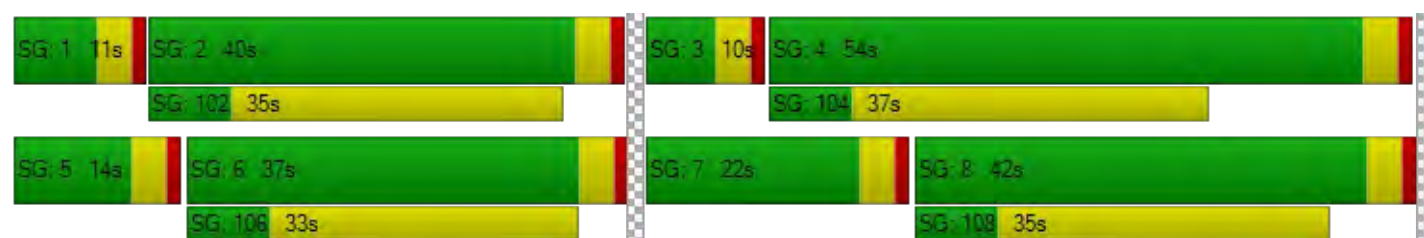
d_M, Delay for Movement [s/veh]	61.39	47.98	45.11	54.28	48.19	49.11	65.87	19.74	16.87	58.01	24.69	47.71
Movement LOS	E	D	D	D	D	D	E	B	B	E	C	D
d_A, Approach Delay [s/veh]	49.70			50.35			29.69			35.77		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	39.75											
Intersection LOS	D											
Intersection V/C	0.906											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.818			2.869			2.974			3.032		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	661			870			626			574		
d_b, Bicycle Delay [s]	25.78			18.37			27.13			29.23		
I_b,int, Bicycle LOS Score for Intersection	2.216			2.437			2.550			3.040		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 10: S Associated Road at Birch Street

Control Type:	Signalized	Delay (sec / veh):	30.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.786

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	522	32	427	10	20	6	13	863	282	313	1255	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	522	32	427	10	20	6	13	863	282	313	1255	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	131	8	107	3	5	2	3	216	71	78	314	4
Total Analysis Volume [veh/h]	522	32	427	10	20	6	13	863	282	313	1255	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	65	65	0	37	0	10	38	0	17	45	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	32	49	6	6	2	63	63	13	74	74
g / C, Green / Cycle	0.18	0.26	0.41	0.05	0.05	0.02	0.53	0.53	0.11	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.16	0.02	0.28	0.01	0.02	0.01	0.34	0.34	0.10	0.36	0.36
s, saturation flow rate [veh/h]	3277	1772	1506	1377	1702	1687	1772	1624	3277	1772	1764
c, Capacity [veh/h]	583	466	611	92	89	31	935	857	357	1095	1090
d1, Uniform Delay [s]	48.27	33.18	29.62	57.73	54.77	58.28	20.17	20.20	52.71	13.65	13.67
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.17	0.06	6.54	0.52	1.81	8.57	3.32	3.65	6.95	2.25	2.27
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.07	0.70	0.11	0.29	0.42	0.64	0.64	0.88	0.58	0.58
d, Delay for Lane Group [s/veh]	53.43	33.24	36.16	58.25	56.58	66.85	23.49	23.84	59.66	15.91	15.94
Lane Group LOS	D	C	D	E	E	E	C	C	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.03	0.71	11.21	0.31	0.80	0.47	12.42	11.51	4.99	10.45	10.43
50th-Percentile Queue Length [ft/ln]	200.87	17.86	280.24	7.81	20.07	11.64	310.45	287.76	124.70	261.22	260.87
95th-Percentile Queue Length [veh/ln]	12.68	1.29	16.70	0.56	1.44	0.84	18.20	17.07	8.65	15.75	15.73
95th-Percentile Queue Length [ft/ln]	317.09	32.15	417.51	14.05	36.12	20.95	454.93	426.87	216.27	393.75	393.31

Movement, Approach, & Intersection Results

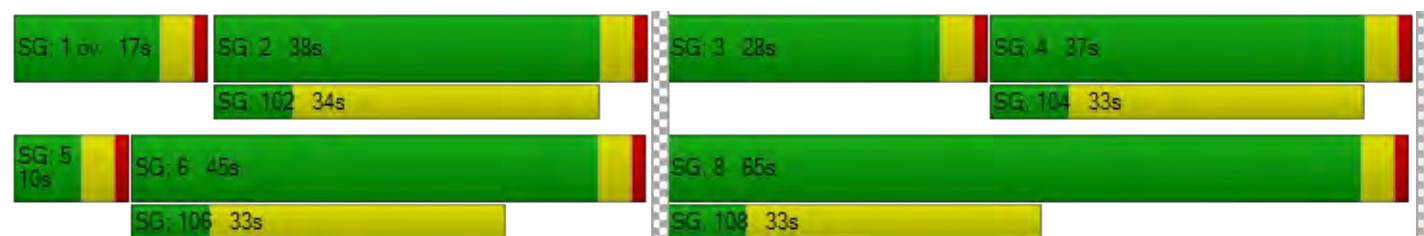
d_M, Delay for Movement [s/veh]	53.43	33.24	36.16	58.25	56.58	56.58	66.85	23.60	23.84	59.66	15.92	15.94
Movement LOS	D	C	D	E	E	E	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	45.26			57.04			24.14			24.57		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.15											
Intersection LOS	C											
Intersection V/C	0.786											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.726			1.986			2.887			2.950		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1017			550			567			683		
d_b, Bicycle Delay [s]	14.50			31.54			30.82			26.00		
I_b,int, Bicycle LOS Score for Intersection	3.178			1.619			2.515			2.866		
Bicycle LOS	C			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	25.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.842

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	98	3	292	286	975	11	5	1328	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	98	3	292	286	975	11	5	1328	137
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	3	25	1	73	72	244	3	1	332	34
Total Analysis Volume [veh/h]	12	2	10	98	3	292	286	975	11	5	1328	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	39	61	0	10	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	3	3	18	18	52	22	77	77	1	55	55
g / C, Green / Cycle	0.03	0.03	0.03	0.16	0.16	0.45	0.19	0.67	0.67	0.01	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.03	0.03	0.19	0.17	0.28	0.28	0.00	0.39	0.09
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1692	1506	1687	1772	1765	1687	3373	1506
c, Capacity [veh/h]	84	52	44	265	265	677	328	1180	1176	15	1622	724
d1, Uniform Delay [s]	56.30	54.30	54.61	42.17	42.17	21.62	44.98	8.88	8.88	56.71	25.59	17.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.26	0.13	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.77	0.30	2.61	0.35	0.34	1.05	8.47	1.09	1.10	13.04	4.74	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.04	0.23	0.19	0.19	0.43	0.87	0.42	0.42	0.34	0.82	0.19
d, Delay for Lane Group [s/veh]	57.07	54.61	57.21	42.52	42.51	22.67	53.45	9.97	9.98	69.75	30.33	17.64
Lane Group LOS	E	D	E	D	D	C	D	A	A	E	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.36	0.06	0.32	1.28	1.28	5.53	8.65	5.67	5.65	0.20	16.07	2.18
50th-Percentile Queue Length [ft/ln]	9.11	1.52	7.88	31.89	31.97	138.20	216.17	141.75	141.30	4.94	401.71	54.52
95th-Percentile Queue Length [veh/ln]	0.66	0.11	0.57	2.30	2.30	9.38	13.47	9.58	9.55	0.36	22.64	3.93
95th-Percentile Queue Length [ft/ln]	16.39	2.73	14.18	57.40	57.55	234.60	336.74	239.38	238.78	8.90	566.06	98.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.07	54.61	57.21	42.52	42.51	22.67	53.45	9.98	9.98	69.75	30.33	17.64
Movement LOS	E	D	E	D	D	C	D	A	A	E	C	B
d_A, Approach Delay [s/veh]	56.93			27.77			19.75			29.28		
Approach LOS	E			C			B			C		
d_I, Intersection Delay [s/veh]	25.47											
Intersection LOS	C											
Intersection V/C	0.842											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.153			2.342			2.895			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	104			522			991			487		
d_b, Bicycle Delay [s]	51.66			31.41			14.63			32.91		
I_b,int, Bicycle LOS Score for Intersection	1.599			2.208			2.609			2.772		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	62.5
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.790

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	612	958	124	213	391	121	310	742	295	78	702	265
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	612	958	124	213	391	121	310	742	295	78	702	265
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	153	240	31	53	98	30	78	186	74	20	176	66
Total Analysis Volume [veh/h]	612	958	124	213	391	121	310	742	295	78	702	265
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	45	0	14	37	0	22	50	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	48	48	10	40	40	18	39	39	7	28	28
g / C, Green / Cycle	0.15	0.40	0.40	0.08	0.33	0.33	0.15	0.33	0.33	0.06	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.21	0.21	0.07	0.10	0.11	0.18	0.22	0.20	0.05	0.21	0.18
s, saturation flow rate [veh/h]	3277	3373	1670	3277	3373	1569	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	494	1349	668	268	1116	520	254	1100	491	100	791	353
d1, Uniform Delay [s]	51.02	27.54	27.56	54.15	29.96	30.06	51.02	34.97	33.93	55.75	44.44	42.71
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.26	0.11	0.11	0.11	0.11	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	111.95	1.53	3.08	5.30	0.72	1.62	116.12	0.73	1.18	12.43	3.61	4.88
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.24	0.54	0.54	0.79	0.31	0.32	1.22	0.67	0.60	0.78	0.89	0.75
d, Delay for Lane Group [s/veh]	162.97	29.08	30.64	59.45	30.68	31.67	167.13	35.70	35.11	68.18	48.05	47.59
Lane Group LOS	F	C	C	E	C	C	F	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.07	8.16	8.38	3.36	3.85	3.83	15.81	9.42	7.35	2.68	10.44	7.76
50th-Percentile Queue Length [ft/ln]	376.72	204.06	209.58	83.97	96.37	95.80	395.32	235.62	183.63	66.91	260.88	194.04
95th-Percentile Queue Length [veh/ln]	23.51	12.85	13.13	6.05	6.94	6.90	24.37	14.46	11.79	4.82	15.73	12.33
95th-Percentile Queue Length [ft/ln]	587.80	321.19	328.29	151.15	173.47	172.45	609.20	361.49	294.75	120.44	393.32	308.27

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	162.97	29.46	30.64	59.45	30.79	31.67	167.13	35.70	35.11	68.18	48.05	47.59
Movement LOS	F	C	C	E	C	C	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	77.78			39.36			65.82			49.44		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	62.49											
Intersection LOS	E											
Intersection V/C	0.790											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.039			3.014			2.919			2.812		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			550			767			583		
d_b, Bicycle Delay [s]	26.00			31.54			22.82			30.10		
I_b,int, Bicycle LOS Score for Intersection	2.491			1.958			2.671			2.422		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	16.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.204

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	47	319	42	28	254	28	62	4	51	75	4	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	319	42	28	254	28	62	4	51	75	4	38
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	80	11	7	64	7	16	1	13	19	1	10
Total Analysis Volume [veh/h]	47	319	42	28	254	28	62	4	51	75	4	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	26	0	10	25	0	0	54	0	0	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	63	63	3	62	62	12	12	12	12
g / C, Green / Cycle	0.05	0.70	0.70	0.03	0.69	0.69	0.13	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.10	0.02	0.08	0.08	0.05	0.04	0.06	0.03
s, saturation flow rate [veh/h]	1687	1772	1701	1687	1772	1711	1364	1522	1349	1528
c, Capacity [veh/h]	78	1243	1193	57	1221	1179	191	200	178	200
d1, Uniform Delay [s]	42.10	4.47	4.48	42.72	4.73	4.74	39.82	35.24	40.95	34.93
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.19	0.25	0.26	6.36	0.19	0.21	0.98	0.74	1.57	0.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.60	0.15	0.15	0.49	0.12	0.12	0.33	0.28	0.42	0.21
d, Delay for Lane Group [s/veh]	49.29	4.72	4.74	49.08	4.93	4.94	40.80	35.98	42.52	35.44
Lane Group LOS	D	A	A	D	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.17	1.02	1.00	0.71	0.82	0.81	1.36	1.12	1.69	0.84
50th-Percentile Queue Length [ft/ln]	29.24	25.45	24.89	17.67	20.53	20.23	33.93	27.90	42.25	21.06
95th-Percentile Queue Length [veh/ln]	2.11	1.83	1.79	1.27	1.48	1.46	2.44	2.01	3.04	1.52
95th-Percentile Queue Length [ft/ln]	52.63	45.81	44.81	31.80	36.95	36.42	61.08	50.23	76.05	37.91

Movement, Approach, & Intersection Results

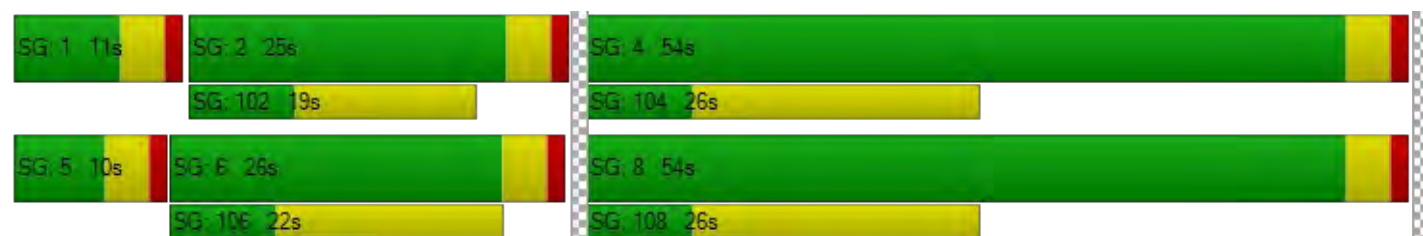
d_M, Delay for Movement [s/veh]	49.29	4.73	4.74	49.08	4.93	4.94	40.80	35.98	35.98	42.52	35.44	35.44
Movement LOS	D	A	A	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	9.86			8.92			38.53			39.98		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	16.78											
Intersection LOS	B											
Intersection V/C	0.204											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.560			2.530			2.003			2.002		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	489			467			1111			1111		
d_b, Bicycle Delay [s]	25.69			26.45			8.89			8.89		
I_b,int, Bicycle LOS Score for Intersection	1.896			1.815			1.753			1.753		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.373

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	323	319	37	356	20	17	4	11	271	4	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	323	319	37	356	20	17	4	11	271	4	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	81	80	9	89	5	4	1	3	68	1	12
Total Analysis Volume [veh/h]	15	323	319	37	356	20	17	4	11	271	4	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	29	0	10	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	72	64	64	72	66	66	4	4	12	12
g / C, Green / Cycle	0.72	0.64	0.64	0.72	0.66	0.66	0.04	0.04	0.12	0.12
(v / s)_i Volume / Saturation Flow Rate	0.01	0.18	0.21	0.04	0.11	0.11	0.01	0.01	0.10	0.10
s, saturation flow rate [veh/h]	1045	1772	1506	861	1772	1739	1703	1506	1687	1632
c, Capacity [veh/h]	815	1140	969	647	1172	1150	61	54	205	198
d1, Uniform Delay [s]	3.99	7.77	8.06	4.49	6.41	6.42	47.08	46.84	42.75	42.76
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.62	0.91	0.17	0.30	0.30	3.28	1.82	6.85	7.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.28	0.33	0.06	0.16	0.16	0.34	0.20	0.80	0.80
d, Delay for Lane Group [s/veh]	4.00	8.40	8.97	4.66	6.71	6.72	50.37	48.67	49.60	49.95
Lane Group LOS	A	A	A	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.07	2.96	3.08	0.21	1.47	1.46	0.56	0.29	4.27	4.17
50th-Percentile Queue Length [ft/ln]	1.87	74.04	76.93	5.30	36.80	36.41	14.11	7.31	106.81	104.15
95th-Percentile Queue Length [veh/ln]	0.13	5.33	5.54	0.38	2.65	2.62	1.02	0.53	7.66	7.50
95th-Percentile Queue Length [ft/ln]	3.37	133.28	138.47	9.55	66.24	65.54	25.39	13.16	191.56	187.46

Movement, Approach, & Intersection Results

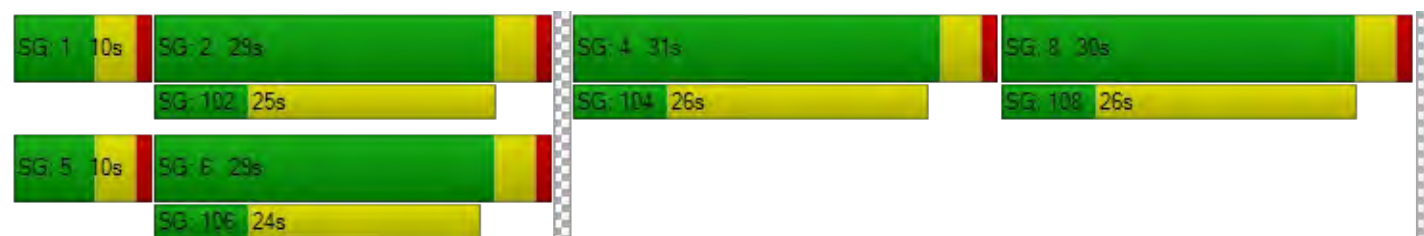
d_M, Delay for Movement [s/veh]	4.00	8.40	8.97	4.66	6.71	6.72	50.37	50.37	48.67	49.74	49.95	49.95
Movement LOS	A	A	A	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	8.58			6.53			49.78			49.77		
Approach LOS	A			A			D			D		
d_I, Intersection Delay [s/veh]	18.20											
Intersection LOS	B											
Intersection V/C	0.373											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.557			2.460			1.983			2.201		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			500			520			540		
d_b, Bicycle Delay [s]	28.13			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.102			1.900			1.612			2.089		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 15: Brea Mall South at State College Boulevard

Control Type:	Signalized	Delay (sec / veh):	26.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.670

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	142	20	66	42	12	379	489	645	23	98	516	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	20	66	42	12	379	489	645	23	98	516	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	5	17	11	3	95	122	161	6	25	129	7
Total Analysis Volume [veh/h]	142	20	66	42	12	379	489	645	23	98	516	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	26	31	0	27	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10	6	6	46	22	66	66	8	52	52
g / C, Green / Cycle	0.09	0.09	0.09	0.06	0.06	0.43	0.21	0.63	0.63	0.07	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.04	0.02	0.01	0.25	0.15	0.19	0.19	0.06	0.15	0.15
s, saturation flow rate [veh/h]	1417	1515	1506	1687	1612	1506	3277	1772	1750	1687	1772	1741
c, Capacity [veh/h]	174	199	137	99	95	654	683	1104	1091	126	868	853
d1, Uniform Delay [s]	45.38	46.61	45.49	47.81	46.97	22.51	38.74	9.21	9.21	47.81	16.20	16.21
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.36	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.08	2.15	2.62	2.85	0.59	2.73	1.42	0.71	0.72	9.69	0.95	0.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.33	0.53	0.48	0.42	0.13	0.58	0.72	0.30	0.30	0.78	0.32	0.32
d, Delay for Lane Group [s/veh]	46.46	48.75	48.11	50.65	47.56	25.24	40.15	9.92	9.93	57.49	17.16	17.18
Lane Group LOS	D	D	D	D	D	C	D	A	A	E	B	B
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.46	2.79	1.73	1.14	0.31	7.41	5.94	3.56	3.52	2.85	4.11	4.06
50th-Percentile Queue Length [ft/ln]	36.47	69.66	43.33	28.48	7.83	185.20	148.57	89.04	88.08	71.33	102.87	101.43
95th-Percentile Queue Length [veh/ln]	2.63	5.02	3.12	2.05	0.56	11.87	9.94	6.41	6.34	5.14	7.41	7.30
95th-Percentile Queue Length [ft/ln]	65.64	125.40	77.99	51.26	14.10	296.79	248.52	160.28	158.54	128.39	185.17	182.57

Movement, Approach, & Intersection Results

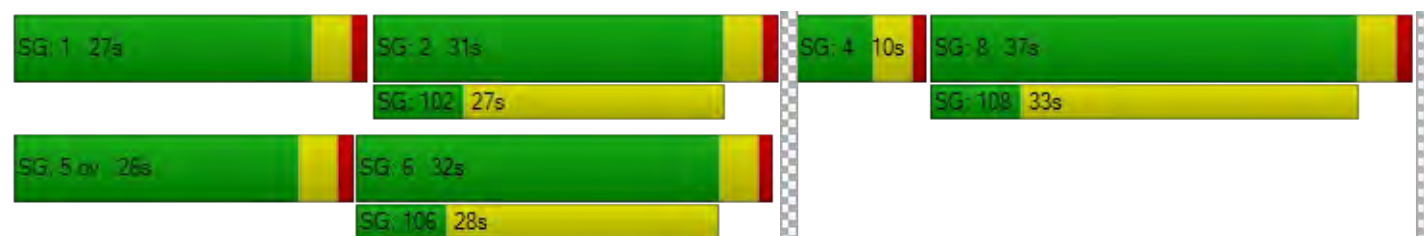
d_M, Delay for Movement [s/veh]	47.79	48.75	48.11	50.65	47.56	25.24	40.15	9.92	9.93	57.49	17.17	17.18
Movement LOS	D	D	D	D	D	C	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	47.99			28.32			22.70			23.33		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	26.20											
Intersection LOS	C											
Intersection V/C	0.670											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			0.00			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.378			2.496			0.000			2.579		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	629			114			514			533		
d_b, Bicycle Delay [s]	24.69			46.67			28.97			28.23		
I_b,int, Bicycle LOS Score for Intersection	1.936			1.917			2.514			2.088		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	59.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.010

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	439	1181	231	268	969	421	311	1281	295	471	1685	309
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	439	1181	231	268	969	421	311	1281	295	471	1685	309
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	295	58	67	242	105	78	320	74	118	421	77
Total Analysis Volume [veh/h]	439	1181	231	268	969	421	311	1281	295	471	1685	309
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	42	0	16	39	0	15	42	0	20	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	38	38	12	35	35	11	38	38	16	43	43
g / C, Green / Cycle	0.13	0.32	0.32	0.10	0.29	0.29	0.09	0.32	0.32	0.13	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.15	0.08	0.20	0.28	0.09	0.32	0.32	0.14	0.35	0.21
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1608	3277	4826	1506
c, Capacity [veh/h]	410	1533	478	319	1399	437	301	1073	512	437	1736	542
d1, Uniform Delay [s]	52.50	37.00	33.01	53.24	37.86	42.00	54.50	40.76	40.91	52.00	37.79	30.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.43	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.65	0.85	0.76	5.88	0.62	31.89	33.30	25.57	39.72	44.49	15.63	4.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.77	0.48	0.84	0.69	0.96	1.03	0.99	1.00	1.08	0.97	0.57
d, Delay for Lane Group [s/veh]	95.15	37.84	33.76	59.12	38.48	73.88	87.80	66.33	80.62	96.50	53.42	35.25
Lane Group LOS	F	D	C	E	D	E	F	E	F	F	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.59	10.46	5.51	4.23	8.47	16.00	5.93	19.26	20.55	9.26	18.46	7.83
50th-Percentile Queue Length [ft/ln]	214.63	261.49	137.83	105.78	211.77	399.97	148.20	481.56	513.69	231.54	461.52	195.83
95th-Percentile Queue Length [veh/ln]	13.78	15.76	9.36	7.60	13.24	22.56	10.04	26.46	27.98	14.71	25.51	12.42
95th-Percentile Queue Length [ft/ln]	344.43	394.08	234.10	190.12	331.09	563.96	251.00	661.51	699.54	367.84	637.68	310.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	95.15	37.84	33.76	59.12	38.48	73.88	87.80	68.74	80.62	96.50	53.42	35.25
Movement LOS	F	D	C	E	D	E	F	E	F	F	D	D
d_A, Approach Delay [s/veh]	50.93			50.81			73.74			59.37		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	59.03											
Intersection LOS	E											
Intersection V/C	1.010											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.251			3.238			3.279			3.323		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			583			633			717		
d_b, Bicycle Delay [s]	28.02			30.10			28.02			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.578			2.472			2.597			2.915		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 19.3
 Level Of Service: B
 Volume to Capacity (v/c): 0.702

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	36	48	89	174	126	219	129	1585	44	132	1865	265
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	48	89	174	126	219	129	1585	44	132	1865	265
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	12	22	44	32	55	32	396	11	33	466	66
Total Analysis Volume [veh/h]	36	48	89	174	126	219	129	1585	44	132	1865	265
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	18	32	0	20	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	19	19	19	19	19	9	51	51	9	51	51
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.21	0.21	0.09	0.56	0.56	0.10	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.06	0.13	0.04	0.15	0.08	0.32	0.32	0.08	0.39	0.18
s, saturation flow rate [veh/h]	1264	1772	1506	1357	3373	1506	1687	3373	1747	1687	4826	1506
c, Capacity [veh/h]	268	364	309	294	693	309	160	1903	986	164	2734	853
d1, Uniform Delay [s]	33.57	29.21	30.21	36.65	29.53	33.26	39.93	12.53	12.54	39.81	13.78	10.26
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.16	0.51	1.90	0.12	2.98	9.17	1.21	2.33	8.95	1.40	0.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.13	0.29	0.59	0.18	0.71	0.81	0.56	0.56	0.81	0.68	0.31
d, Delay for Lane Group [s/veh]	33.80	29.38	30.72	38.55	29.65	36.24	49.10	13.75	14.87	48.77	15.18	11.21
Lane Group LOS	C	C	C	D	C	D	D	B	B	D	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.70	0.85	1.65	3.78	1.12	4.60	3.17	6.64	7.19	3.23	8.43	2.79
50th-Percentile Queue Length [ft/ln]	17.44	21.33	41.20	94.49	28.05	115.07	79.16	165.95	179.72	80.70	210.83	69.72
95th-Percentile Queue Length [veh/ln]	1.26	1.54	2.97	6.80	2.02	8.12	5.70	10.86	11.59	5.81	13.20	5.02
95th-Percentile Queue Length [ft/ln]	31.40	38.39	74.16	170.08	50.49	203.04	142.49	271.58	289.65	145.25	329.89	125.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.80	29.38	30.72	38.55	29.65	36.24	49.10	14.11	14.87	48.77	15.18	11.21
Movement LOS	C	C	C	D	C	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	30.99			35.42			16.70			16.68		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	19.27											
Intersection LOS	B											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.392			2.487			3.185			3.473		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			622			667		
d_b, Bicycle Delay [s]	17.42			17.42			21.36			20.00		
I_b,int, Bicycle LOS Score for Intersection	1.845			1.988			2.527			2.804		
Bicycle LOS	A			A			B			C		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.954

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	561	861	250	232	685	213	247	1775	420	236	1820	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	861	250	232	685	213	247	1775	420	236	1820	152
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	215	63	58	171	53	62	444	105	59	455	38
Total Analysis Volume [veh/h]	561	861	250	232	685	213	247	1775	420	236	1820	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	47	0	15	39	0	13	45	0	13	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	36	36	10	27	27	9	48	48	9	48	48
g / C, Green / Cycle	0.16	0.30	0.30	0.09	0.23	0.23	0.08	0.40	0.40	0.08	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.17	0.18	0.17	0.07	0.20	0.14	0.08	0.37	0.28	0.07	0.38	0.10
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	521	1448	452	287	772	345	250	1943	606	250	1943	606
d1, Uniform Delay [s]	50.52	35.81	35.27	53.80	44.80	41.59	55.43	33.90	29.72	55.23	34.41	23.84
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	43.30	0.39	1.06	5.34	3.68	1.80	23.77	8.10	6.40	16.05	10.11	0.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.59	0.55	0.81	0.89	0.62	0.99	0.91	0.69	0.94	0.94	0.25
d, Delay for Lane Group [s/veh]	93.82	36.20	36.33	59.14	48.49	43.39	79.20	42.00	36.12	71.28	44.52	24.83
Lane Group LOS	F	D	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.92	7.20	6.26	3.65	10.21	5.84	4.56	17.37	10.98	4.11	18.38	3.04
50th-Percentile Queue Length [ft/ln]	273.05	179.92	156.59	91.34	255.22	145.95	113.94	434.29	274.54	102.76	459.54	76.04
95th-Percentile Queue Length [veh/ln]	16.92	11.60	10.37	6.58	15.45	9.80	8.06	24.21	16.42	7.40	25.41	5.48
95th-Percentile Queue Length [ft/ln]	422.99	289.91	259.21	164.42	386.22	245.01	201.47	605.18	410.41	184.97	635.33	136.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	93.82	36.20	36.33	59.14	48.49	43.39	79.20	42.00	36.12	71.28	44.52	24.83
Movement LOS	F	D	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	55.55			49.71			44.75			46.02		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	48.30											
Intersection LOS	D											
Intersection V/C	0.954											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.106			3.031			3.409			3.347		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	717			583			683			683		
d_b, Bicycle Delay [s]	24.70			30.10			26.00			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.479			2.492			2.903			2.774		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.819

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	44	34	61	323	25	214	252	1745	28	57	2011	332
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	34	61	323	25	214	252	1745	28	57	2011	332
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	9	15	81	6	54	63	436	7	14	503	83
Total Analysis Volume [veh/h]	44	34	61	323	25	214	252	1745	28	57	2011	332
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	41	0	14	44	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	19	19	10	58	58	5	53	53
g / C, Green / Cycle	0.06	0.06	0.06	0.19	0.19	0.09	0.55	0.55	0.05	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.04	0.10	0.16	0.08	0.35	0.35	0.03	0.42	0.22
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1530	3277	3373	1757	1687	4826	1506
c, Capacity [veh/h]	109	115	89	607	284	312	1856	967	80	2424	756
d1, Uniform Delay [s]	47.20	46.86	48.11	38.69	41.34	46.61	16.24	16.26	49.37	22.32	16.70
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.37	1.42	9.01	0.72	6.71	4.94	1.62	3.09	11.18	3.46	1.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.30	0.69	0.53	0.84	0.81	0.63	0.63	0.71	0.83	0.44
d, Delay for Lane Group [s/veh]	49.57	48.28	57.12	39.42	48.04	51.54	17.87	19.35	60.55	25.78	18.55
Lane Group LOS	D	D	E	D	D	D	B	B	E	C	B
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.18	0.89	1.78	3.81	6.45	3.43	9.50	10.31	1.72	14.12	5.33
50th-Percentile Queue Length [ft/ln]	29.38	22.29	44.53	95.13	161.20	85.65	237.58	257.87	42.97	352.99	133.33
95th-Percentile Queue Length [veh/ln]	2.12	1.61	3.21	6.85	10.61	6.17	14.56	15.58	3.09	20.28	9.12
95th-Percentile Queue Length [ft/ln]	52.89	40.13	80.16	171.24	265.31	154.16	363.97	389.55	77.35	507.05	228.01

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.57	48.28	57.12	39.42	48.04	48.04	51.54	18.36	19.35	60.55	25.78	18.55
Movement LOS	D	D	E	D	D	D	D	B	B	E	C	B
d_A, Approach Delay [s/veh]	52.56			43.08			22.50			25.61		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	27.03											
Intersection LOS	C											
Intersection V/C	0.819											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.199			2.537			3.256			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	114			705			762			686		
d_b, Bicycle Delay [s]	46.67			22.02			20.12			22.67		
I_b,int, Bicycle LOS Score for Intersection	1.674			2.487			2.673			2.880		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	65.7
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.021

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	359	586	355	497	306	97	107	1907	103	431	1905	582
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	586	355	497	306	97	107	1907	103	431	1905	582
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	147	89	124	77	24	27	477	26	108	476	146
Total Analysis Volume [veh/h]	359	586	355	497	306	97	107	1907	103	431	1905	582
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	27	41	0	25	39	0	10	36	0	18	44	44
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	16	31	31	21	37	37	6	38	38	14	46	71
g / C, Green / Cycle	0.13	0.26	0.26	0.18	0.31	0.31	0.05	0.31	0.31	0.12	0.38	0.59
(v / s)_i Volume / Saturation Flow Rate	0.11	0.17	0.24	0.21	0.12	0.12	0.03	0.31	0.31	0.13	0.39	0.39
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1627	3277	4826	1712	3277	4826	1506
c, Capacity [veh/h]	427	877	392	415	540	496	164	1514	537	385	1840	888
d1, Uniform Delay [s]	51.01	39.81	43.04	49.53	32.91	32.91	56.02	40.83	40.84	53.00	37.16	16.46
k, delay calibration	0.11	0.11	0.29	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.51	0.89	17.98	94.18	0.46	0.50	4.30	18.75	34.16	61.65	30.75	3.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.67	0.91	1.20	0.39	0.39	0.65	0.98	0.98	1.12	1.04	0.66
d, Delay for Lane Group [s/veh]	55.52	40.69	61.02	143.71	33.37	33.41	60.32	59.58	74.99	114.65	67.91	20.22
Lane Group LOS	E	D	E	F	C	C	E	E	E	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.54	7.84	12.08	11.63	4.90	4.51	1.69	16.89	20.29	9.10	22.80	11.14
50th-Percentile Queue Length [ft/ln]	138.39	195.95	302.04	290.67	122.57	112.78	42.30	422.30	507.20	227.43	570.01	278.45
95th-Percentile Queue Length [veh/ln]	9.39	12.43	17.78	18.66	8.53	7.99	3.05	23.63	27.68	14.68	31.40	16.61
95th-Percentile Queue Length [ft/ln]	234.86	310.74	444.55	466.52	213.35	199.86	76.15	590.81	691.88	367.09	784.94	415.28

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	55.52	40.69	61.02	143.71	33.38	33.41	60.32	63.00	74.99	114.65	67.91	20.22
Movement LOS	E	D	E	F	C	C	E	E	E	F	F	C
d_A, Approach Delay [s/veh]	50.34			94.31			63.45			65.30		
Approach LOS	D			F			E			E		
d_I, Intersection Delay [s/veh]	65.68											
Intersection LOS	E											
Intersection V/C	1.021											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.906			2.820			3.348			3.534		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			533			667		
d_b, Bicycle Delay [s]	28.70			30.10			32.27			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.632			2.302			2.433			3.165		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	19.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.847

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	682	0	537	0	1728	1050	0	2421	446
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	682	0	537	0	1728	1050	0	2421	446
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	171	0	134	0	432	263	0	605	112
Total Analysis Volume [veh/h]	0	0	0	682	0	537	0	1728	1050	0	2421	446
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		28	28	28	54	54
g / C, Green / Cycle		0.31	0.31	0.31	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate		0.24	0.25	0.27	0.36	0.50
s, saturation flow rate [veh/h]		1687	1624	1506	4826	4826
c, Capacity [veh/h]		530	510	473	2880	2880
d1, Uniform Delay [s]		27.84	28.18	28.94	11.37	14.65
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.36	2.89	4.67	0.93	3.15
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.80	0.86	0.60	0.84
d, Delay for Lane Group [s/veh]		30.20	31.08	33.62	12.30	17.80
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		7.97	8.12	8.53	6.71	12.50
50th-Percentile Queue Length [ft/ln]		199.13	203.06	213.36	167.67	312.43
95th-Percentile Queue Length [veh/ln]		12.59	12.80	13.33	10.95	18.29
95th-Percentile Queue Length [ft/ln]		314.84	319.91	333.13	273.85	457.37

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	30.55	0.00	33.00	0.00	12.30	0.00	0.00	17.80	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			31.63			12.30			17.80		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	19.17											
Intersection LOS	B											
Intersection V/C	0.847											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.428			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.144			2.510			2.891		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	33.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1078	81	453	0	0	295	216	1824	425	0	2480	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1078	81	453	0	0	295	216	1824	425	0	2480	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	20	113	0	0	74	54	456	106	0	620	15
Total Analysis Volume [veh/h]	1078	81	453	0	0	295	216	1824	425	0	2480	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	52	0	0	0	19	19	68	0	0	49	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	37	15	15	75	55	55
g / C, Green / Cycle	0.31	0.31	0.31	0.13	0.13	0.62	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.24	0.24	0.27	0.11	0.13	0.38	0.39	0.36
s, saturation flow rate [veh/h]	3277	1681	1506	2665	1687	4826	4826	1743
c, Capacity [veh/h]	1022	525	470	335	212	2998	2231	806
d1, Uniform Delay [s]	37.47	37.51	38.97	51.56	52.44	13.82	28.63	27.27
k, delay calibration	0.11	0.17	0.23	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.31	4.05	9.97	7.57	33.77	0.93	4.41	7.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.78	0.87	0.88	1.02	0.61	0.85	0.79
d, Delay for Lane Group [s/veh]	38.77	41.55	48.93	59.13	86.20	14.75	33.05	34.96
Lane Group LOS	D	D	D	E	F	B	C	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.69	11.42	12.55	4.71	8.35	9.78	16.68	16.73
50th-Percentile Queue Length [ft/ln]	267.17	285.41	313.72	117.70	208.75	244.47	416.93	418.35
95th-Percentile Queue Length [veh/ln]	16.05	16.96	18.36	8.27	13.20	14.91	23.37	23.44
95th-Percentile Queue Length [ft/ln]	401.20	423.94	458.96	206.66	329.96	372.68	584.37	586.07

Movement, Approach, & Intersection Results

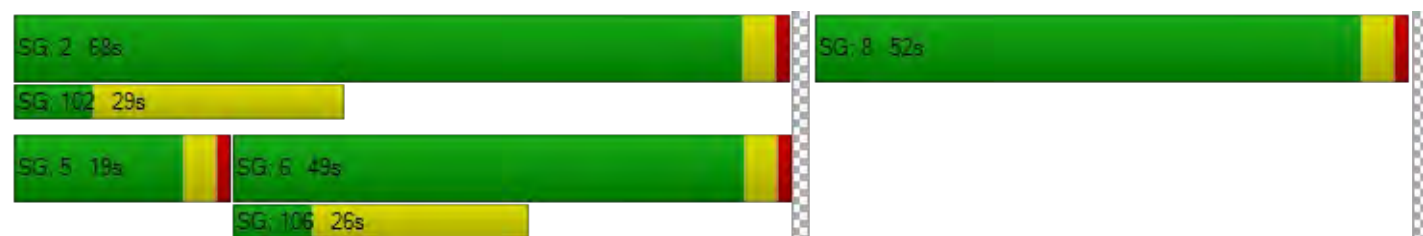
d_M, Delay for Movement [s/veh]	39.49	41.55	48.12	0.00	0.00	59.13	86.20	14.75	0.00	0.00	33.49	34.96
Movement LOS	D	D	D			E	F	B			C	C
d_A, Approach Delay [s/veh]	42.06			59.13			22.32			33.52		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	33.28											
Intersection LOS	C											
Intersection V/C	0.883											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.628			2.166			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			0			1067			750		
d_b, Bicycle Delay [s]	21.60			60.00			13.07			23.44		
I_b,int, Bicycle LOS Score for Intersection	4.219			4.132			2.682			2.607		
Bicycle LOS	D			D			B			B		

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.884

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	260	310	112	320	361	221	254	1748	141	184	1839	183
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	260	310	112	320	361	221	254	1748	141	184	1839	183
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	65	78	28	80	90	55	64	437	35	46	460	46
Total Analysis Volume [veh/h]	260	310	112	320	361	221	254	1748	141	184	1839	183
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	16	41	0	23	47	0	18	42	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	25	25	12	27	27	19	53	53	14	48	48
g / C, Green / Cycle	0.08	0.21	0.21	0.10	0.23	0.23	0.16	0.44	0.44	0.12	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.08	0.12	0.13	0.10	0.20	0.15	0.15	0.37	0.37	0.11	0.31	0.31
s, saturation flow rate [veh/h]	3277	1772	1614	3277	1772	1506	1687	3373	1705	1687	4826	1668
c, Capacity [veh/h]	277	370	337	331	399	339	268	1482	749	198	1921	664
d1, Uniform Delay [s]	54.67	42.94	42.99	53.79	45.28	42.25	50.02	30.00	30.15	52.49	31.59	31.61
k, delay calibration	0.11	0.11	0.11	0.11	0.21	0.11	0.16	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.18	1.53	1.71	16.26	13.75	2.12	20.60	6.06	11.70	16.61	3.25	8.95
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.94	0.59	0.60	0.97	0.90	0.65	0.95	0.84	0.85	0.93	0.78	0.78
d, Delay for Lane Group [s/veh]	68.85	44.47	44.70	70.05	59.03	44.37	70.62	36.06	41.85	69.10	34.84	40.55
Lane Group LOS	E	D	D	E	E	D	E	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.45	6.06	5.59	5.56	11.93	6.15	9.06	16.94	18.51	6.40	13.06	14.61
50th-Percentile Queue Length [ft/ln]	111.30	151.56	139.72	138.89	298.30	153.63	226.56	423.46	462.73	160.02	326.39	365.19
95th-Percentile Queue Length [veh/ln]	7.91	10.10	9.47	9.42	17.60	10.21	14.00	23.69	25.56	10.55	18.98	20.88
95th-Percentile Queue Length [ft/ln]	197.81	252.51	236.64	235.53	439.92	255.26	349.98	592.20	639.12	263.75	474.54	521.89

Movement, Approach, & Intersection Results

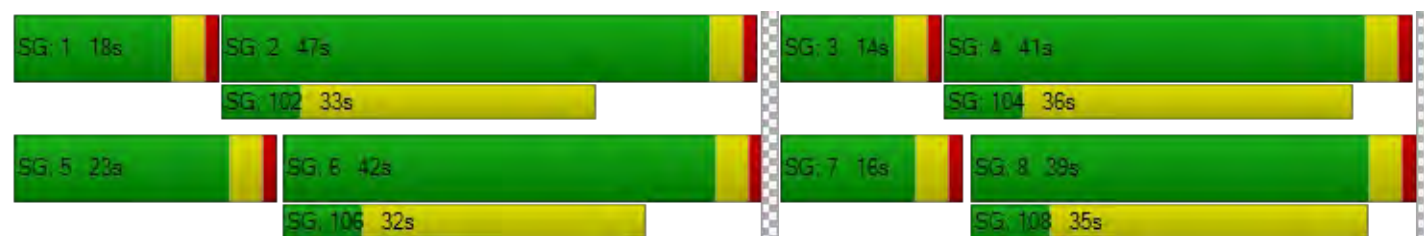
d_M, Delay for Movement [s/veh]	68.85	44.54	44.70	70.05	59.03	44.37	70.62	37.71	41.85	69.10	35.89	40.55
Movement LOS	E	D	D	E	E	D	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	53.83			59.35			41.88			39.05		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	44.86											
Intersection LOS	D											
Intersection V/C	0.884											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.580			2.735			3.283			3.274		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			617			717			633		
d_b, Bicycle Delay [s]	30.10			28.70			24.70			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.122			3.048			2.738			2.470		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	30.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.836

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	293	47	285	25	23	14	19	1817	279	230	1975	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	293	47	285	25	23	14	19	1817	279	230	1975	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	12	71	6	6	4	5	454	70	58	494	14
Total Analysis Volume [veh/h]	293	47	285	25	23	14	19	1817	279	230	1975	57
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	46	0	0	10	0	10	32	0	32	54	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	5	5	3	55	55	18	70	70
g / C, Green / Cycle	0.21	0.21	0.21	0.04	0.04	0.02	0.46	0.46	0.15	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.10	0.10	0.19	0.01	0.02	0.01	0.38	0.19	0.14	0.40	0.40
s, saturation flow rate [veh/h]	1687	1710	1506	1687	1661	1687	4826	1506	1687	3373	1746
c, Capacity [veh/h]	360	365	321	75	74	41	2196	685	259	1971	1021
d1, Uniform Delay [s]	41.27	41.27	45.81	55.63	56.06	57.79	28.59	21.88	49.78	17.18	17.23
k, delay calibration	0.11	0.11	0.12	0.11	0.11	0.11	0.50	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.95	0.94	8.68	2.56	5.16	7.85	3.75	1.79	10.56	1.90	3.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.47	0.89	0.33	0.50	0.46	0.83	0.41	0.89	0.68	0.68
d, Delay for Lane Group [s/veh]	42.22	42.20	54.49	58.20	61.22	65.64	32.34	23.67	60.34	19.08	20.90
Lane Group LOS	D	D	D	E	E	E	C	C	E	B	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.48	4.53	8.98	0.79	1.20	0.66	15.59	5.57	7.51	12.64	13.68
50th-Percentile Queue Length [ft/ln]	111.96	113.29	224.53	19.73	30.07	16.49	389.69	139.18	187.71	315.89	341.91
95th-Percentile Queue Length [veh/ln]	7.95	8.02	13.90	1.42	2.17	1.19	22.06	9.44	12.00	18.47	19.74
95th-Percentile Queue Length [ft/ln]	198.73	200.56	347.40	35.51	54.13	29.69	551.56	235.92	300.06	461.63	493.54

Movement, Approach, & Intersection Results

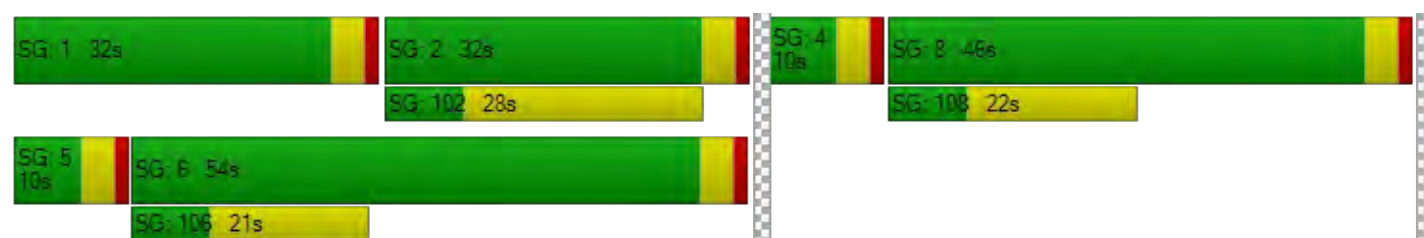
d_M, Delay for Movement [s/veh]	42.21	42.20	54.49	58.20	61.22	61.22	65.64	32.34	23.67	60.34	19.67	20.90
Movement LOS	D	D	D	E	E	E	E	C	C	E	B	C
d_A, Approach Delay [s/veh]	47.81			60.00			31.49			23.83		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.43											
Intersection LOS	C											
Intersection V/C	0.836											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.427			2.014			0.000			3.219		
Crosswalk LOS	B			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	700			100			467			833		
d_b, Bicycle Delay [s]	25.35			54.15			35.27			20.42		
I_b,int, Bicycle LOS Score for Intersection	2.591			1.662			2.723			2.804		
Bicycle LOS	B			A			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.940

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	367	738	111	266	484	114	230	1341	213	203	1641	399
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	367	738	111	266	484	114	230	1341	213	203	1641	399
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	92	185	28	67	121	29	58	335	53	51	410	100
Total Analysis Volume [veh/h]	367	738	111	266	484	114	230	1341	213	203	1641	399
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	20	35	0	15	30	0	13	57	0	13	57	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	31	31	11	27	27	9	53	53	9	53	53
g / C, Green / Cycle	0.13	0.26	0.26	0.09	0.22	0.22	0.08	0.44	0.44	0.08	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.11	0.24	0.25	0.08	0.14	0.08	0.07	0.31	0.31	0.06	0.41	0.42
s, saturation flow rate [veh/h]	3277	1772	1692	3277	3373	1506	3277	3373	1650	3277	3373	1603
c, Capacity [veh/h]	418	456	435	301	746	333	246	1493	731	246	1493	710
d1, Uniform Delay [s]	51.42	43.84	43.88	53.87	42.48	39.37	55.21	26.97	27.01	54.72	31.39	32.01
k, delay calibration	0.11	0.41	0.42	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.00	28.15	29.57	8.54	0.96	0.61	15.02	2.73	5.53	6.86	10.48	22.51
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.95	0.95	0.88	0.65	0.34	0.93	0.70	0.70	0.83	0.92	0.94
d, Delay for Lane Group [s/veh]	57.43	71.99	73.46	62.42	43.44	39.97	70.22	29.70	32.55	61.59	41.88	54.52
Lane Group LOS	E	E	E	E	D	D	E	C	C	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.76	16.12	15.61	4.32	6.61	2.90	3.97	12.41	12.77	3.26	20.30	22.50
50th-Percentile Queue Length [ft/ln]	144.05	402.90	390.17	108.05	165.34	72.50	99.25	310.37	319.35	81.47	507.60	562.56
95th-Percentile Queue Length [veh/ln]	9.70	22.70	22.09	7.73	10.83	5.22	7.15	18.19	18.64	5.87	27.69	30.28
95th-Percentile Queue Length [ft/ln]	242.47	567.49	552.14	193.28	270.78	130.49	178.64	454.83	465.88	146.64	692.34	757.05

Movement, Approach, & Intersection Results

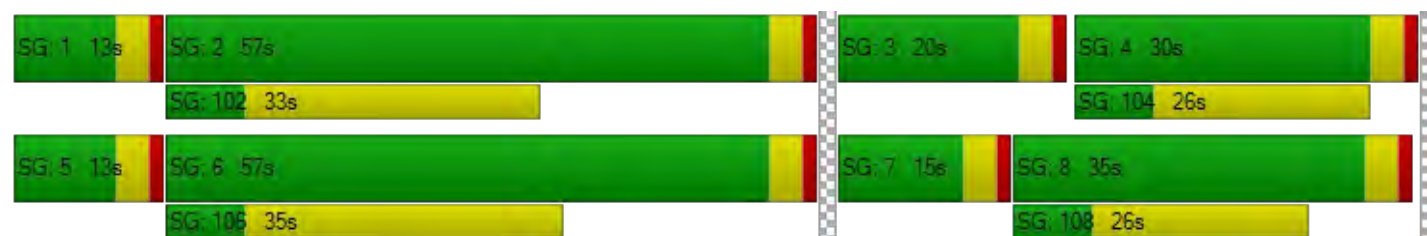
d_M, Delay for Movement [s/veh]	57.43	72.60	73.46	62.42	43.44	39.97	70.22	30.34	32.55	61.59	43.96	54.52
Movement LOS	E	E	E	E	D	D	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	68.10			48.82			35.74			47.43		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	48.33											
Intersection LOS	D											
Intersection V/C	0.940											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.810			2.918			3.215			3.222		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			433			883			883		
d_b, Bicycle Delay [s]	33.00			36.82			18.70			18.70		
I_b,int, Bicycle LOS Score for Intersection	2.563			2.272			2.541			2.793		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	43.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.911

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	81	914	347	167	649	351	579	1337	71	331	1178	268
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	914	347	167	649	351	579	1337	71	331	1178	268
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	229	87	42	162	88	145	334	18	83	295	67
Total Analysis Volume [veh/h]	81	914	347	167	649	351	579	1337	71	331	1178	268
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	44	44	11	45	45	27	47	0	18	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	36	54	7	37	64	23	47	47	14	38	38
g / C, Green / Cycle	0.05	0.30	0.45	0.06	0.31	0.53	0.19	0.39	0.39	0.12	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.05	0.27	0.23	0.05	0.19	0.23	0.18	0.28	0.05	0.10	0.29	0.29
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1609
c, Capacity [veh/h]	85	1002	673	192	1030	798	626	1902	593	383	1079	515
d1, Uniform Delay [s]	56.85	40.69	23.83	56.03	35.86	17.31	47.70	30.47	23.12	52.06	39.08	39.15
k, delay calibration	0.11	0.11	0.39	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.96	3.70	2.21	11.22	0.64	0.80	6.43	2.20	0.41	5.89	12.40	22.63
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.91	0.52	0.87	0.63	0.44	0.92	0.70	0.12	0.86	0.91	0.91
d, Delay for Lane Group [s/veh]	91.81	44.38	26.05	67.25	36.51	18.11	54.14	32.68	23.53	57.96	51.48	61.78
Lane Group LOS	F	D	C	E	D	B	D	C	C	E	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.27	13.39	7.42	2.81	8.23	6.03	9.03	11.07	1.36	5.20	15.48	16.31
50th-Percentile Queue Length [ft/ln]	81.86	334.70	185.45	70.19	205.80	150.70	225.73	276.64	33.96	130.08	387.09	407.87
95th-Percentile Queue Length [veh/ln]	5.89	19.39	11.88	5.05	12.94	10.05	13.96	16.52	2.45	8.94	21.94	22.94
95th-Percentile Queue Length [ft/ln]	147.34	484.72	297.12	126.34	323.44	251.36	348.93	413.03	61.13	223.60	548.42	573.48

Movement, Approach, & Intersection Results

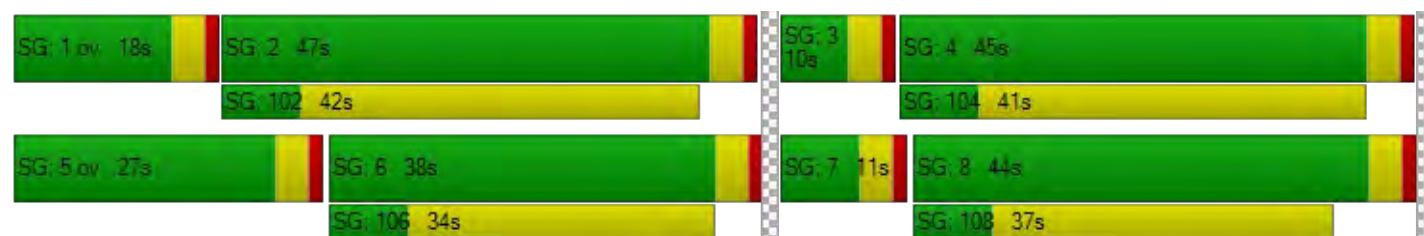
d_M, Delay for Movement [s/veh]	91.81	44.38	26.05	67.25	36.51	18.11	54.14	32.68	23.53	57.96	53.23	61.78
Movement LOS	F	D	C	E	D	B	D	C	C	E	D	E
d_A, Approach Delay [s/veh]	42.50			35.37			38.60			55.40		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	43.60											
Intersection LOS	D											
Intersection V/C	0.911											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.856			3.016			3.253			3.181		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			683			717			567		
d_b, Bicycle Delay [s]	26.67			26.00			24.70			30.82		
I_b,int, Bicycle LOS Score for Intersection	2.667			2.522			2.652			2.537		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 27: State College Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	61.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	536	1097	32	138	405	254	356	1139	311	21	1069	310
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	536	1097	32	138	405	254	356	1139	311	21	1069	310
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	134	274	8	35	101	64	89	285	78	5	267	78
Total Analysis Volume [veh/h]	536	1097	32	138	405	254	356	1139	311	21	1069	310
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	52	0	11	44	44	14	46	46	11	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	42	7	34	48	10	52	71	3	45	45
g / C, Green / Cycle	0.13	0.35	0.06	0.28	0.40	0.08	0.43	0.59	0.03	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.16	0.33	0.04	0.08	0.17	0.11	0.34	0.21	0.01	0.28	0.28
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1575
c, Capacity [veh/h]	410	1183	190	1368	603	274	1458	890	84	1263	590
d1, Uniform Delay [s]	52.50	37.48	55.61	33.64	25.95	55.00	29.20	12.66	57.35	32.56	32.57
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	141.85	3.75	5.26	0.12	0.47	140.49	4.22	1.08	1.54	4.01	8.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.31	0.93	0.73	0.30	0.42	1.30	0.78	0.35	0.25	0.74	0.74
d, Delay for Lane Group [s/veh]	194.35	41.23	60.88	33.76	26.42	195.49	33.42	13.74	58.88	36.57	40.86
Lane Group LOS	F	D	E	C	C	F	C	B	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	14.25	15.85	2.19	3.11	5.30	9.48	14.65	4.48	0.33	12.42	12.30
50th-Percentile Queue Length [ft/ln]	356.14	396.28	54.84	77.71	132.55	237.12	366.20	112.12	8.27	310.40	307.54
95th-Percentile Queue Length [veh/ln]	22.66	22.38	3.95	5.60	9.08	15.81	20.92	7.96	0.60	18.19	18.05
95th-Percentile Queue Length [ft/ln]	566.42	559.52	98.72	139.88	226.95	395.17	523.12	198.95	14.89	454.87	451.35

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	194.35	41.23	0.00	60.88	33.76	26.42	195.49	33.42	13.74	58.88	37.09	40.86
Movement LOS	F	D		E	C	C	F	C	B	E	D	D
d_A, Approach Delay [s/veh]	91.49			36.11			61.97			38.25		
Approach LOS	F			D			E			D		
d_I, Intersection Delay [s/veh]	60.98											
Intersection LOS	E											
Intersection V/C	0.871											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.028			3.051			3.186			2.981		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			667			700			650		
d_b, Bicycle Delay [s]	21.60			26.67			25.35			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.907			1.998			3.050			2.330		
Bicycle LOS	C			A			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	18.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	69	133	55	103	142	86	76	1256	50	47	1268	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	133	55	103	142	86	76	1256	50	47	1268	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	33	14	26	36	22	19	314	13	12	317	23
Total Analysis Volume [veh/h]	69	133	55	103	142	86	76	1256	50	47	1268	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	32	0	17	32	0	10	31	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	7	7	7	9	9	5	55	55	4	55	55
g / C, Green / Cycle	0.06	0.08	0.08	0.08	0.10	0.10	0.06	0.62	0.62	0.05	0.61	0.61
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.06	0.06	0.07	0.07	0.05	0.26	0.26	0.03	0.27	0.27
s, saturation flow rate [veh/h]	1687	1772	1602	1687	1772	1556	1687	3373	1737	1687	3373	1711
c, Capacity [veh/h]	95	147	133	132	186	163	98	2071	1067	80	2035	1032
d1, Uniform Delay [s]	41.89	40.10	40.23	40.81	38.70	38.86	41.88	9.02	9.02	42.09	9.68	9.68
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.24	4.88	6.26	9.59	3.57	4.71	12.16	0.62	1.20	6.68	0.70	1.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.73	0.66	0.69	0.78	0.64	0.67	0.77	0.42	0.42	0.59	0.44	0.44
d, Delay for Lane Group [s/veh]	52.13	44.98	46.49	50.40	42.27	43.57	54.05	9.64	10.22	48.76	10.39	11.07
Lane Group LOS	D	D	D	D	D	D	D	A	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.76	2.24	2.19	2.57	2.66	2.52	1.98	4.08	4.37	1.16	4.51	4.77
50th-Percentile Queue Length [ft/ln]	44.05	56.05	54.65	64.18	66.49	62.97	49.48	101.88	109.23	29.06	112.73	119.23
95th-Percentile Queue Length [veh/ln]	3.17	4.04	3.93	4.62	4.79	4.53	3.56	7.34	7.80	2.09	7.99	8.35
95th-Percentile Queue Length [ft/ln]	79.29	100.90	98.37	115.53	119.68	113.35	89.06	183.38	194.93	52.30	199.80	208.77

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	52.13	45.40	46.49	50.40	42.49	43.57	54.05	9.82	10.22	48.76	10.58	11.07
Movement LOS	D	D	D	D	D	D	D	A	B	D	B	B
d_A, Approach Delay [s/veh]	47.44			45.23			12.27			11.89		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	18.02											
Intersection LOS	B											
Intersection V/C	0.524											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.396			2.423			2.984			2.986		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	622			622			600			600		
d_b, Bicycle Delay [s]	21.36			21.36			22.05			22.05		
I_b,int, Bicycle LOS Score for Intersection	1.772			1.833			2.320			2.333		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	39.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.803

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	306	394	173	163	711	175	68	1197	271	242	1057	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	306	394	173	163	711	175	68	1197	271	242	1057	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	99	43	41	178	44	17	299	68	61	264	14
Total Analysis Volume [veh/h]	306	394	173	163	711	175	68	1197	271	242	1057	54
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	39	0	17	39	0	10	42	0	22	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	28	28	13	28	28	6	45	45	18	57	57
g / C, Green / Cycle	0.11	0.24	0.24	0.11	0.24	0.24	0.05	0.37	0.37	0.15	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.09	0.12	0.11	0.10	0.21	0.12	0.04	0.25	0.18	0.14	0.22	0.22
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1728
c, Capacity [veh/h]	358	794	354	184	794	354	87	1793	560	254	1588	813
d1, Uniform Delay [s]	52.56	39.77	39.69	52.74	44.51	39.75	56.30	31.54	28.92	50.59	21.51	21.51
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.14	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.84	0.48	1.04	12.86	3.90	1.07	14.07	1.99	2.98	20.15	0.97	1.89
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.50	0.49	0.88	0.90	0.49	0.78	0.67	0.48	0.95	0.46	0.46
d, Delay for Lane Group [s/veh]	58.40	40.25	40.73	65.60	48.40	40.81	70.38	33.53	31.91	70.73	22.48	23.40
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.82	5.10	4.52	5.50	10.62	4.58	2.38	9.91	6.43	8.61	7.13	7.52
50th-Percentile Queue Length [ft/ln]	120.49	127.44	113.07	137.53	265.42	114.58	59.46	247.75	160.75	215.33	178.33	187.92
95th-Percentile Queue Length [veh/ln]	8.42	8.80	8.01	9.35	15.96	8.09	4.28	15.07	10.59	13.43	11.51	12.01
95th-Percentile Queue Length [ft/ln]	210.51	220.01	200.27	233.69	399.01	202.35	107.03	376.81	264.71	335.66	287.83	300.32

Movement, Approach, & Intersection Results

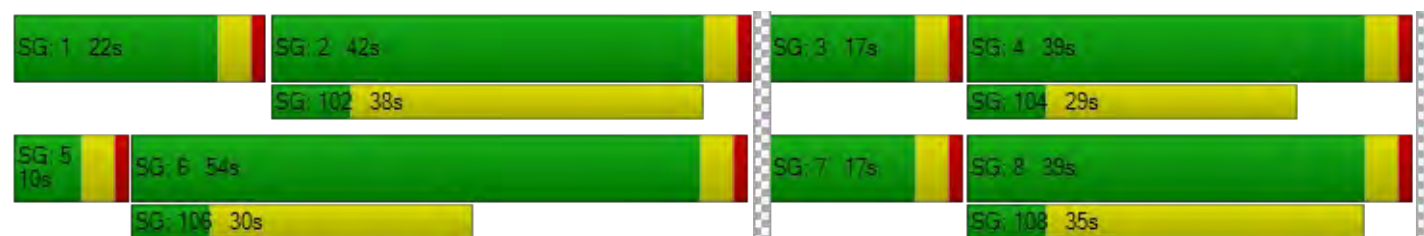
d_M, Delay for Movement [s/veh]	58.40	40.25	40.73	65.60	48.40	40.81	70.38	33.53	31.91	70.73	22.76	23.40
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	46.71			49.81			34.88			31.37		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	39.29											
Intersection LOS	D											
Intersection V/C	0.803											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.900			2.721			3.114			3.010		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			583			633			833		
d_b, Bicycle Delay [s]	30.10			30.10			28.02			20.42		
I_b,int, Bicycle LOS Score for Intersection	2.280			2.425			2.404			2.304		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	49.7
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.874

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	167	256	415	510	361	6	19	1161	301	757	1598	728
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	167	256	415	510	361	6	19	1161	301	757	1598	728
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	64	104	128	90	2	5	290	75	189	400	182
Total Analysis Volume [veh/h]	167	256	415	510	361	6	19	1161	301	757	1598	728
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	32	0	22	44	0	10	39	0	27	56	56
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	20	20	20	18	32	32	3	43	43	23	63	85
g / C, Green / Cycle	0.05	0.16	0.16	0.16	0.15	0.26	0.26	0.02	0.36	0.36	0.19	0.53	0.71
(v / s)_i Volume / Saturation Flow Rate	0.05	0.14	0.14	0.14	0.16	0.10	0.10	0.01	0.23	0.23	0.23	0.33	0.48
s, saturation flow rate [veh/h]	3277	1772	1515	1506	3277	1772	1761	3277	4826	1542	3277	4826	1506
c, Capacity [veh/h]	166	292	249	248	493	468	465	80	1737	555	628	2545	1071
d1, Uniform Delay [s]	56.98	48.70	48.72	48.73	51.01	36.27	36.27	57.47	31.90	31.97	48.52	20.04	9.70
k, delay calibration	0.11	0.13	0.13	0.13	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.47	7.91	9.32	9.38	28.77	0.54	0.54	1.51	1.80	5.61	95.58	1.18	3.49
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.85	0.85	0.85	1.04	0.39	0.39	0.24	0.64	0.64	1.20	0.63	0.68
d, Delay for Lane Group [s/veh]	90.45	56.62	58.05	58.11	79.78	36.81	36.81	58.98	33.69	37.57	144.10	21.23	13.19
Lane Group LOS	F	E	E	E	F	D	D	E	C	D	F	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.29	7.83	6.81	6.78	9.34	4.52	4.49	0.30	9.11	9.40	17.70	10.51	10.52
50th-Percentile Queue Length [ft/ln]	82.35	195.7	170.3	169.4	233.61	112.88	112.24	7.50	227.77	235.01	442.46	262.80	263.11
95th-Percentile Queue Length [veh/ln]	5.93	12.42	11.09	11.05	14.59	8.00	7.96	0.54	14.06	14.43	26.93	15.83	15.84
95th-Percentile Queue Length [ft/ln]	148.2	310.4	277.3	276.1	364.73	200.00	199.12	13.51	351.52	360.72	673.15	395.73	396.12

Movement, Approach, & Intersection Results

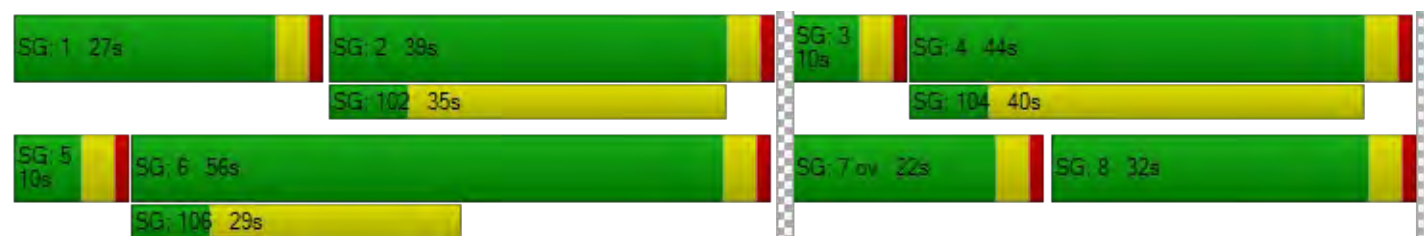
d_M, Delay for Movement [s/veh]	90.45	56.66	58.08	79.78	36.81	36.81	58.98	33.88	37.57	144.10	21.23	13.19
Movement LOS	F	E	E	F	D	D	E	C	D	F	C	B
d_A, Approach Delay [s/veh]	64.10			61.80			34.95			49.50		
Approach LOS	E			E			C			D		
d_I, Intersection Delay [s/veh]	49.73											
Intersection LOS	D											
Intersection V/C	0.874											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.922			2.772			3.215			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	467			667			583			867		
d_b, Bicycle Delay [s]	35.27			26.67			30.10			19.27		
I_b,int, Bicycle LOS Score for Intersection	2.251			2.283			2.171			3.255		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	36.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.937

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	844	0	1185	0	1491	580	185	1923	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	844	0	1185	0	1491	580	185	1923	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	211	0	296	0	373	145	46	481	0
Total Analysis Volume [veh/h]	0	0	0	844	0	1185	0	1491	580	185	1923	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	71	0	0	0	37	0	12	49	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		59	59	41	41	8	53
g / C, Green / Cycle		0.49	0.49	0.34	0.34	0.07	0.44
(v / s)_i Volume / Saturation Flow Rate		0.26	0.44	0.31	0.22	0.06	0.40
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1608	1308	1649	911	221	2135
d1, Uniform Delay [s]		20.94	28.00	37.60	33.21	55.28	30.98
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.27	2.69	8.58	3.39	8.18	6.64
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.52	0.91	0.90	0.64	0.84	0.90
d, Delay for Lane Group [s/veh]		21.21	30.69	46.17	36.60	63.46	37.63
Lane Group LOS		C	C	D	D	E	D
Critical Lane Group		No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.06	15.51	15.01	7.49	3.02	18.04
50th-Percentile Queue Length [ft/ln]		201.57	387.73	375.13	187.19	75.40	451.05
95th-Percentile Queue Length [veh/ln]		12.72	21.97	21.36	11.98	5.43	25.01
95th-Percentile Queue Length [ft/ln]		317.99	549.19	533.95	299.38	135.72	625.20

Movement, Approach, & Intersection Results

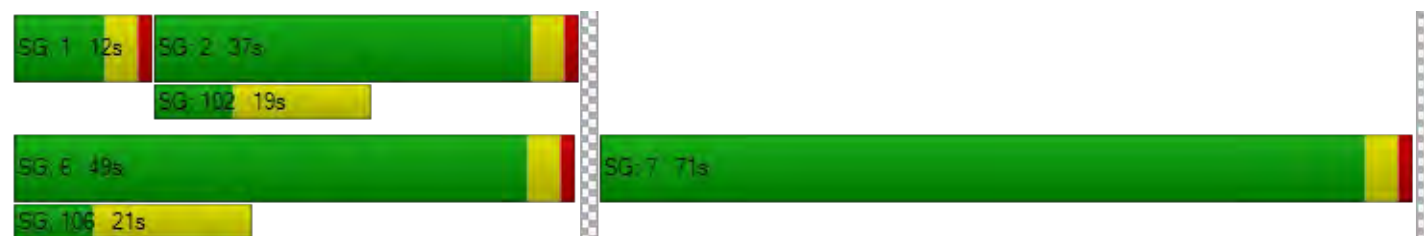
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	21.21	0.00	30.69	0.00	46.17	36.60	63.46	37.63	0.00
Movement LOS				C		C		D	D	E	D	
d_A, Approach Delay [s/veh]	0.00			26.75			43.49			39.89		
Approach LOS	A			C			D			D		
d_I, Intersection Delay [s/veh]	36.80											
Intersection LOS	D											
Intersection V/C	0.937											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0		11.0		0.0		0.0	
M_corner, Corner Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00		0.00		0.00		0.00	
d_p, Pedestrian Delay [s]	49.50		49.50		0.00		0.00	
I_p,int, Pedestrian LOS Score for Intersection	2.102		2.639		0.000		0.000	
Crosswalk LOS	B		B		F		F	
s_b, Saturation Flow Rate of the bicycle lane	2000		2000		2000		2000	
c_b, Capacity of the bicycle lane [bicycles/h]	0		0		550		750	
d_b, Bicycle Delay [s]	60.00		60.00		31.54		23.44	
I_b,int, Bicycle LOS Score for Intersection	4.132		4.132		2.699		2.719	
Bicycle LOS	D		D		B		B	

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	22.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.859

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↶↶↶						↷↷↷			↷↷↷		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1169	0	477	0	0	0	0	1631	705	0	960	438
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1169	0	477	0	0	0	0	1631	705	0	960	438
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	292	0	119	0	0	0	0	408	176	0	240	110
Total Analysis Volume [veh/h]	1169	0	477	0	0	0	0	1631	705	0	960	438
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	58	0	0	0	0	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	21	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37		45	45	45	45
g / C, Green / Cycle	0.41	0.41		0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.36	0.32		0.35	0.38	0.39	0.20
s, saturation flow rate [veh/h]	3277	1506		3373	1528	1506	4826
c, Capacity [veh/h]	1353	622		1680	761	750	2403
d1, Uniform Delay [s]	24.07	22.66		17.31	18.32	18.49	14.13
k, delay calibration	0.11	0.11		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.78	2.14		2.40	7.31	7.83	0.50
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.77		0.70	0.77	0.78	0.40
d, Delay for Lane Group [s/veh]	25.84	24.80		19.71	25.63	26.32	14.62
Lane Group LOS	C	C		B	C	C	B
Critical Lane Group	Yes	No		No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.02	8.58		9.19	10.68	10.85	3.97
50th-Percentile Queue Length [ft/ln]	275.62	214.58		229.86	267.05	271.28	99.28
95th-Percentile Queue Length [veh/ln]	16.47	13.39		14.17	16.04	16.25	7.15
95th-Percentile Queue Length [ft/ln]	411.76	334.70		354.18	401.05	406.34	178.71

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.84	0.00	24.80	0.00	0.00	0.00	0.00	19.98	26.20	0.00	14.62	0.00
Movement LOS	C		C					B	C		B	
d_A, Approach Delay [s/veh]	25.54			0.00			22.84			14.62		
Approach LOS	C			A			C			B		
d_I, Intersection Delay [s/veh]	22.15											
Intersection LOS	C											
Intersection V/C	0.859											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.758	0.000	0.000	0.000
Crosswalk LOS	C	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	622	622
d_b, Bicycle Delay [s]	45.00	45.00	21.36	21.36
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.844	2.088
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	27.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.643

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	378	147	123	1	148	213	156	853	656	130	732	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	147	123	1	148	213	156	853	656	130	732	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	37	31	0	37	53	39	213	164	33	183	2
Total Analysis Volume [veh/h]	378	147	123	1	148	213	156	853	656	130	732	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	52	52	10	43	0	16	38	38	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	33	43	0	18	18	12	55	74	6	49	49
g / C, Green / Cycle	0.13	0.30	0.39	0.00	0.16	0.16	0.11	0.50	0.67	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.12	0.08	0.08	0.00	0.08	0.14	0.09	0.25	0.25	0.04	0.14	0.14
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1763
c, Capacity [veh/h]	440	524	584	5	291	248	184	1689	1789	181	1508	788
d1, Uniform Delay [s]	46.65	29.76	22.48	54.79	41.94	44.77	48.18	18.37	7.89	51.16	19.65	19.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.01	0.29	0.18	22.41	1.37	8.51	10.39	1.08	0.58	5.22	0.56	1.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.28	0.21	0.22	0.51	0.86	0.85	0.51	0.37	0.72	0.32	0.32
d, Delay for Lane Group [s/veh]	51.66	30.05	22.66	77.20	43.31	53.28	58.56	19.45	8.47	56.37	20.21	20.73
Lane Group LOS	D	C	C	E	D	D	E	B	A	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.35	3.03	2.15	0.06	3.77	6.21	4.72	7.31	3.25	1.89	4.08	4.38
50th-Percentile Queue Length [ft/ln]	133.66	75.75	53.79	1.40	94.28	155.22	117.97	182.63	81.35	47.29	102.05	109.59
95th-Percentile Queue Length [veh/ln]	9.14	5.45	3.87	0.10	6.79	10.30	8.28	11.74	5.86	3.40	7.35	7.82
95th-Percentile Queue Length [ft/ln]	228.47	136.35	96.83	2.52	169.71	257.39	207.03	293.44	146.44	85.12	183.69	195.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.66	30.05	22.66	77.20	43.31	53.28	58.56	19.45	8.47	56.37	20.39	20.73
Movement LOS	D	C	C	E	D	D	E	B	A	E	C	C
d_A, Approach Delay [s/veh]	41.25			49.27			18.79			25.77		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	27.72											
Intersection LOS	C											
Intersection V/C	0.643											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.719			2.304			3.099			2.861		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	873			709			618			509		
d_b, Bicycle Delay [s]	17.47			22.91			26.25			30.56		
I_b,int, Bicycle LOS Score for Intersection	2.629			2.157			2.933			2.038		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	30.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.648

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	99	474	307	363	924	101	87	125	39	345	139	325
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	474	307	363	924	101	87	125	39	345	139	325
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	119	77	91	231	25	22	31	10	86	35	81
Total Analysis Volume [veh/h]	99	474	307	363	924	101	87	125	39	345	139	325
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	18	28	0	18	28	0	11	37	0	22	48	48
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	49	49	14	56	56	7	12	13	19	37
g / C, Green / Cycle	0.07	0.47	0.47	0.13	0.53	0.53	0.06	0.12	0.13	0.18	0.35
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.20	0.11	0.20	0.20	0.05	0.10	0.11	0.08	0.22
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1684	1687	1700	3277	1772	1506
c, Capacity [veh/h]	125	1586	708	438	1787	892	110	198	417	316	527
d1, Uniform Delay [s]	47.86	17.16	18.53	44.35	14.57	14.57	48.41	45.40	44.74	38.49	28.29
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.58	0.48	1.93	4.06	0.62	1.25	11.74	8.50	4.23	0.96	1.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.30	0.43	0.83	0.38	0.38	0.79	0.83	0.83	0.44	0.62
d, Delay for Lane Group [s/veh]	58.45	17.65	20.46	48.42	15.20	15.82	60.15	53.91	48.97	39.46	29.47
Lane Group LOS	E	B	C	D	B	B	E	D	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.91	3.57	5.22	4.82	4.79	4.93	2.60	4.63	4.60	3.27	6.84
50th-Percentile Queue Length [ft/ln]	72.69	89.19	130.50	120.50	119.69	123.35	64.96	115.66	115.04	81.67	171.02
95th-Percentile Queue Length [veh/ln]	5.23	6.42	8.97	8.42	8.38	8.58	4.68	8.15	8.12	5.88	11.13
95th-Percentile Queue Length [ft/ln]	130.84	160.54	224.18	210.51	209.39	214.43	116.93	203.84	202.99	147.01	278.25

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.45	17.65	20.46	48.42	15.36	15.82	60.15	53.91	53.91	48.97	39.46	29.47
Movement LOS	E	B	C	D	B	B	E	D	D	D	D	C
d_A, Approach Delay [s/veh]	23.22			24.04			56.07			39.50		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	30.00											
Intersection LOS	C											
Intersection V/C	0.648											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.906			3.010			2.139			2.721		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	457			457			629			838		
d_b, Bicycle Delay [s]	31.24			31.24			24.69			17.72		
I_b,int, Bicycle LOS Score for Intersection	2.044			2.323			1.974			2.894		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.505

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	96	76	176	53	36	79	88	660	124	157	811	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	96	76	176	53	36	79	88	660	124	157	811	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	24	19	44	13	9	20	22	165	31	39	203	7
Total Analysis Volume [veh/h]	96	76	176	53	36	79	88	660	124	157	811	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	18	18	18	18	6	50	50	10	54	54
g / C, Green / Cycle	0.20	0.20	0.20	0.20	0.20	0.07	0.56	0.56	0.11	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.08	0.04	0.12	0.04	0.07	0.05	0.23	0.23	0.09	0.24	0.02
s, saturation flow rate [veh/h]	1277	1772	1506	1323	1580	1687	1772	1675	1687	3373	1506
c, Capacity [veh/h]	211	345	293	252	307	113	990	936	191	2041	911
d1, Uniform Delay [s]	39.17	30.51	33.07	35.47	31.50	41.34	11.34	11.34	39.02	9.24	7.14
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.52	0.32	1.98	0.41	0.75	10.92	1.24	1.31	8.44	0.58	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.45	0.22	0.60	0.21	0.37	0.78	0.41	0.41	0.82	0.40	0.03
d, Delay for Lane Group [s/veh]	40.69	30.83	35.05	35.87	32.25	52.26	12.58	12.65	47.46	9.82	7.20
Lane Group LOS	D	C	D	D	C	D	B	B	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.12	1.40	3.60	1.07	2.20	2.24	4.60	4.37	3.79	3.90	0.21
50th-Percentile Queue Length [ft/ln]	52.92	34.99	89.92	26.73	55.06	56.03	114.88	109.19	94.69	97.51	5.19
95th-Percentile Queue Length [veh/ln]	3.81	2.52	6.47	1.92	3.96	4.03	8.11	7.80	6.82	7.02	0.37
95th-Percentile Queue Length [ft/ln]	95.25	62.98	161.85	48.11	99.12	100.86	202.77	194.88	170.43	175.51	9.34

Movement, Approach, & Intersection Results

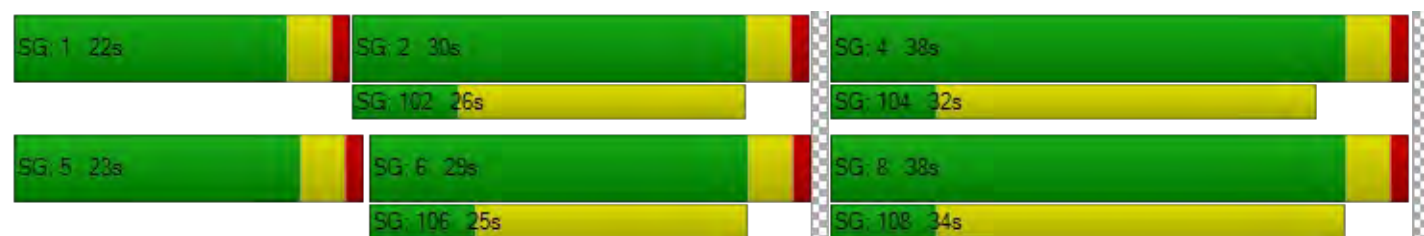
d_M, Delay for Movement [s/veh]	40.69	30.83	35.05	35.87	32.25	32.25	52.26	12.61	12.65	47.46	9.82	7.20
Movement LOS	D	C	D	D	C	C	D	B	B	D	A	A
d_A, Approach Delay [s/veh]	35.69			33.40			16.62			15.68		
Approach LOS	D			C			B			B		
d_I, Intersection Delay [s/veh]	20.19											
Intersection LOS	C											
Intersection V/C	0.505											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.293			2.056			2.798			2.834		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.134			1.837			2.279			2.380		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	43.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.821

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TWO			TWO			TWO			TWO		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	121	411	179	277	706	511	300	722	167	172	698	240
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	411	179	277	706	511	300	722	167	172	698	240
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	103	45	69	177	128	75	181	42	43	175	60
Total Analysis Volume [veh/h]	121	411	179	277	706	511	300	722	167	172	698	240
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	28	57	0	16	41	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	41	41	13	48	48	12	42	42	8	38	38
g / C, Green / Cycle	0.05	0.34	0.34	0.10	0.40	0.40	0.10	0.35	0.35	0.07	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.04	0.12	0.12	0.08	0.36	0.38	0.09	0.21	0.11	0.05	0.21	0.16
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1532	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	164	1161	518	343	706	611	328	1184	529	219	1072	478
d1, Uniform Delay [s]	56.21	29.38	29.28	52.56	33.99	34.79	53.49	32.16	28.43	55.15	35.22	33.23
k, delay calibration	0.11	0.11	0.11	0.11	0.34	0.36	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.26	0.18	0.40	4.55	12.78	19.93	10.04	2.34	1.56	6.11	3.08	3.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.35	0.35	0.81	0.91	0.94	0.91	0.61	0.32	0.79	0.65	0.50
d, Delay for Lane Group [s/veh]	62.47	29.57	29.68	57.10	46.78	54.72	63.53	34.50	29.99	61.26	38.30	36.96
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.95	4.47	3.91	4.30	19.71	19.22	4.93	9.00	3.75	2.75	9.20	6.17
50th-Percentile Queue Length [ft/ln]	48.77	111.65	97.70	107.41	492.80	480.52	123.37	225.10	93.86	68.70	230.10	154.23
95th-Percentile Queue Length [veh/ln]	3.51	7.93	7.03	7.70	26.99	26.41	8.58	13.93	6.76	4.95	14.18	10.24
95th-Percentile Queue Length [ft/ln]	87.79	198.29	175.86	192.39	674.84	660.27	214.45	348.13	168.94	123.65	354.49	256.07

Movement, Approach, & Intersection Results

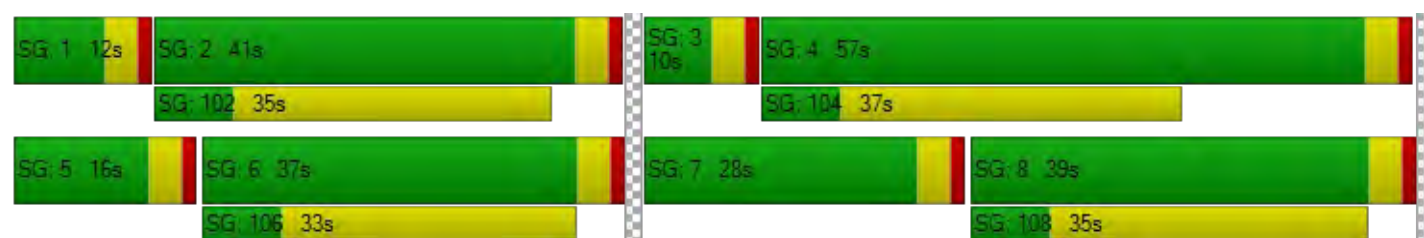
d_M, Delay for Movement [s/veh]	62.47	29.57	29.68	57.10	47.51	54.72	63.53	34.50	29.99	61.26	38.30	36.96
Movement LOS	E	C	C	E	D	D	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	35.19			51.76			41.19			41.57		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	43.84											
Intersection LOS	D											
Intersection V/C	0.821											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.852			2.864			2.959			2.926		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			883			617			550		
d_b, Bicycle Delay [s]	30.10			18.70			28.70			31.54		
I_b,int, Bicycle LOS Score for Intersection	2.146			2.792			2.541			2.475		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.589

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	359	19	222	12	21	13	8	724	330	181	719	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	19	222	12	21	13	8	724	330	181	719	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	5	56	3	5	3	2	181	83	45	180	3
Total Analysis Volume [veh/h]	359	19	222	12	21	13	8	724	330	181	719	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	60	60	0	37	0	10	38	0	12	40	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	23	35	5	5	1	67	67	8	74	74
g / C, Green / Cycle	0.13	0.21	0.32	0.04	0.04	0.01	0.61	0.61	0.07	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.11	0.01	0.15	0.01	0.02	0.00	0.31	0.31	0.06	0.21	0.21
s, saturation flow rate [veh/h]	3277	1772	1506	1393	1660	1687	1772	1586	3277	1772	1761
c, Capacity [veh/h]	427	369	478	89	69	21	1080	967	239	1187	1181
d1, Uniform Delay [s]	46.74	34.86	30.04	53.65	51.59	53.93	12.22	12.23	50.04	7.54	7.54
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	0.06	0.74	0.68	5.32	11.13	1.75	1.96	4.82	0.68	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.05	0.46	0.14	0.49	0.38	0.51	0.52	0.76	0.31	0.31
d, Delay for Lane Group [s/veh]	51.27	34.92	30.78	54.34	56.91	65.06	13.98	14.19	54.86	8.22	8.22
Lane Group LOS	D	C	C	D	E	E	B	B	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.05	0.42	4.78	0.35	1.02	0.28	7.84	7.09	2.60	3.54	3.52
50th-Percentile Queue Length [ft/ln]	126.16	10.39	119.52	8.64	25.47	7.10	196.06	177.14	64.95	88.46	87.98
95th-Percentile Queue Length [veh/ln]	8.73	0.75	8.37	0.62	1.83	0.51	12.44	11.45	4.68	6.37	6.33
95th-Percentile Queue Length [ft/ln]	218.26	18.69	209.17	15.56	45.85	12.78	310.88	286.27	116.92	159.22	158.36

Movement, Approach, & Intersection Results

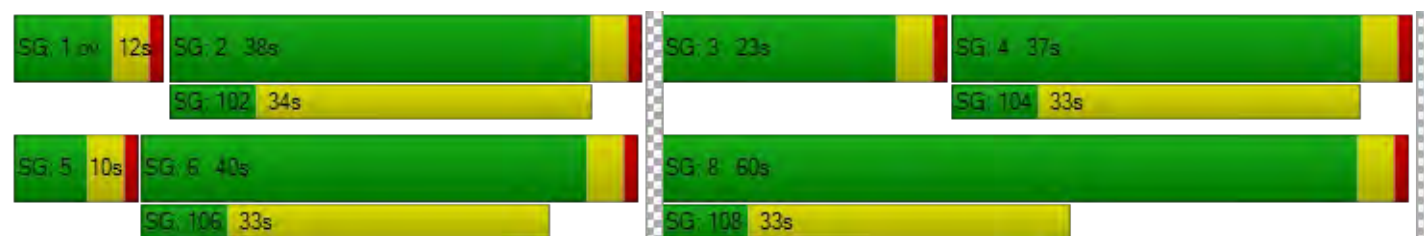
d_M, Delay for Movement [s/veh]	51.27	34.92	30.78	54.34	56.91	56.91	65.06	14.03	14.19	54.86	8.22	8.22
Movement LOS	D	C	C	D	E	E	E	B	B	D	A	A
d_A, Approach Delay [s/veh]	43.17			56.24			14.46			17.48		
Approach LOS	D			E			B			B		
d_I, Intersection Delay [s/veh]	22.82											
Intersection LOS	C											
Intersection V/C	0.589											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.646			1.977			2.729			2.783		
Crosswalk LOS	B			A			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1018			600			618			655		
d_b, Bicycle Delay [s]	13.25			26.95			26.25			24.89		
I_b,int, Bicycle LOS Score for Intersection	2.550			1.636			2.436			2.312		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.492

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	94	4	207	172	828	5	11	656	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	94	4	207	172	828	5	11	656	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	2	24	1	52	43	207	1	3	164	19
Total Analysis Volume [veh/h]	10	2	8	94	4	207	172	828	5	11	656	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	34	38	0	28	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	3	3	14	14	39	14	75	75	2	63	63
g / C, Green / Cycle	0.03	0.03	0.03	0.13	0.13	0.35	0.13	0.69	0.69	0.02	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.03	0.03	0.14	0.10	0.24	0.24	0.01	0.19	0.05
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1694	1506	1687	1772	1768	1687	3373	1506
c, Capacity [veh/h]	82	46	39	215	215	534	217	1213	1211	28	1932	863
d1, Uniform Delay [s]	54.18	52.27	52.49	43.19	43.19	26.59	46.55	7.15	7.15	53.58	12.47	10.59
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.66	0.38	2.50	0.53	0.53	0.46	6.41	0.78	0.78	8.65	0.48	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.04	0.20	0.23	0.23	0.39	0.79	0.34	0.34	0.39	0.34	0.09
d, Delay for Lane Group [s/veh]	54.85	52.65	54.99	43.73	43.73	27.05	52.96	7.93	7.93	62.23	12.95	10.79
Lane Group LOS	D	D	D	D	D	C	D	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.29	0.06	0.24	1.23	1.23	4.11	4.94	3.93	3.92	0.37	4.27	0.87
50th-Percentile Queue Length [ft/ln]	7.26	1.47	6.09	30.76	30.86	102.86	123.41	98.22	98.03	9.21	106.67	21.84
95th-Percentile Queue Length [veh/ln]	0.52	0.11	0.44	2.21	2.22	7.41	8.58	7.07	7.06	0.66	7.65	1.57
95th-Percentile Queue Length [ft/ln]	13.07	2.64	10.97	55.37	55.55	185.15	214.50	176.80	176.45	16.58	191.37	39.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.85	52.65	54.99	43.73	43.73	27.05	52.96	7.93	7.93	62.23	12.95	10.79
Movement LOS	D	D	D	D	D	C	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	54.68			32.41			15.64			13.46		
Approach LOS	D			C			B			B		
d_I, Intersection Delay [s/veh]	17.70											
Intersection LOS	B											
Intersection V/C	0.492											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.150			2.276			2.690			0.000		
Crosswalk LOS	B			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			545			618			509		
d_b, Bicycle Delay [s]	49.16			29.09			26.25			30.56		
I_b,int, Bicycle LOS Score for Intersection	1.593			2.063			2.389			2.173		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	35.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.552

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	240	426	63	164	662	129	171	470	309	58	387	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	426	63	164	662	129	171	470	309	58	387	116
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	107	16	41	166	32	43	118	77	15	97	29
Total Analysis Volume [veh/h]	240	426	63	164	662	129	171	470	309	58	387	116
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	37	0	15	37	0	19	47	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	56	56	8	53	53	13	26	26	5	18	18
g / C, Green / Cycle	0.09	0.51	0.51	0.07	0.48	0.48	0.12	0.23	0.23	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.10	0.05	0.16	0.16	0.10	0.14	0.21	0.03	0.11	0.08
s, saturation flow rate [veh/h]	3277	3373	1658	3277	3373	1629	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	300	1705	838	225	1629	787	200	790	352	78	546	244
d1, Uniform Delay [s]	49.04	14.90	14.92	50.25	17.47	17.50	47.61	37.52	40.63	51.86	43.68	41.89
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.96	0.25	0.52	4.44	0.53	1.12	10.03	0.72	6.97	13.00	1.71	1.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.19	0.19	0.73	0.33	0.33	0.86	0.60	0.88	0.74	0.71	0.48
d, Delay for Lane Group [s/veh]	53.99	15.15	15.44	54.69	18.01	18.62	57.64	38.24	47.60	64.86	45.39	43.33
Lane Group LOS	D	B	B	D	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.43	2.26	2.32	2.35	4.19	4.22	5.14	5.69	8.67	1.86	5.10	2.96
50th-Percentile Queue Length [ft/ln]	85.77	56.52	58.11	58.71	104.75	105.49	128.45	142.17	216.66	46.51	127.54	73.91
95th-Percentile Queue Length [veh/ln]	6.18	4.07	4.18	4.23	7.54	7.59	8.86	9.60	13.49	3.35	8.81	5.32
95th-Percentile Queue Length [ft/ln]	154.38	101.73	104.60	105.68	188.55	189.71	221.38	239.94	337.36	83.73	220.15	133.04

Movement, Approach, & Intersection Results

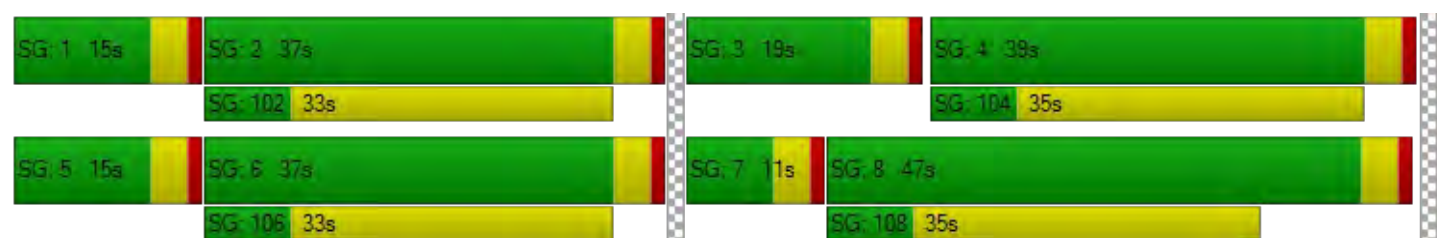
d_M, Delay for Movement [s/veh]	53.99	15.22	15.44	54.69	18.13	18.62	57.64	38.24	47.60	64.86	45.39	43.33
Movement LOS	D	B	B	D	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	28.00			24.47			44.78			46.98		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.27											
Intersection LOS	D											
Intersection V/C	0.552											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.949			2.938			2.740			2.667		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	600			600			782			636		
d_b, Bicycle Delay [s]	26.95			26.95			20.40			25.57		
I_b,int, Bicycle LOS Score for Intersection	1.961			2.085			2.343			2.022		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.258

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	22	284	114	71	270	21	35	11	60	82	4	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	284	114	71	270	21	35	11	60	82	4	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	71	29	18	68	5	9	3	15	21	1	15
Total Analysis Volume [veh/h]	22	284	114	71	270	21	35	11	60	82	4	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	29	43	0	17	31	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	60	60	5	62	62	13	13	13	13
g / C, Green / Cycle	0.03	0.66	0.66	0.06	0.69	0.69	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.12	0.04	0.08	0.08	0.03	0.05	0.06	0.04
s, saturation flow rate [veh/h]	1687	1772	1604	1687	1772	1727	1339	1542	1329	1520
c, Capacity [veh/h]	48	1173	1062	94	1221	1191	195	229	189	226
d1, Uniform Delay [s]	43.04	5.81	5.83	41.90	4.73	4.74	38.59	34.18	40.43	34.02
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.63	0.33	0.37	11.61	0.20	0.21	0.43	0.76	1.57	0.66
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.18	0.18	0.76	0.12	0.12	0.18	0.31	0.43	0.28
d, Delay for Lane Group [s/veh]	49.66	6.14	6.21	53.51	4.94	4.95	39.02	34.94	42.00	34.68
Lane Group LOS	D	A	A	D	A	A	D	C	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.57	1.40	1.32	1.84	0.85	0.84	0.74	1.42	1.84	1.25
50th-Percentile Queue Length [ft/ln]	14.14	34.97	33.05	45.98	21.17	20.91	18.53	35.45	45.93	31.28
95th-Percentile Queue Length [veh/ln]	1.02	2.52	2.38	3.31	1.52	1.51	1.33	2.55	3.31	2.25
95th-Percentile Queue Length [ft/ln]	25.46	62.94	59.50	82.77	38.11	37.64	33.36	63.82	82.67	56.31

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.66	6.16	6.21	53.51	4.94	4.95	39.02	34.94	34.94	42.00	34.68	34.68
Movement LOS	D	A	A	D	A	A	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	8.45			14.47			36.29			38.82		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	17.68											
Intersection LOS	B											
Intersection V/C	0.258											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.578			2.493			1.989			2.051		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	867			600			578			578		
d_b, Bicycle Delay [s]	14.45			22.05			22.76			22.76		
I_b,int, Bicycle LOS Score for Intersection	1.906			1.858			1.735			1.799		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	23.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.524

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	23	334	426	43	300	22	25	18	27	392	8	73
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	334	426	43	300	22	25	18	27	392	8	73
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	84	107	11	75	6	6	5	7	98	2	18
Total Analysis Volume [veh/h]	23	334	426	43	300	22	25	18	27	392	8	73
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	66	58	58	66	59	59	5	5	17	17
g / C, Green / Cycle	0.66	0.58	0.58	0.66	0.59	0.59	0.05	0.05	0.17	0.17
(v / s)_i Volume / Saturation Flow Rate	0.02	0.19	0.28	0.05	0.09	0.09	0.02	0.02	0.14	0.14
s, saturation flow rate [veh/h]	1104	1772	1506	798	1772	1730	1722	1506	1687	1628
c, Capacity [veh/h]	785	1023	869	509	1047	1022	89	78	284	274
d1, Uniform Delay [s]	5.98	11.01	12.46	7.56	9.22	9.23	46.12	45.79	40.36	40.36
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.85	1.97	0.33	0.32	0.33	3.96	2.60	6.90	7.13
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.33	0.49	0.08	0.15	0.16	0.48	0.35	0.85	0.85
d, Delay for Lane Group [s/veh]	6.00	11.86	14.44	7.89	9.54	9.56	50.08	48.39	47.27	47.50
Lane Group LOS	A	B	B	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.16	3.88	5.73	0.34	1.60	1.58	1.13	0.70	6.22	6.02
50th-Percentile Queue Length [ft/ln]	3.90	97.01	143.19	8.39	40.07	39.58	28.33	17.54	155.62	150.62
95th-Percentile Queue Length [veh/ln]	0.28	6.98	9.65	0.60	2.89	2.85	2.04	1.26	10.32	10.05
95th-Percentile Queue Length [ft/ln]	7.03	174.61	241.31	15.09	72.13	71.24	51.00	31.57	257.91	251.26

Movement, Approach, & Intersection Results

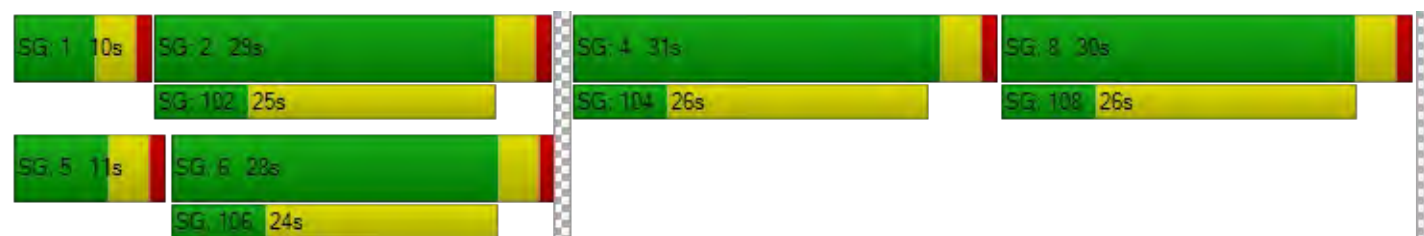
d_M, Delay for Movement [s/veh]	6.00	11.86	14.44	7.89	9.55	9.56	50.08	50.08	48.39	47.36	47.50	47.50
Movement LOS	A	B	B	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	13.09			9.35			49.43			47.38		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	23.38											
Intersection LOS	C											
Intersection V/C	0.524											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.598			2.460			2.005			2.294		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	480			500			520			540		
d_b, Bicycle Delay [s]	28.88			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.206			1.861			1.675			2.340		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	32.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.875

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	173	25	93	62	20	525	671	500	29	88	740	36
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	25	93	62	20	525	671	500	29	88	740	36
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	6	23	16	5	131	168	125	7	22	185	9
Total Analysis Volume [veh/h]	173	25	93	62	20	525	671	500	29	88	740	36
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	15	15	36	31	0	37	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	11	11	63	32	73	73	8	49	49
g / C, Green / Cycle	0.10	0.10	0.10	0.09	0.09	0.52	0.26	0.61	0.61	0.07	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.06	0.04	0.01	0.35	0.20	0.15	0.15	0.05	0.22	0.22
s, saturation flow rate [veh/h]	1417	1511	1506	1687	1612	1506	3277	1772	1738	1687	1772	1743
c, Capacity [veh/h]	182	207	153	156	149	790	866	1075	1054	112	724	712
d1, Uniform Delay [s]	51.20	52.67	51.66	51.35	50.09	20.82	40.84	10.93	10.94	55.21	26.94	26.95
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.45	2.77	3.88	1.64	0.41	4.38	1.52	0.55	0.56	11.41	2.88	2.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.60	0.61	0.40	0.13	0.66	0.77	0.25	0.25	0.79	0.54	0.54
d, Delay for Lane Group [s/veh]	52.65	55.44	55.54	53.00	50.50	25.20	42.36	11.49	11.50	66.62	29.83	29.88
Lane Group LOS	D	E	E	D	D	C	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.18	3.82	2.85	1.83	0.57	11.42	9.32	3.38	3.32	2.98	9.02	8.89
50th-Percentile Queue Length [ft/ln]	54.52	95.53	71.19	45.85	14.29	285.54	232.96	84.39	82.96	74.46	225.55	222.18
95th-Percentile Queue Length [veh/ln]	3.93	6.88	5.13	3.30	1.03	16.96	14.32	6.08	5.97	5.36	13.95	13.78
95th-Percentile Queue Length [ft/ln]	98.14	171.96	128.15	82.54	25.72	424.10	358.11	151.90	149.32	134.02	348.71	344.41

Movement, Approach, & Intersection Results

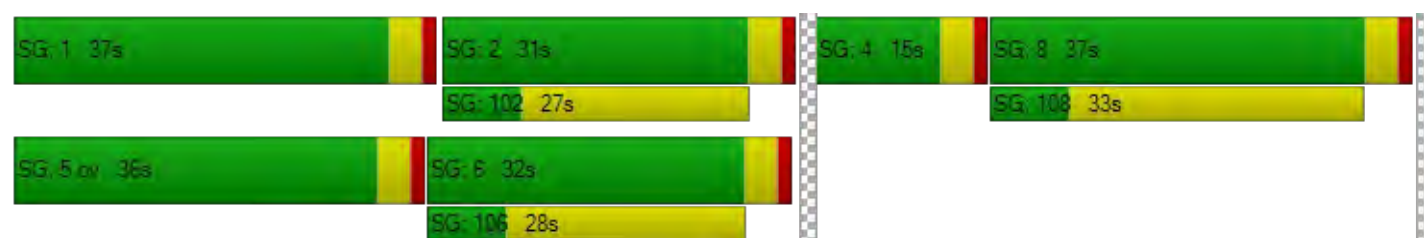
d_M, Delay for Movement [s/veh]	54.21	55.44	55.54	53.00	50.50	25.20	42.36	11.49	11.50	66.62	29.85	29.88
Movement LOS	D	E	E	D	D	C	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	54.77			28.87			28.75			33.60		
Approach LOS	D			C			C			C		
d_I, Intersection Delay [s/veh]	32.75											
Intersection LOS	C											
Intersection V/C	0.875											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.397			2.575			0.000			2.610		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			183			450			467		
d_b, Bicycle Delay [s]	31.54			49.50			36.04			35.27		
I_b,int, Bicycle LOS Score for Intersection	2.040			2.060			2.550			2.272		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.857

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	354	814	217	263	840	328	370	1199	280	387	1362	248
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	354	814	217	263	840	328	370	1199	280	387	1362	248
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	204	54	66	210	82	93	300	70	97	341	62
Total Analysis Volume [veh/h]	354	814	217	263	840	328	370	1199	280	387	1362	248
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	42	0	15	39	0	19	43	0	20	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	33	33	11	30	30	15	44	44	16	45	45
g / C, Green / Cycle	0.12	0.27	0.27	0.09	0.25	0.25	0.13	0.37	0.37	0.13	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.11	0.17	0.14	0.08	0.17	0.22	0.11	0.30	0.30	0.12	0.28	0.16
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1606	3277	4826	1506
c, Capacity [veh/h]	385	1311	409	304	1191	372	412	1243	592	438	1817	567
d1, Uniform Delay [s]	52.43	38.33	37.23	53.75	41.25	43.55	51.74	34.03	34.13	51.11	32.53	27.95
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.27	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.14	0.48	1.07	7.31	0.78	15.42	7.14	5.59	11.40	6.03	2.89	2.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.62	0.53	0.86	0.71	0.88	0.90	0.80	0.81	0.88	0.75	0.44
d, Delay for Lane Group [s/veh]	61.57	38.81	38.30	61.05	42.02	58.97	58.88	39.62	45.53	57.14	35.42	30.40
Lane Group LOS	E	D	D	E	D	E	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.76	7.04	5.54	4.22	7.62	10.91	5.89	13.87	14.28	6.08	11.81	5.70
50th-Percentile Queue Length [ft/ln]	143.99	176.01	138.61	105.62	190.46	272.75	147.26	346.66	356.94	151.90	295.15	142.46
95th-Percentile Queue Length [veh/ln]	9.70	11.39	9.41	7.60	12.15	16.33	9.87	19.97	20.47	10.12	17.44	9.61
95th-Percentile Queue Length [ft/ln]	242.39	284.79	235.16	189.89	303.63	408.17	246.76	499.34	511.86	252.97	436.03	240.33

Movement, Approach, & Intersection Results

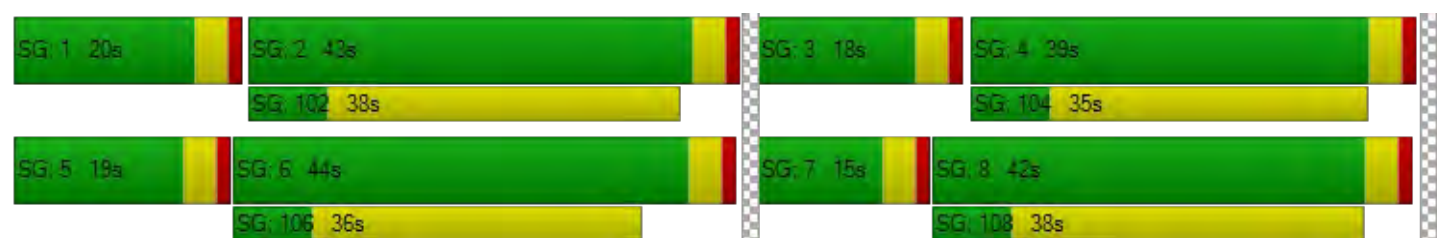
d_M, Delay for Movement [s/veh]	61.57	38.81	38.30	61.05	42.02	58.97	58.88	40.60	45.53	57.14	35.42	30.40
Movement LOS	E	D	D	E	D	E	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	44.55			49.40			45.00			39.01		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.06											
Intersection LOS	D											
Intersection V/C	0.857											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.176			3.173			3.214			3.261		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			583			650			667		
d_b, Bicycle Delay [s]	28.02			30.10			27.34			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.321			2.347			2.577			2.658		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	14.6
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.507

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	27	32	106	131	51	123	68	1340	42	98	1485	156
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	32	106	131	51	123	68	1340	42	98	1485	156
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	8	27	33	13	31	17	335	11	25	371	39
Total Analysis Volume [veh/h]	27	32	106	131	51	123	68	1340	42	98	1485	156
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	10	28	0	29	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	15	15	15	15	15	5	61	61	7	63	63
g / C, Green / Cycle	0.16	0.16	0.16	0.16	0.16	0.16	0.05	0.64	0.64	0.07	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.07	0.10	0.02	0.08	0.04	0.27	0.27	0.06	0.31	0.10
s, saturation flow rate [veh/h]	1353	1772	1506	1377	3373	1506	1687	3373	1744	1687	4826	1506
c, Capacity [veh/h]	240	282	240	239	537	240	90	2160	1117	125	3191	996
d1, Uniform Delay [s]	37.42	34.20	36.13	40.77	34.10	36.57	44.38	8.42	8.42	43.23	7.87	6.08
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.21	0.18	1.28	1.94	0.08	1.70	12.19	0.61	1.17	10.17	0.49	0.34
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.44	0.55	0.09	0.51	0.76	0.42	0.42	0.78	0.47	0.16
d, Delay for Lane Group [s/veh]	37.62	34.38	37.40	42.71	34.17	38.26	56.57	9.03	9.59	53.40	8.36	6.42
Lane Group LOS	D	C	D	D	C	D	E	A	A	D	A	A
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.57	0.64	2.28	3.07	0.50	2.70	1.87	4.32	4.64	2.60	4.49	1.15
50th-Percentile Queue Length [ft/ln]	14.31	16.05	57.09	76.87	12.62	67.38	46.76	107.97	116.04	64.90	112.19	28.75
95th-Percentile Queue Length [veh/ln]	1.03	1.16	4.11	5.53	0.91	4.85	3.37	7.73	8.17	4.67	7.96	2.07
95th-Percentile Queue Length [ft/ln]	25.75	28.89	102.75	138.36	22.72	121.28	84.17	193.18	204.37	116.82	199.05	51.74

Movement, Approach, & Intersection Results

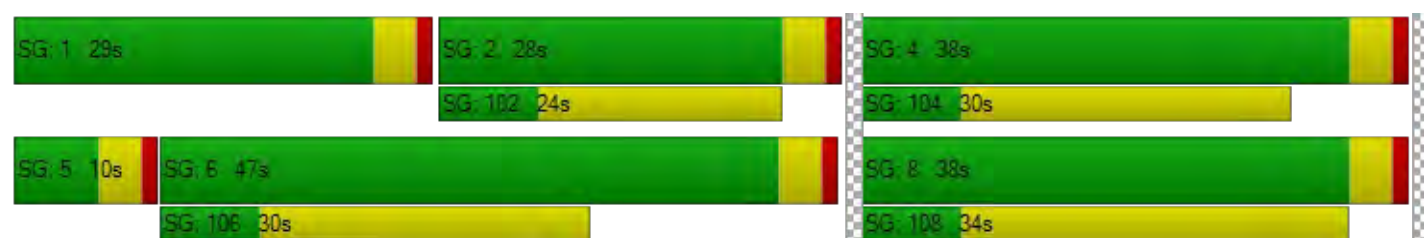
d_M, Delay for Movement [s/veh]	37.62	34.38	37.40	42.71	34.17	38.26	56.57	9.21	9.59	53.40	8.36	6.42
Movement LOS	D	C	D	D	C	D	E	A	A	D	A	A
d_A, Approach Delay [s/veh]	36.85			39.49			11.44			10.73		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	14.58											
Intersection LOS	B											
Intersection V/C	0.507											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.372			2.412			3.064			3.318		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	716			716			505			905		
d_b, Bicycle Delay [s]	19.58			19.58			26.53			14.23		
I_b,int, Bicycle LOS Score for Intersection	1.832			1.811			2.357			2.516		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	46.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	441	544	268	296	906	227	243	1462	266	352	1415	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	441	544	268	296	906	227	243	1462	266	352	1415	164
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	136	67	74	227	57	61	366	67	88	354	41
Total Analysis Volume [veh/h]	441	544	268	296	906	227	243	1462	266	352	1415	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	41	0	19	39	0	14	42	0	18	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	38	38	13	34	34	10	39	39	14	43	43
g / C, Green / Cycle	0.14	0.32	0.32	0.11	0.28	0.28	0.08	0.32	0.32	0.12	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.11	0.18	0.09	0.27	0.15	0.07	0.30	0.18	0.11	0.29	0.11
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	465	1537	480	352	958	428	274	1563	488	383	1724	538
d1, Uniform Delay [s]	51.07	31.41	33.91	52.57	42.06	36.22	54.43	39.36	33.32	52.44	35.09	27.83
k, delay calibration	0.11	0.11	0.12	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.63	0.14	1.17	5.45	5.72	1.02	9.38	11.84	4.33	9.20	4.53	1.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.35	0.56	0.84	0.95	0.53	0.89	0.94	0.55	0.92	0.82	0.30
d, Delay for Lane Group [s/veh]	61.70	31.55	35.07	58.02	47.78	37.25	63.82	51.19	37.65	61.64	39.62	29.29
Lane Group LOS	E	C	D	E	D	D	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.24	4.07	6.62	4.64	13.75	5.73	3.99	15.46	6.94	5.73	13.11	3.63
50th-Percentile Queue Length [ft/ln]	181.03	101.75	165.42	115.99	343.70	143.16	99.71	386.53	173.51	143.17	327.64	90.83
95th-Percentile Queue Length [veh/ln]	11.65	7.33	10.84	8.17	19.83	9.65	7.18	21.91	11.26	9.65	19.04	6.54
95th-Percentile Queue Length [ft/ln]	291.36	183.14	270.88	204.30	495.73	241.27	179.48	547.75	281.52	241.28	476.07	163.49

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.70	31.55	35.07	58.02	47.78	37.25	63.82	51.19	37.65	61.64	39.62	29.29
Movement LOS	E	C	D	E	D	D	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	42.92			48.23			50.92			42.76		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	46.42											
Intersection LOS	D											
Intersection V/C	0.939											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.078			3.029			3.302			3.292		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			633			700		
d_b, Bicycle Delay [s]	28.70			30.10			28.02			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.249			2.739			2.644			2.622		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	48.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	69	39	171	410	78	293	316	1542	33	115	1744	464
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	39	171	410	78	293	316	1542	33	115	1744	464
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	10	43	103	20	73	79	386	8	29	436	116
Total Analysis Volume [veh/h]	69	39	171	410	78	293	316	1542	33	115	1744	464
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	15	0	0	40	0	16	52	0	13	49	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16	31	31	12	48	48	9	45	45
g / C, Green / Cycle	0.13	0.13	0.13	0.26	0.26	0.10	0.40	0.40	0.08	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.12	0.13	0.24	0.10	0.31	0.31	0.07	0.36	0.31
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1555	3277	3373	1753	1687	4826	1506
c, Capacity [veh/h]	219	230	178	855	406	331	1349	701	129	1810	565
d1, Uniform Delay [s]	47.42	46.50	51.96	37.51	43.10	53.72	31.23	31.24	55.00	36.73	33.91
k, delay calibration	0.11	0.11	0.11	0.11	0.31	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.81	0.34	23.21	0.42	19.43	14.41	4.25	7.94	18.33	14.13	12.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.31	0.17	0.96	0.48	0.91	0.95	0.77	0.77	0.89	0.96	0.82
d, Delay for Lane Group [s/veh]	48.23	46.85	75.17	37.93	62.53	68.13	35.48	39.18	73.33	50.87	46.58
Lane Group LOS	D	D	E	D	E	E	D	D	E	D	D
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.93	1.06	6.25	5.15	12.80	5.40	13.60	14.86	4.10	18.71	14.02
50th-Percentile Queue Length [ft/ln]	48.22	26.60	156.29	128.80	319.98	135.10	339.88	371.62	102.60	467.63	350.61
95th-Percentile Queue Length [veh/ln]	3.47	1.91	10.35	8.87	18.67	9.22	19.64	21.19	7.39	25.80	20.17
95th-Percentile Queue Length [ft/ln]	86.80	47.87	258.80	221.87	466.67	230.41	491.05	529.69	184.68	644.96	504.15

Movement, Approach, & Intersection Results

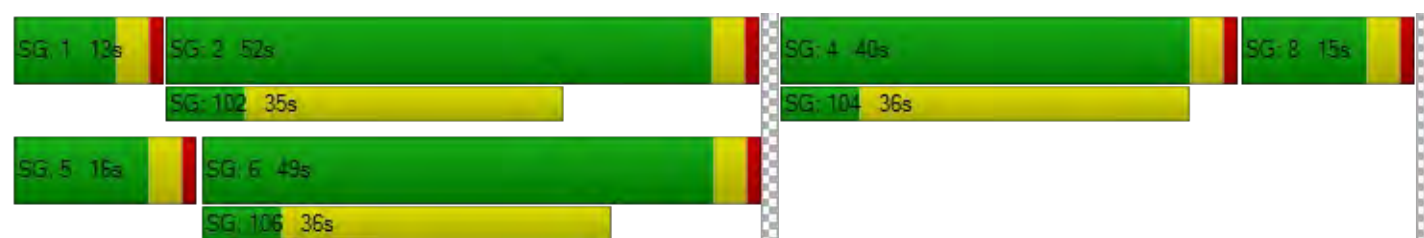
d_M, Delay for Movement [s/veh]	48.23	46.85	75.17	37.93	62.53	62.53	68.13	36.69	39.18	73.33	50.87	46.58
Movement LOS	D	D	E	D	E	E	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	64.55			49.61			41.99			51.12		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	48.34											
Intersection LOS	D											
Intersection V/C	0.948											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.268			2.626			3.226			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	183			600			800			750		
d_b, Bicycle Delay [s]	49.50			29.40			21.60			23.44		
I_b,int, Bicycle LOS Score for Intersection	1.790			2.848			2.600			2.837		
Bicycle LOS	A			C			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	144.6
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.378

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	285	548	579	683	422	180	137	1603	192	630	1887	1054
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	285	548	579	683	422	180	137	1603	192	630	1887	1054
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	71	137	145	171	106	45	34	401	48	158	472	264
Total Analysis Volume [veh/h]	285	548	579	683	422	180	137	1603	192	630	1887	1054
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	28	41	0	26	39	0	10	34	0	19	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	37	37	22	46	46	6	30	30	15	39	65
g / C, Green / Cycle	0.11	0.31	0.31	0.18	0.38	0.38	0.05	0.25	0.25	0.13	0.33	0.54
(v / s)_i Volume / Saturation Flow Rate	0.09	0.16	0.38	0.29	0.18	0.18	0.04	0.28	0.28	0.19	0.39	0.70
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1595	3277	4826	1649	3277	4826	1506
c, Capacity [veh/h]	351	1034	462	434	678	611	165	1213	415	410	1575	818
d1, Uniform Delay [s]	52.40	34.45	41.61	49.01	27.81	27.87	56.48	44.92	44.92	52.50	40.43	27.43
k, delay calibration	0.11	0.11	0.50	0.14	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.52	0.42	131.10	261.28	0.50	0.56	10.15	58.64	74.86	243.71	95.72	139.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.53	1.25	1.57	0.46	0.47	0.83	1.10	1.10	1.54	1.20	1.29
d, Delay for Lane Group [s/veh]	56.92	34.87	172.71	310.29	28.31	28.43	66.64	103.57	119.78	296.21	136.15	166.63
Lane Group LOS	E	C	F	F	C	C	E	F	F	F	F	F
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.42	6.67	30.27	22.22	6.87	6.27	2.29	18.53	20.86	20.05	29.22	53.76
50th-Percentile Queue Length [ft/ln]	110.41	166.77	756.70	555.48	171.67	156.75	57.26	463.18	521.62	501.25	730.53	1343.89
95th-Percentile Queue Length [veh/ln]	7.86	10.91	44.81	35.80	11.16	10.38	4.12	27.06	30.01	31.88	42.55	78.81
95th-Percentile Queue Length [ft/ln]	196.58	272.67	1120.26	895.09	279.11	259.42	103.06	676.38	750.26	796.96	1063.81	1970.18

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	56.92	34.87	172.71	310.29	28.34	28.43	66.64	106.25	119.78	296.21	136.15	166.63
Movement LOS	E	C	F	F	C	C	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	95.85			178.21			104.78			173.38		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	144.63											
Intersection LOS	F											
Intersection V/C	1.378											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.978			2.958			3.327			3.608		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			500			650		
d_b, Bicycle Delay [s]	28.70			30.10			33.75			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.725			2.620			2.357			3.524		
Bicycle LOS	B			B			B			D		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	28.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.917

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	563	0	739	0	1980	1185	0	2739	409
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	563	0	739	0	1980	1185	0	2739	409
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	141	0	185	0	495	296	0	685	102
Total Analysis Volume [veh/h]	0	0	0	563	0	739	0	1980	1185	0	2739	409
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	47	0	0	0	73	0	0	73	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		38	38	38	74	74
g / C, Green / Cycle		0.32	0.32	0.32	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate		0.26	0.28	0.29	0.41	0.57
s, saturation flow rate [veh/h]		1687	1556	1506	4826	4826
c, Capacity [veh/h]		531	490	474	2984	2984
d1, Uniform Delay [s]		37.86	39.00	39.50	14.79	20.17
k, delay calibration		0.25	0.30	0.32	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		7.05	13.51	17.78	1.18	5.82
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.82	0.89	0.92	0.66	0.92
d, Delay for Lane Group [s/veh]		44.90	52.50	57.28	15.97	26.00
Lane Group LOS		D	D	E	B	C
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		12.68	13.83	14.49	11.34	22.39
50th-Percentile Queue Length [ft/ln]		316.93	345.66	362.14	283.53	559.73
95th-Percentile Queue Length [veh/ln]		18.52	19.92	20.73	16.86	30.15
95th-Percentile Queue Length [ft/ln]		462.92	498.11	518.19	421.61	753.74

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	46.64	0.00	55.31	0.00	15.97	0.00	0.00	26.00	0.00
Movement LOS				D		E		B			C	
d_A, Approach Delay [s/veh]	0.00			51.56			15.97			26.00		
Approach LOS	A			D			B			C		
d_I, Intersection Delay [s/veh]	28.23											
Intersection LOS	C											
Intersection V/C	0.917											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.462			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			1150			1150		
d_b, Bicycle Delay [s]	60.00			60.00			10.84			10.84		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.281			2.649			3.066		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG 2 73s

SG 6 73s

SG 7 47s

SG 105 22s

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	43.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.961

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1485	176	601	0	0	271	286	1800	653	0	1976	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1485	176	601	0	0	271	286	1800	653	0	1976	45
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	371	44	150	0	0	68	72	450	163	0	494	11
Total Analysis Volume [veh/h]	1485	176	601	0	0	271	286	1800	653	0	1976	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	60	0	0	0	22	22	60	0	0	38	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	51	51	51	18	18	61	39	39
g / C, Green / Cycle	0.42	0.42	0.42	0.15	0.15	0.51	0.33	0.33
(v / s)_i Volume / Saturation Flow Rate	0.34	0.34	0.38	0.10	0.17	0.37	0.31	0.29
s, saturation flow rate [veh/h]	3277	1702	1506	2665	1687	4826	4826	1744
c, Capacity [veh/h]	1384	719	636	401	254	2466	1578	571
d1, Uniform Delay [s]	30.32	30.18	32.33	48.17	50.94	22.88	39.59	38.23
k, delay calibration	0.11	0.26	0.33	0.11	0.21	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.15	4.93	13.37	1.99	76.92	1.94	14.99	18.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.80	0.90	0.68	1.13	0.73	0.96	0.89
d, Delay for Lane Group [s/veh]	31.47	35.11	45.70	50.17	127.86	24.82	54.58	56.30
Lane Group LOS	C	D	D	D	F	C	D	E
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.03	15.14	17.53	3.95	13.03	13.28	16.58	16.76
50th-Percentile Queue Length [ft/ln]	350.82	378.59	438.20	98.68	325.64	332.12	414.55	419.04
95th-Percentile Queue Length [veh/ln]	20.18	21.53	24.39	7.11	20.00	19.26	23.26	23.48
95th-Percentile Queue Length [ft/ln]	504.40	538.14	609.86	177.63	499.93	481.55	581.50	586.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.35	35.11	45.07	0.00	0.00	50.17	127.86	24.82	0.00	0.00	54.98	56.30
Movement LOS	C	D	D			D	F	C			D	E
d_A, Approach Delay [s/veh]	36.00			50.17			38.95			55.01		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	43.29											
Intersection LOS	D											
Intersection V/C	0.961											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.755			2.207			0.000			0.000		
Crosswalk LOS	C			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	933			0			933			567		
d_b, Bicycle Delay [s]	17.07			60.00			17.07			30.82		
I_b,int, Bicycle LOS Score for Intersection	5.292			4.132			2.707			2.393		
Bicycle LOS	F			D			B			B		

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	36.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.829

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	292	223	146	355	254	179	217	1655	247	159	1626	226
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	292	223	146	355	254	179	217	1655	247	159	1626	226
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	56	37	89	64	45	54	414	62	40	407	57
Total Analysis Volume [veh/h]	292	223	146	355	254	179	217	1655	247	159	1626	226
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	39	0	16	40	0	19	40	0	15	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	17	17	12	18	18	15	54	54	11	50	50
g / C, Green / Cycle	0.10	0.16	0.16	0.11	0.17	0.17	0.14	0.49	0.49	0.10	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.09	0.11	0.11	0.11	0.14	0.12	0.13	0.38	0.38	0.09	0.29	0.29
s, saturation flow rate [veh/h]	3277	1772	1542	3277	1772	1506	1687	3373	1657	1687	4826	1632
c, Capacity [veh/h]	330	280	244	359	296	252	231	1640	806	170	2172	735
d1, Uniform Delay [s]	48.89	43.86	43.94	48.95	44.56	43.33	47.08	23.30	23.49	49.17	23.34	23.34
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.94	3.16	3.77	19.47	7.10	3.69	16.47	3.63	7.54	19.98	1.44	4.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.70	0.71	0.99	0.86	0.71	0.94	0.77	0.78	0.94	0.64	0.64
d, Delay for Lane Group [s/veh]	56.83	47.02	47.71	68.41	51.66	47.01	63.55	26.93	31.04	69.15	24.78	27.54
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.31	5.28	4.71	5.82	7.28	4.85	6.91	13.86	14.77	5.26	9.28	9.98
50th-Percentile Queue Length [ft/ln]	107.74	132.12	117.71	145.43	181.99	121.13	172.76	346.43	369.23	131.59	232.09	249.61
95th-Percentile Queue Length [veh/ln]	7.71	9.05	8.27	9.77	11.70	8.46	11.22	19.96	21.07	9.03	14.28	15.17
95th-Percentile Queue Length [ft/ln]	192.86	226.37	206.67	244.31	292.61	211.38	280.55	499.06	526.80	225.66	357.01	379.16

Movement, Approach, & Intersection Results

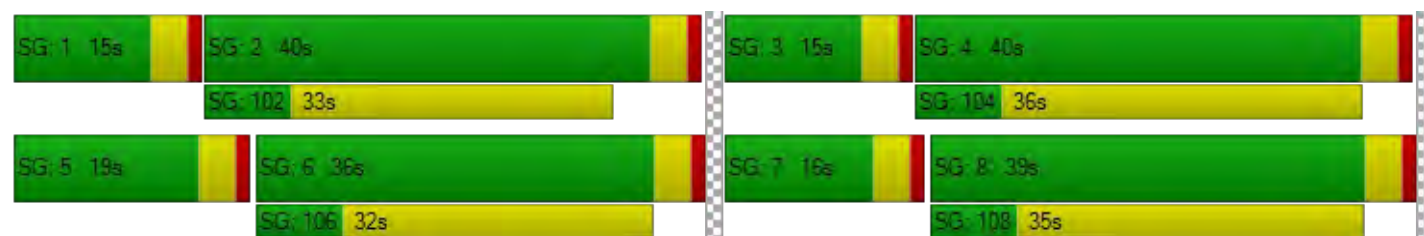
d_M, Delay for Movement [s/veh]	56.83	47.10	47.71	68.41	51.66	47.01	63.55	27.89	31.04	69.15	25.19	27.54
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	51.54			58.15			31.91			28.93		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	36.87											
Intersection LOS	D											
Intersection V/C	0.829											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.567			2.699			3.249			3.243		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	636			655			655			582		
d_b, Bicycle Delay [s]	25.57			24.89			24.89			27.65		
I_b,int, Bicycle LOS Score for Intersection	2.105			2.860			2.725			2.389		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	25.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	195	17	254	26	10	12	24	1888	277	206	1902	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	195	17	254	26	10	12	24	1888	277	206	1902	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	49	4	64	7	3	3	6	472	69	52	476	12
Total Analysis Volume [veh/h]	195	17	254	26	10	12	24	1888	277	206	1902	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	29	0	0	10	0	10	38	0	18	46	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	18	18	4	4	3	43	43	13	53	53
g / C, Green / Cycle	0.19	0.19	0.19	0.05	0.05	0.03	0.45	0.45	0.14	0.56	0.56
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.17	0.02	0.01	0.01	0.39	0.18	0.12	0.38	0.38
s, saturation flow rate [veh/h]	1687	1700	1506	1687	1616	1687	4826	1506	1687	3373	1750
c, Capacity [veh/h]	328	330	292	79	75	52	2170	677	239	1890	980
d1, Uniform Delay [s]	32.96	32.96	37.17	43.93	43.85	45.33	23.66	17.65	39.95	14.84	14.87
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.56	0.56	7.87	2.42	2.12	6.18	5.10	1.83	9.00	1.98	3.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.32	0.32	0.87	0.33	0.29	0.46	0.87	0.41	0.86	0.68	0.68
d, Delay for Lane Group [s/veh]	33.53	33.52	45.04	46.35	45.96	51.51	28.77	19.48	48.95	16.82	18.67
Lane Group LOS	C	C	D	D	D	D	C	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.12	2.14	6.26	0.64	0.54	0.64	13.04	4.29	5.24	9.51	10.41
50th-Percentile Queue Length [ft/ln]	53.10	53.49	156.52	16.05	13.55	16.07	326.05	107.23	131.09	237.77	260.18
95th-Percentile Queue Length [veh/ln]	3.82	3.85	10.36	1.16	0.98	1.16	18.96	7.69	9.00	14.57	15.70
95th-Percentile Queue Length [ft/ln]	95.58	96.29	259.11	28.90	24.39	28.93	474.11	192.15	224.98	364.22	392.45

Movement, Approach, & Intersection Results

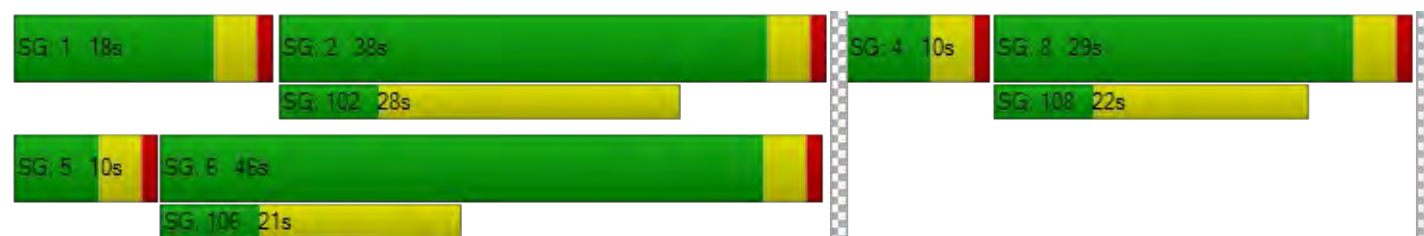
d_M, Delay for Movement [s/veh]	33.53	33.52	45.04	46.35	45.96	45.96	51.51	28.77	19.48	48.95	17.42	18.67
Movement LOS	C	C	D	D	D	D	D	C	B	D	B	B
d_A, Approach Delay [s/veh]	39.80			46.17			27.84			20.46		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	25.90											
Intersection LOS	C											
Intersection V/C	0.839											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			0.00			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.367			1.986			0.000			3.198		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	526			126			716			884		
d_b, Bicycle Delay [s]	25.79			41.69			19.58			14.78		
I_b,int, Bicycle LOS Score for Intersection	2.329			1.639			2.764			2.744		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	33.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.762

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TLO			TLO			TLO			TLO		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	311	378	83	281	673	134	183	1124	287	139	1330	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	378	83	281	673	134	183	1124	287	139	1330	136
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	95	21	70	168	34	46	281	72	35	333	34
Total Analysis Volume [veh/h]	311	378	83	281	673	134	183	1124	287	139	1330	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	30	0	20	35	0	11	39	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	23	23	11	23	23	7	44	44	6	43	43
g / C, Green / Cycle	0.11	0.23	0.23	0.11	0.23	0.23	0.07	0.44	0.44	0.06	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.09	0.13	0.13	0.09	0.20	0.09	0.06	0.28	0.28	0.04	0.29	0.29
s, saturation flow rate [veh/h]	3277	1772	1663	3277	3373	1506	3277	3373	1593	3277	3373	1689
c, Capacity [veh/h]	362	410	385	356	773	345	232	1480	699	202	1449	725
d1, Uniform Delay [s]	43.76	34.17	34.18	43.52	37.16	32.65	45.79	22.03	22.03	46.05	22.93	22.94
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.95	1.30	1.39	3.95	3.20	0.71	5.90	2.20	4.60	4.14	2.53	4.97
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.58	0.58	0.79	0.87	0.39	0.79	0.65	0.65	0.69	0.67	0.67
d, Delay for Lane Group [s/veh]	49.71	35.47	35.58	47.47	40.36	33.36	51.69	24.23	26.63	50.19	25.46	27.91
Lane Group LOS	D	D	D	D	D	C	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.05	5.22	4.92	3.56	8.14	2.80	2.41	8.94	8.93	1.80	9.41	9.92
50th-Percentile Queue Length [ft/ln]	101.32	130.46	123.05	89.05	203.51	69.91	60.37	223.59	223.14	45.02	235.26	248.03
95th-Percentile Queue Length [veh/ln]	7.30	8.96	8.56	6.41	12.82	5.03	4.35	13.85	13.83	3.24	14.44	15.09
95th-Percentile Queue Length [ft/ln]	182.38	224.12	214.00	160.29	320.48	125.84	108.67	346.20	345.63	81.04	361.03	377.17

Movement, Approach, & Intersection Results

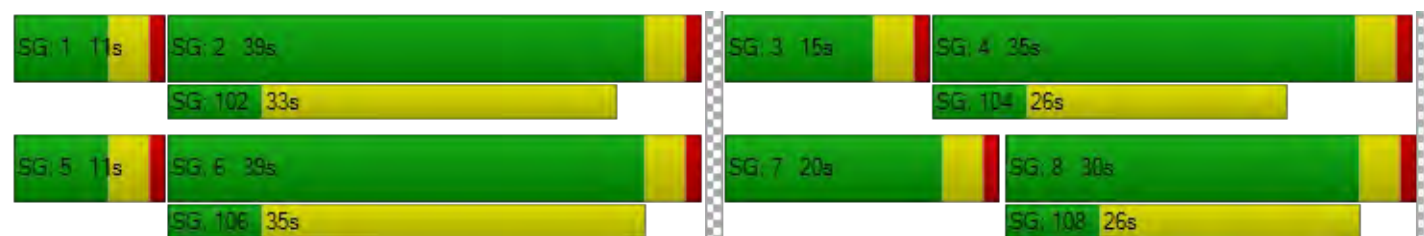
d_M, Delay for Movement [s/veh]	49.71	35.51	35.58	47.47	40.36	33.36	51.69	24.58	26.63	50.19	26.11	27.91
Movement LOS	D	D	D	D	D	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	41.24			41.34			28.06			28.35		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.02											
Intersection LOS	C											
Intersection V/C	0.762											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.762			2.847			3.141			3.107		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			620			700			700		
d_b, Bicycle Delay [s]	27.38			23.81			21.13			21.13		
I_b,int, Bicycle LOS Score for Intersection	2.197			2.457			2.436			2.442		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	38.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	83	580	357	211	782	384	402	895	80	320	845	175
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	580	357	211	782	384	402	895	80	320	845	175
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	145	89	53	196	96	101	224	20	80	211	44
Total Analysis Volume [veh/h]	83	580	357	211	782	384	402	895	80	320	845	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	42	42	14	45	45	23	46	0	18	41	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	29	47	10	32	55	19	51	51	14	46	46
g / C, Green / Cycle	0.06	0.24	0.39	0.08	0.26	0.45	0.16	0.43	0.43	0.12	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.05	0.17	0.24	0.06	0.23	0.26	0.12	0.19	0.05	0.10	0.20	0.20
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1620
c, Capacity [veh/h]	101	814	591	266	886	685	521	2059	643	385	1300	624
d1, Uniform Delay [s]	55.84	41.76	29.09	54.19	42.50	23.95	48.44	24.24	20.85	51.83	28.51	28.52
k, delay calibration	0.11	0.11	0.41	0.11	0.11	0.28	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.08	1.17	3.78	5.28	3.11	1.85	2.47	0.67	0.40	4.66	1.55	3.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.71	0.60	0.79	0.88	0.56	0.77	0.43	0.12	0.83	0.53	0.53
d, Delay for Lane Group [s/veh]	70.93	42.93	32.86	59.46	45.60	25.80	50.91	24.91	21.25	56.49	30.06	31.72
Lane Group LOS	E	D	C	E	D	C	D	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.91	7.98	8.76	3.33	11.43	8.24	5.95	6.06	1.44	4.96	7.89	7.88
50th-Percentile Queue Length [ft/ln]	72.75	199.59	219.03	83.18	285.64	205.91	148.68	151.60	36.01	123.98	197.34	196.92
95th-Percentile Queue Length [veh/ln]	5.24	12.62	13.62	5.99	16.97	12.94	9.95	10.10	2.59	8.61	12.50	12.48
95th-Percentile Queue Length [ft/ln]	130.96	315.44	340.39	149.72	424.22	323.57	248.66	252.56	64.82	215.28	312.53	311.98

Movement, Approach, & Intersection Results

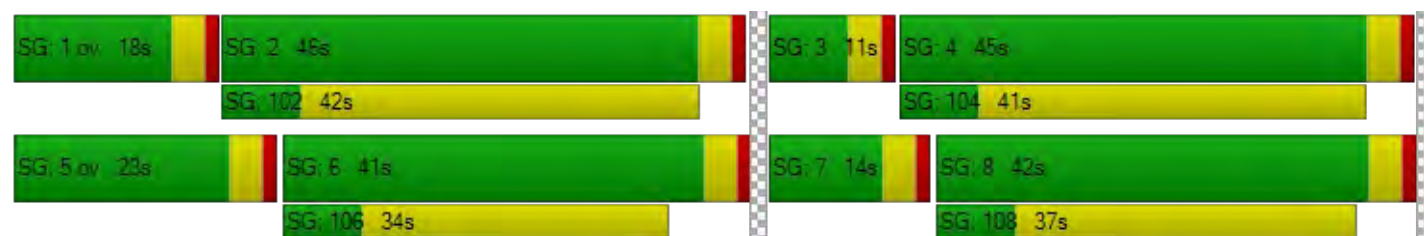
d_M, Delay for Movement [s/veh]	70.93	42.93	32.86	59.46	45.60	25.80	50.91	24.91	21.25	56.49	30.37	31.72
Movement LOS	E	D	C	E	D	C	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	41.69			42.21			32.29			36.78		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	38.01											
Intersection LOS	D											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.824			2.961			3.154			3.081		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			683			700			617		
d_b, Bicycle Delay [s]	28.02			26.00			25.35			28.70		
I_b,int, Bicycle LOS Score for Intersection	2.401			2.696			2.317			2.297		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	40.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.694

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	402	894	531	148	508	302	303	838	230	41	812	175
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	402	894	531	148	508	302	303	838	230	41	812	175
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	224	133	37	127	76	76	210	58	10	203	44
Total Analysis Volume [veh/h]	402	894	531	148	508	302	303	838	230	41	812	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	18	51	0	11	44	44	15	43	43	15	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	35	7	28	43	11	57	75	5	51	51
g / C, Green / Cycle	0.12	0.29	0.06	0.23	0.36	0.09	0.48	0.63	0.04	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.12	0.27	0.05	0.11	0.20	0.09	0.25	0.15	0.01	0.20	0.20
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1616
c, Capacity [veh/h]	384	983	193	1127	541	302	1612	946	125	1430	685
d1, Uniform Delay [s]	53.00	41.00	55.67	39.42	30.85	54.49	21.76	9.78	56.24	24.82	24.87
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.02	3.63	6.18	0.28	1.40	24.68	1.20	0.61	1.51	1.09	2.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.05	0.91	0.76	0.45	0.56	1.00	0.52	0.24	0.33	0.47	0.47
d, Delay for Lane Group [s/veh]	88.02	44.63	61.84	39.71	32.25	79.18	22.96	10.39	57.76	25.91	27.17
Lane Group LOS	F	D	E	D	C	F	C	B	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.64	13.11	2.37	4.32	7.20	5.60	8.35	2.74	0.63	6.98	6.98
50th-Percentile Queue Length [ft/ln]	190.98	327.69	59.37	108.03	179.95	139.90	208.77	68.39	15.81	174.43	174.47
95th-Percentile Queue Length [veh/ln]	12.40	19.05	4.27	7.73	11.60	9.48	13.09	4.92	1.14	11.31	11.31
95th-Percentile Queue Length [ft/ln]	310.06	476.13	106.87	193.26	289.95	237.11	327.25	123.11	28.46	282.73	282.78

Movement, Approach, & Intersection Results

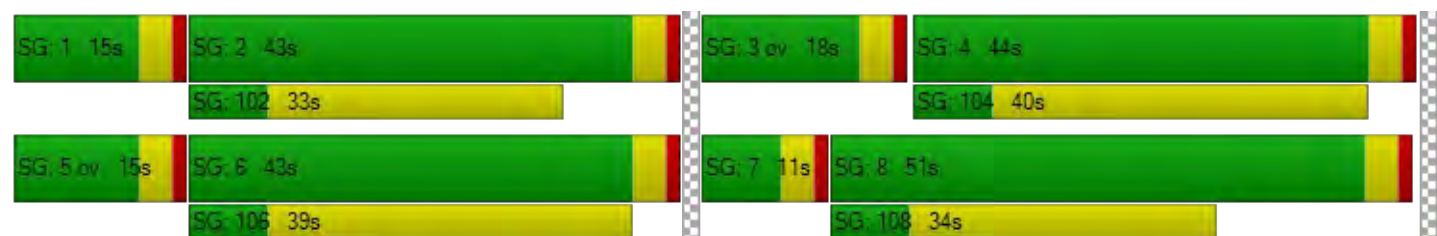
d_M, Delay for Movement [s/veh]	88.02	44.63	0.00	61.84	39.71	32.25	79.18	22.96	10.39	57.76	26.14	27.17
Movement LOS	F	D		E	D	C	F	C	B	E	C	C
d_A, Approach Delay [s/veh]	58.09			40.78			33.28			27.57		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	40.47											
Intersection LOS	D											
Intersection V/C	0.694											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.992			3.023			3.091			2.888		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	783			667			650			650		
d_b, Bicycle Delay [s]	22.20			26.67			27.34			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.629			2.087			2.691			2.125		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-VIII

YEAR 2040 PLUS PROJECT
TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	29.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.726

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	56	193	141	214	462	79	87	1326	142	150	1403	67
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	56	193	141	214	462	79	87	1326	142	150	1403	67
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	14	48	35	54	116	20	22	332	36	38	351	17
Total Analysis Volume [veh/h]	56	193	141	214	462	79	87	1326	142	150	1403	67
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	32	0	22	42	0	10	31	0	15	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	13	13	15	23	23	6	46	46	11	51	51
g / C, Green / Cycle	0.05	0.13	0.13	0.15	0.23	0.23	0.06	0.46	0.46	0.11	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.03	0.10	0.10	0.13	0.16	0.16	0.05	0.29	0.29	0.09	0.29	0.29
s, saturation flow rate [veh/h]	1687	1772	1532	1687	1772	1683	1687	3373	1685	1687	3373	1731
c, Capacity [veh/h]	82	229	198	247	402	382	103	1545	772	180	1699	872
d1, Uniform Delay [s]	46.89	42.12	42.36	41.79	35.45	35.47	46.56	20.72	20.72	43.86	17.32	17.32
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.69	5.24	7.40	8.92	2.11	2.23	16.88	1.99	3.94	9.60	1.40	2.72
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.76	0.80	0.87	0.69	0.69	0.85	0.63	0.63	0.83	0.57	0.57
d, Delay for Lane Group [s/veh]	56.59	47.37	49.76	50.71	37.56	37.70	63.44	22.71	24.67	53.46	18.72	20.04
Lane Group LOS	E	D	D	D	D	D	E	C	C	D	B	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.59	4.47	4.19	5.72	6.35	6.06	2.61	8.80	9.22	4.10	7.75	8.28
50th-Percentile Queue Length [ft/ln]	39.65	111.87	104.80	143.10	158.71	151.51	65.32	220.10	230.45	102.39	193.79	206.89
95th-Percentile Queue Length [veh/ln]	2.85	7.94	7.55	9.65	10.48	10.10	4.70	13.67	14.20	7.37	12.32	12.99
95th-Percentile Queue Length [ft/ln]	71.37	198.61	188.64	241.19	262.01	252.45	117.57	341.76	354.93	184.30	307.94	324.83

Movement, Approach, & Intersection Results

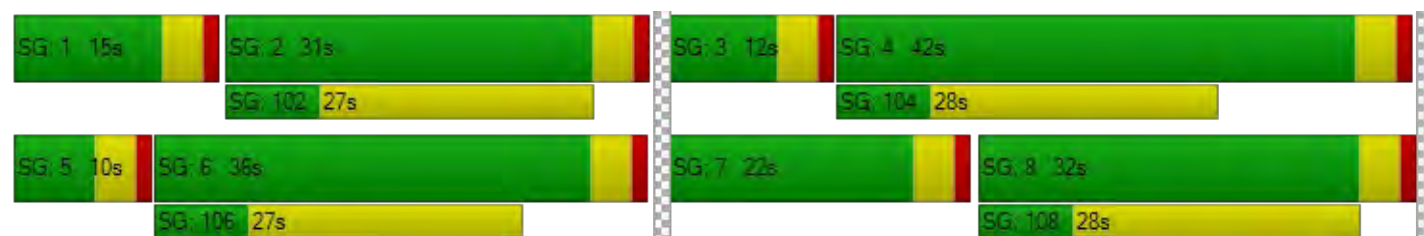
d_M, Delay for Movement [s/veh]	56.59	47.59	49.76	50.71	37.62	37.70	63.44	23.22	24.67	53.46	19.12	20.04
Movement LOS	E	D	D	D	D	D	E	C	C	D	B	C
d_A, Approach Delay [s/veh]	49.66			41.34			25.61			22.34		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.30											
Intersection LOS	C											
Intersection V/C	0.726											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.528			2.520			3.030			3.059		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	560			760			540			640		
d_b, Bicycle Delay [s]	25.92			19.22			26.65			23.12		
I_b,int, Bicycle LOS Score for Intersection	1.881			2.182			2.415			2.451		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	45.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.907

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	237	361	158	128	982	259	112	1409	441	219	1445	144
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	237	361	158	128	982	259	112	1409	441	219	1445	144
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	59	90	40	32	246	65	28	352	110	55	361	36
Total Analysis Volume [veh/h]	237	361	158	128	982	259	112	1409	441	219	1445	144
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	18	43	0	13	42	0	21	50	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	36	36	11	37	37	9	40	40	17	48	48
g / C, Green / Cycle	0.08	0.30	0.30	0.09	0.31	0.31	0.08	0.33	0.33	0.14	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.07	0.11	0.10	0.08	0.29	0.17	0.07	0.29	0.29	0.13	0.31	0.31
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1691
c, Capacity [veh/h]	274	1022	456	153	1047	467	127	1598	499	239	1341	672
d1, Uniform Delay [s]	54.34	32.64	32.56	53.69	40.26	34.47	54.98	37.92	37.97	50.79	31.71	31.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.12	0.21	0.45	11.26	4.80	1.06	17.42	7.38	19.97	13.12	4.76	9.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.87	0.35	0.35	0.84	0.94	0.55	0.88	0.88	0.88	0.92	0.79	0.79
d, Delay for Lane Group [s/veh]	62.46	32.84	33.01	64.95	45.07	35.53	72.39	45.30	57.94	63.91	36.47	40.94
Lane Group LOS	E	C	C	E	D	D	E	D	E	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.84	4.14	3.65	4.28	14.61	6.42	3.97	13.98	14.88	7.35	14.14	15.05
50th-Percentile Queue Length [ft/ln]	96.08	103.48	91.16	106.95	365.37	160.55	99.16	349.43	371.99	183.66	353.45	376.32
95th-Percentile Queue Length [veh/ln]	6.92	7.45	6.56	7.67	20.88	10.58	7.14	20.11	21.21	11.79	20.30	21.42
95th-Percentile Queue Length [ft/ln]	172.95	186.27	164.08	191.75	522.11	264.45	178.49	502.71	530.15	294.79	507.61	535.39

Movement, Approach, & Intersection Results

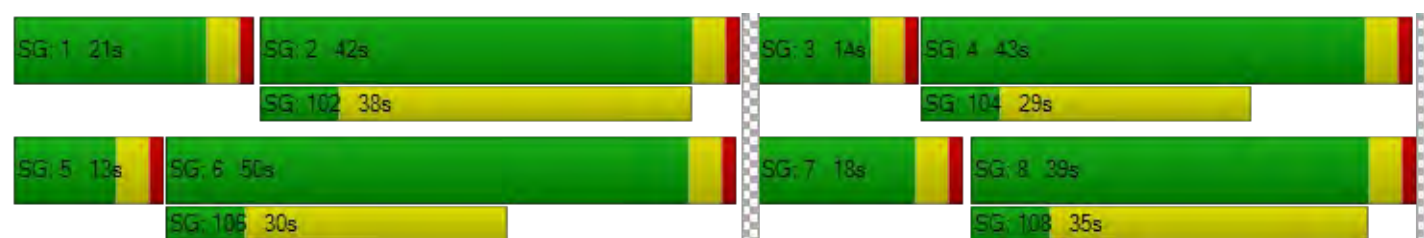
d_M, Delay for Movement [s/veh]	62.46	32.84	33.01	64.95	45.07	35.53	72.39	45.30	57.94	63.91	37.67	40.94
Movement LOS	E	C	C	E	D	D	E	D	E	E	D	D
d_A, Approach Delay [s/veh]	42.16			45.12			49.69			41.11		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.03											
Intersection LOS	D											
Intersection V/C	0.907											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.942			2.789			3.215			3.096		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			650			633			767		
d_b, Bicycle Delay [s]	30.10			27.34			28.02			22.82		
I_b,int, Bicycle LOS Score for Intersection	2.183			2.689			2.639			2.554		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	40.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.871

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	188	200	225	858	713	9	15	1350	266	498	1752	550
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	188	200	225	858	713	9	15	1350	266	498	1752	550
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	50	56	215	178	2	4	338	67	125	438	138
Total Analysis Volume [veh/h]	188	200	225	858	713	9	15	1350	266	498	1752	550
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	13	16	0	41	44	0	10	39	0	24	53	53
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	9	13	13	13	35	38	38	2	37	37	20	54	93
g / C, Green / Cycle	0.07	0.11	0.11	0.11	0.29	0.32	0.32	0.02	0.31	0.31	0.17	0.45	0.77
(v / s)_i Volume / Saturation Flow Rate	0.06	0.09	0.09	0.09	0.26	0.20	0.20	0.00	0.25	0.25	0.15	0.36	0.37
s, saturation flow rate [veh/h]	3277	1772	1586	1506	3277	1772	1764	3277	4826	1586	3277	4826	1506
c, Capacity [veh/h]	241	188	168	159	944	568	565	68	1477	485	546	2182	1165
d1, Uniform Delay [s]	54.65	52.53	52.60	52.64	41.21	34.83	34.85	57.85	38.63	38.67	49.17	28.30	4.85
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.17	0.17	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.39	8.36	9.89	10.67	3.76	1.90	1.92	1.64	5.31	14.73	6.39	3.25	1.37
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.82	0.83	0.83	0.91	0.64	0.64	0.22	0.82	0.83	0.91	0.80	0.47
d, Delay for Lane Group [s/veh]	60.04	60.89	62.49	63.31	44.97	36.73	36.77	59.48	43.94	53.40	55.56	31.54	6.22
Lane Group LOS	E	E	E	E	D	D	D	E	D	D	E	C	A
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.97	4.95	4.57	4.40	12.61	9.28	9.26	0.24	11.68	12.83	7.80	14.74	4.47
50th-Percentile Queue Length [ft/ln]	74.35	123.7	114.1	109.9	315.31	232.01	231.57	5.99	292.12	320.75	194.97	368.47	111.71
95th-Percentile Queue Length [veh/ln]	5.35	8.60	8.07	7.84	18.44	14.28	14.25	0.43	17.29	18.70	12.38	21.03	7.94
95th-Percentile Queue Length [ft/ln]	133.8	214.9	201.7	195.9	460.92	356.91	356.35	10.79	432.28	467.60	309.47	525.87	198.38

Movement, Approach, & Intersection Results

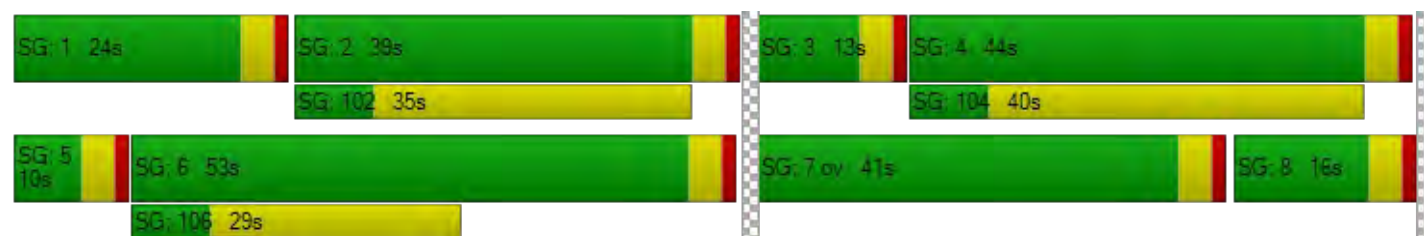
d_M, Delay for Movement [s/veh]	60.04	61.26	62.99	44.97	36.75	36.77	59.48	44.88	53.40	55.56	31.54	6.22
Movement LOS	E	E	E	D	D	D	E	D	D	E	C	A
d_A, Approach Delay [s/veh]	61.52			41.21			46.41			30.84		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	39.99											
Intersection LOS	D											
Intersection V/C	0.871											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.899			2.848			3.251			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	200			667			583			817		
d_b, Bicycle Delay [s]	48.60			26.67			30.10			21.00		
I_b,int, Bicycle LOS Score for Intersection	2.065			2.863			2.232			3.100		
Bicycle LOS	B			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	31.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.883

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	1090	0	695	0	1868	606	234	2152	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	1090	0	695	0	1868	606	234	2152	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	273	0	174	0	467	152	59	538	0
Total Analysis Volume [veh/h]	0	0	0	1090	0	695	0	1868	606	234	2152	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	54	0	0	0	47	0	14	61	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		115	115	115	115	115	115
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		43	43	50	50	10	64
g / C, Green / Cycle		0.37	0.37	0.43	0.43	0.09	0.56
(v / s)_i Volume / Saturation Flow Rate		0.33	0.26	0.39	0.23	0.07	0.45
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1226	997	2094	1157	287	2684
d1, Uniform Delay [s]		33.73	30.45	30.05	23.84	51.54	20.43
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.42	0.89	6.29	1.70	5.66	2.64
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.89	0.70	0.89	0.52	0.82	0.80
d, Delay for Lane Group [s/veh]		36.15	31.34	36.34	25.54	57.20	23.07
Lane Group LOS		D	C	D	C	E	C
Critical Lane Group		Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]		14.38	8.16	16.65	6.23	3.53	15.28
50th-Percentile Queue Length [ft/ln]		359.38	204.01	416.29	155.75	88.37	381.94
95th-Percentile Queue Length [veh/ln]		20.59	12.85	23.34	10.32	6.36	21.69
95th-Percentile Queue Length [ft/ln]		514.83	321.13	583.60	258.09	159.07	542.19

Movement, Approach, & Intersection Results

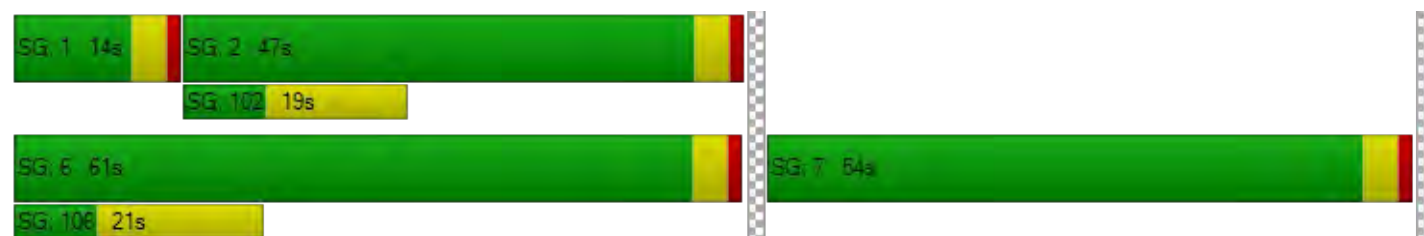
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	36.15	0.00	31.34	0.00	36.34	25.54	57.20	23.07	0.00
Movement LOS				D		C		D	C	E	C	
d_A, Approach Delay [s/veh]	0.00			34.28			33.69			26.42		
Approach LOS	A			C			C			C		
d_I, Intersection Delay [s/veh]	31.24											
Intersection LOS	C											
Intersection V/C	0.883											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.136			2.578			0.000			0.000		
Crosswalk LOS	B			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			748			991		
d_b, Bicycle Delay [s]	57.50			57.50			22.54			14.63		
I_b,int, Bicycle LOS Score for Intersection	4.132			4.132			2.920			2.872		
Bicycle LOS	D			D			C			C		

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	31.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.955

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1080	0	500	0	0	0	0	2616	402	0	1350	518
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1080	0	500	0	0	0	0	2616	402	0	1350	518
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	0	125	0	0	0	0	654	101	0	338	130
Total Analysis Volume [veh/h]	1080	0	500	0	0	0	0	2616	402	0	1350	518
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	51	0	0	0	0	0	0	69	0	0	69	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	21	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	120	120		120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	43	43		69	69	69	69
g / C, Green / Cycle	0.36	0.36		0.57	0.57	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.33	0.33		0.52	0.53	0.27	0.28
s, saturation flow rate [veh/h]	3277	1506		3373	1655	1506	4826
c, Capacity [veh/h]	1181	543		1932	948	862	2764
d1, Uniform Delay [s]	36.54	36.67		22.64	23.12	14.92	15.18
k, delay calibration	0.11	0.35		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	3.24	18.08		7.40	15.33	1.81	0.62
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.92		0.90	0.92	0.47	0.49
d, Delay for Lane Group [s/veh]	39.78	54.75		30.04	38.44	16.73	15.80
Lane Group LOS	D	D		C	D	B	B
Critical Lane Group	No	Yes		No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	15.35	16.50		22.50	24.98	6.66	7.26
50th-Percentile Queue Length [ft/ln]	383.79	412.44		562.46	624.42	166.59	181.42
95th-Percentile Queue Length [veh/ln]	21.78	23.16		30.28	33.17	10.90	11.67
95th-Percentile Queue Length [ft/ln]	544.43	578.97		756.93	829.32	272.43	291.87

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	39.78	0.00	54.75	0.00	0.00	0.00	0.00	31.98	16.73	0.00	15.80	0.00
Movement LOS	D		D					C	B		B	
d_A, Approach Delay [s/veh]	44.52			0.00			30.70			15.80		
Approach LOS	D			A			C			B		
d_I, Intersection Delay [s/veh]	30.99											
Intersection LOS	C											
Intersection V/C	0.955											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.700	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	1083	1083
d_b, Bicycle Delay [s]	60.00	60.00	12.60	12.60
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	3.220	2.302
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:
Analysis Method:
Analysis Period:

Signalized
HCM 6th Edition
15 minutes

Delay (sec / veh):
Level Of Service:
Volume to Capacity (v/c):

36.3
D
0.957

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	292	113	51	19	231	327	135	711	1252	346	833	17
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	292	113	51	19	231	327	135	711	1252	346	833	17
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	73	28	13	5	58	82	34	178	313	87	208	4
Total Analysis Volume [veh/h]	292	113	51	19	231	327	135	711	1252	346	833	17
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	50	50	10	44	0	23	37	37	18	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	37	55	3	28	28	11	45	61	14	48	48
g / C, Green / Cycle	0.10	0.32	0.48	0.02	0.24	0.24	0.10	0.40	0.53	0.12	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.09	0.06	0.03	0.01	0.13	0.22	0.08	0.21	0.47	0.11	0.17	0.17
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1753
c, Capacity [veh/h]	344	567	718	42	425	361	163	1330	1423	399	1415	736
d1, Uniform Delay [s]	50.61	28.41	16.31	55.35	38.22	42.46	51.04	26.74	23.56	49.62	23.25	23.25
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.18	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.88	0.17	0.04	7.56	1.08	13.32	10.14	1.54	8.05	5.80	0.83	1.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.20	0.07	0.46	0.54	0.91	0.83	0.53	0.88	0.87	0.40	0.40
d, Delay for Lane Group [s/veh]	56.50	28.58	16.36	62.91	39.31	55.78	61.18	28.28	31.61	55.42	24.07	24.84
Lane Group LOS	E	C	B	E	D	E	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.40	2.30	0.74	0.63	5.82	10.28	4.27	7.69	15.75	5.19	5.41	5.78
50th-Percentile Queue Length [ft/ln]	110.12	57.52	18.48	15.78	145.38	257.00	106.84	192.36	393.77	129.84	135.16	144.47
95th-Percentile Queue Length [veh/ln]	7.85	4.14	1.33	1.14	9.77	15.54	7.66	12.24	22.26	8.93	9.22	9.72
95th-Percentile Queue Length [ft/ln]	196.17	103.54	33.26	28.41	244.24	388.45	191.59	306.08	556.49	223.28	230.50	243.04

Movement, Approach, & Intersection Results

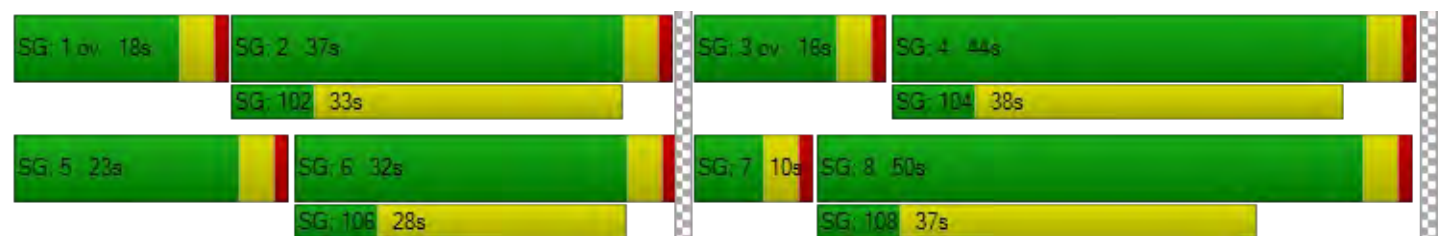
d_M, Delay for Movement [s/veh]	56.50	28.58	16.36	62.91	39.31	55.78	61.18	28.28	31.61	55.42	24.33	24.84
Movement LOS	E	C	B	E	D	E	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	45.09			49.42			32.39			33.33		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	36.26											
Intersection LOS	D											
Intersection V/C	0.957											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.836			2.348			3.170			2.881		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	800			696			574			487		
d_b, Bicycle Delay [s]	20.70			24.46			29.23			32.91		
I_b,int, Bicycle LOS Score for Intersection	2.312			2.512			3.290			2.217		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 27.7
 Level Of Service: C
 Volume to Capacity (v/c): 0.552

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	30	480	253	485	1086	60	49	79	12	333	79	242
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	30	480	253	485	1086	60	49	79	12	333	79	242
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	120	63	121	272	15	12	20	3	83	20	61
Total Analysis Volume [veh/h]	30	480	253	485	1086	60	49	79	12	333	79	242
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	21	28	0	30	37	0	16	37	0	20	41	41
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	4	58	58	20	74	74	5	8	14	17	41
g / C, Green / Cycle	0.03	0.50	0.50	0.17	0.64	0.64	0.04	0.07	0.12	0.15	0.35
(v / s)_i Volume / Saturation Flow Rate	0.02	0.14	0.17	0.15	0.22	0.22	0.03	0.05	0.10	0.04	0.16
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1724	1687	1731	3277	1772	1506
c, Capacity [veh/h]	56	1684	752	571	2160	1104	71	117	393	257	533
d1, Uniform Delay [s]	54.77	16.82	17.34	46.05	9.59	9.60	54.37	52.81	49.61	44.01	28.59
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.77	0.43	1.21	3.64	0.45	0.88	11.19	10.61	5.13	0.67	0.60
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.54	0.29	0.34	0.85	0.35	0.35	0.69	0.78	0.85	0.31	0.45
d, Delay for Lane Group [s/veh]	62.54	17.24	18.55	49.69	10.04	10.47	65.56	63.42	54.74	44.68	29.19
Lane Group LOS	E	B	B	D	B	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.98	3.76	4.23	6.98	4.33	4.56	1.62	2.93	4.96	2.07	5.21
50th-Percentile Queue Length [ft/ln]	24.42	94.06	105.83	174.50	108.17	113.94	40.52	73.26	123.98	51.71	130.28
95th-Percentile Queue Length [veh/ln]	1.76	6.77	7.61	11.31	7.74	8.06	2.92	5.27	8.61	3.72	8.96
95th-Percentile Queue Length [ft/ln]	43.95	169.32	190.19	282.82	193.45	201.48	72.94	131.87	215.28	93.08	223.88

Movement, Approach, & Intersection Results

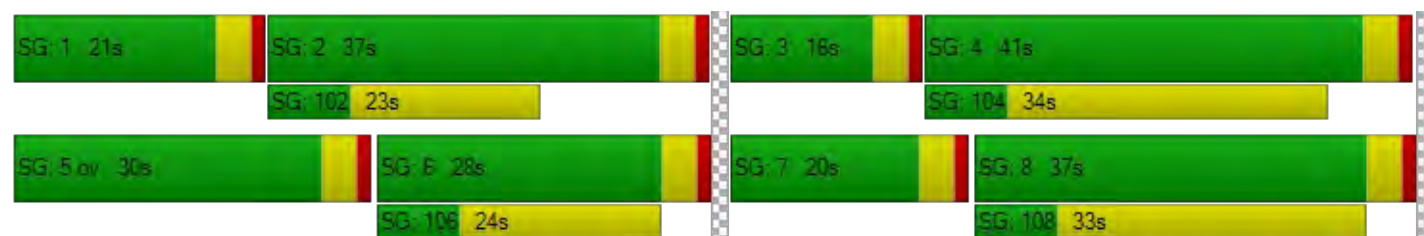
d_M, Delay for Movement [s/veh]	62.54	17.24	18.55	49.69	10.17	10.47	65.56	63.42	63.42	54.74	44.68	29.19
Movement LOS	E	B	B	D	B	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	19.46			21.93			64.17			44.07		
Approach LOS	B			C			E			D		
d_I, Intersection Delay [s/veh]	27.74											
Intersection LOS	C											
Intersection V/C	0.552											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.911			3.030			2.052			2.704		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	417			574			574			643		
d_b, Bicycle Delay [s]	36.00			29.23			29.23			26.45		
I_b,int, Bicycle LOS Score for Intersection	1.979			2.457			1.791			2.639		
Bicycle LOS	A			B			A			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.7
 Level Of Service: B
 Volume to Capacity (v/c): 0.435

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	34	43	89	38	52	26	40	647	218	106	557	44
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	34	43	89	38	52	26	40	647	218	106	557	44
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	11	22	10	13	7	10	162	55	27	139	11
Total Analysis Volume [veh/h]	34	43	89	38	52	26	40	647	218	106	557	44
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	10	30	0	22	42	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	11	11	11	11	4	60	60	7	64	64
g / C, Green / Cycle	0.12	0.12	0.12	0.12	0.12	0.04	0.67	0.67	0.08	0.71	0.71
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.06	0.03	0.05	0.02	0.25	0.26	0.06	0.17	0.03
s, saturation flow rate [veh/h]	1321	1772	1506	1363	1673	1687	1772	1621	1687	3373	1506
c, Capacity [veh/h]	143	208	177	174	196	72	1187	1086	134	2385	1065
d1, Uniform Delay [s]	41.90	35.94	37.27	40.13	36.78	42.27	6.58	6.58	40.69	4.63	3.98
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.85	0.49	2.22	0.62	1.30	6.65	0.93	1.02	9.86	0.23	0.07
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.24	0.21	0.50	0.22	0.40	0.56	0.38	0.38	0.79	0.23	0.04
d, Delay for Lane Group [s/veh]	42.74	36.43	39.49	40.75	38.08	48.92	7.51	7.60	50.54	4.86	4.05
Lane Group LOS	D	D	D	D	D	D	A	A	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.76	0.87	1.92	0.83	1.64	1.00	3.57	3.30	2.64	1.56	0.22
50th-Percentile Queue Length [ft/ln]	19.08	21.81	48.03	20.66	40.97	24.88	89.36	82.45	66.11	39.12	5.60
95th-Percentile Queue Length [veh/ln]	1.37	1.57	3.46	1.49	2.95	1.79	6.43	5.94	4.76	2.82	0.40
95th-Percentile Queue Length [ft/ln]	34.34	39.27	86.45	37.18	73.74	44.78	160.85	148.41	119.00	70.42	10.07

Movement, Approach, & Intersection Results

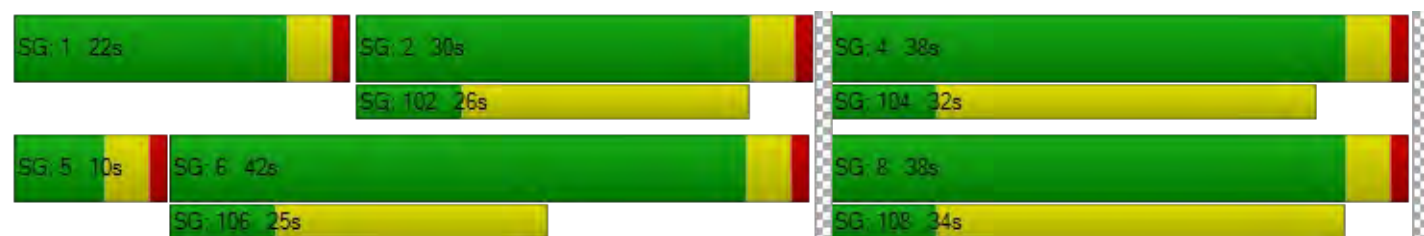
d_M, Delay for Movement [s/veh]	42.74	36.43	39.49	40.75	38.08	38.08	48.92	7.54	7.60	50.54	4.86	4.05
Movement LOS	D	D	D	D	D	D	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	39.36			38.96			9.38			11.66		
Approach LOS	D			D			A			B		
d_I, Intersection Delay [s/veh]	14.67											
Intersection LOS	B											
Intersection V/C	0.435											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.263			2.019			2.645			2.747		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			844		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			15.02		
I_b,int, Bicycle LOS Score for Intersection	1.834			1.751			2.306			2.143		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	45.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.687

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	78	187	104	792	944	214	104	582	48	87	583	289
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	78	187	104	792	944	214	104	582	48	87	583	289
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	47	26	198	236	54	26	146	12	22	146	72
Total Analysis Volume [veh/h]	78	187	104	792	944	214	104	582	48	87	583	289
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	32	61	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	23	23	28	45	45	6	48	48	6	48	48
g / C, Green / Cycle	0.05	0.19	0.19	0.23	0.37	0.37	0.05	0.40	0.40	0.05	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.02	0.06	0.07	0.24	0.33	0.35	0.03	0.17	0.03	0.03	0.17	0.19
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1663	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	154	635	284	764	663	623	161	1339	598	157	1335	596
d1, Uniform Delay [s]	55.84	41.87	42.48	46.03	34.89	36.03	56.05	26.37	22.54	55.89	26.48	27.11
k, delay calibration	0.11	0.11	0.11	0.11	0.24	0.27	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.55	0.26	0.79	25.56	7.71	14.19	4.27	1.03	0.26	3.01	1.04	2.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.51	0.29	0.37	1.04	0.87	0.93	0.64	0.43	0.08	0.55	0.44	0.48
d, Delay for Lane Group [s/veh]	58.39	42.13	43.28	71.59	42.60	50.22	60.31	27.40	22.80	58.89	27.52	29.92
Lane Group LOS	E	D	D	F	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.21	2.42	2.76	14.02	16.87	18.40	1.64	6.24	0.90	1.36	6.27	6.63
50th-Percentile Queue Length [ft/ln]	30.23	60.40	69.09	350.45	421.64	460.10	41.10	156.07	22.42	33.90	156.78	165.83
95th-Percentile Queue Length [veh/ln]	2.18	4.35	4.97	20.57	23.60	25.44	2.96	10.34	1.61	2.44	10.38	10.86
95th-Percentile Queue Length [ft/ln]	54.41	108.71	124.35	514.19	590.01	635.99	73.97	258.52	40.36	61.01	259.45	271.42

Movement, Approach, & Intersection Results

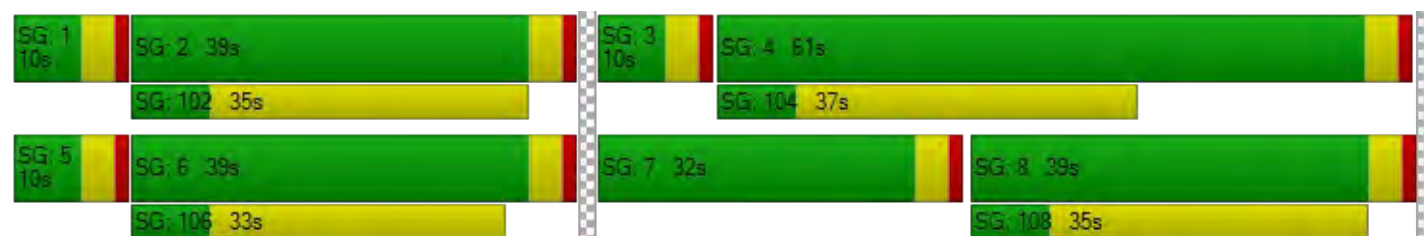
d_M, Delay for Movement [s/veh]	58.39	42.13	43.28	71.59	45.55	50.22	60.31	27.40	22.80	58.89	27.52	29.92
Movement LOS	E	D	D	F	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	45.89			56.64			31.76			31.09		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	44.99											
Intersection LOS	D											
Intersection V/C	0.687											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.809			2.878			2.832			2.947		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			950			583			583		
d_b, Bicycle Delay [s]	30.10			16.54			30.10			30.10		
I_b,int, Bicycle LOS Score for Intersection	1.864			3.168			2.165			2.351		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	30.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.855

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	242	6	325	57	30	8	2	1047	393	446	770	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	242	6	325	57	30	8	2	1047	393	446	770	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	61	2	81	14	8	2	1	262	98	112	193	3
Total Analysis Volume [veh/h]	242	6	325	57	30	8	2	1047	393	446	770	10
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	55	55	0	37	0	10	40	0	25	55	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	24	49	9	9	0	63	63	21	84	84
g / C, Green / Cycle	0.09	0.20	0.41	0.07	0.07	0.00	0.53	0.53	0.17	0.70	0.70
(v / s)_i Volume / Saturation Flow Rate	0.07	0.00	0.22	0.04	0.02	0.00	0.42	0.43	0.14	0.22	0.22
s, saturation flow rate [veh/h]	3277	1772	1506	1410	1708	1687	1772	1610	3277	1772	1764
c, Capacity [veh/h]	298	351	612	135	126	6	933	848	573	1237	1231
d1, Uniform Delay [s]	53.53	38.70	26.94	56.06	52.63	59.66	23.23	23.61	47.28	7.01	7.01
k, delay calibration	0.11	0.11	0.35	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.27	0.02	2.31	2.09	1.32	31.21	7.15	8.60	2.32	0.67	0.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.02	0.53	0.42	0.30	0.34	0.80	0.82	0.78	0.32	0.32
d, Delay for Lane Group [s/veh]	58.80	38.72	29.25	58.14	53.95	90.87	30.39	32.21	49.60	7.68	7.69
Lane Group LOS	E	D	C	E	D	F	C	C	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.80	0.15	7.39	1.78	1.13	0.11	18.52	17.75	6.54	3.84	3.82
50th-Percentile Queue Length [ft/ln]	95.02	3.63	184.63	44.51	28.32	2.79	463.09	443.86	163.49	95.96	95.59
95th-Percentile Queue Length [veh/ln]	6.84	0.26	11.84	3.20	2.04	0.20	25.58	24.66	10.73	6.91	6.88
95th-Percentile Queue Length [ft/ln]	171.03	6.54	296.05	80.11	50.98	5.02	639.54	616.61	268.34	172.72	172.06

Movement, Approach, & Intersection Results

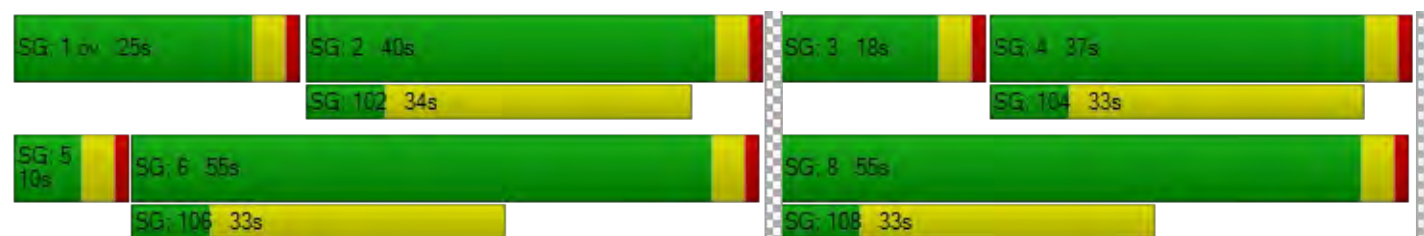
d_M, Delay for Movement [s/veh]	58.80	38.72	29.25	58.14	53.95	53.95	90.87	30.91	32.21	49.60	7.68	7.69
Movement LOS	E	D	C	E	D	D	F	C	C	D	A	A
d_A, Approach Delay [s/veh]	41.83			56.47			31.35			22.93		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.77											
Intersection LOS	C											
Intersection V/C	0.855											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.701			1.991			2.794			2.979		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	850			550			600			850		
d_b, Bicycle Delay [s]	19.84			31.54			29.40			19.84		
I_b,int, Bicycle LOS Score for Intersection	2.505			1.716			2.749			2.571		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	27.0
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.780

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	3	3	6	261	2	489	328	1012	17	10	801	101
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	3	3	6	261	2	489	328	1012	17	10	801	101
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	1	1	2	65	1	122	82	253	4	3	200	25
Total Analysis Volume [veh/h]	3	3	6	261	2	489	328	1012	17	10	801	101
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	44	39	0	37	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	2	2	28	28	67	29	72	72	2	45	45
g / C, Green / Cycle	0.02	0.02	0.02	0.23	0.23	0.56	0.24	0.60	0.60	0.01	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.00	0.00	0.00	0.08	0.08	0.32	0.19	0.29	0.29	0.01	0.24	0.07
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1688	1506	1687	1772	1761	1687	3373	1506
c, Capacity [veh/h]	65	31	26	394	394	846	412	1064	1058	26	1254	560
d1, Uniform Delay [s]	59.69	58.05	58.18	38.27	38.27	17.08	42.56	13.50	13.50	58.58	31.08	25.40
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.15	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	1.34	4.29	0.49	0.49	2.87	4.91	1.58	1.59	9.48	2.50	0.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.05	0.10	0.23	0.33	0.33	0.58	0.80	0.48	0.49	0.39	0.64	0.18
d, Delay for Lane Group [s/veh]	59.98	59.38	62.47	38.77	38.76	19.95	47.47	15.07	15.09	68.06	33.58	26.11
Lane Group LOS	E	E	E	D	D	B	D	B	B	E	C	C
Critical Lane Group	No	No	Yes	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.10	0.10	0.21	3.29	3.29	9.17	9.64	8.03	8.00	0.37	9.92	2.07
50th-Percentile Queue Length [ft/ln]	2.41	2.53	5.29	82.17	82.21	229.31	241.11	200.85	200.01	9.22	248.05	51.63
95th-Percentile Queue Length [veh/ln]	0.17	0.18	0.38	5.92	5.92	14.14	14.74	12.68	12.64	0.66	15.09	3.72
95th-Percentile Queue Length [ft/ln]	4.34	4.56	9.52	147.90	147.98	353.48	368.43	317.06	315.98	16.59	377.20	92.94

Movement, Approach, & Intersection Results

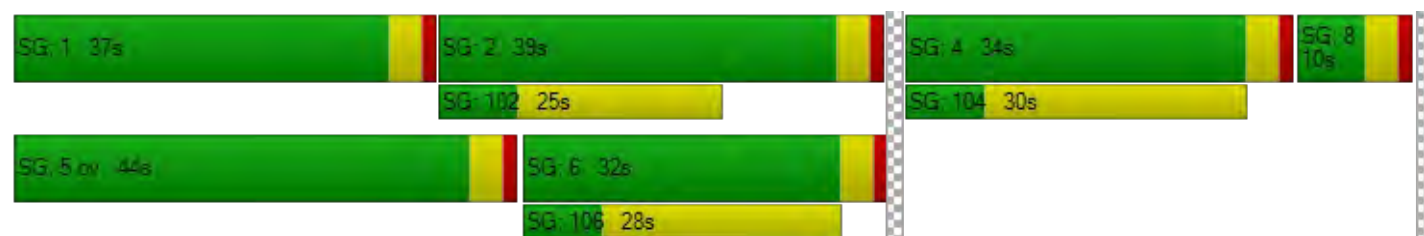
d_M, Delay for Movement [s/veh]	59.98	59.38	62.47	38.77	38.76	19.95	47.47	15.08	15.09	68.06	33.58	26.11
Movement LOS	E	E	E	D	D	B	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	61.08			26.53			22.91			33.13		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	27.03											
Intersection LOS	C											
Intersection V/C	0.780											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.155			2.433			2.835			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			500			583			467		
d_b, Bicycle Delay [s]	54.15			33.75			30.10			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.579			2.800			2.679			2.312		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	41.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.867

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	138	230	95	450	1307	267	49	675	533	64	452	220
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	230	95	450	1307	267	49	675	533	64	452	220
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	58	24	113	327	67	12	169	133	16	113	55
Total Analysis Volume [veh/h]	138	230	95	450	1307	267	49	675	533	64	452	220
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	37	0	22	49	0	13	51	0	10	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	35	35	18	47	47	5	45	45	6	46	46
g / C, Green / Cycle	0.05	0.30	0.30	0.15	0.40	0.40	0.04	0.37	0.37	0.05	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.07	0.14	0.31	0.32	0.03	0.20	0.35	0.04	0.13	0.15
s, saturation flow rate [veh/h]	3277	3373	1530	3277	3373	1623	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	164	999	453	492	1336	643	68	1257	561	81	1282	572
d1, Uniform Delay [s]	56.52	31.79	31.94	50.25	31.89	32.07	56.91	29.53	36.56	56.54	26.62	27.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.39	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.86	0.51	1.21	7.20	4.88	10.18	13.28	0.36	23.44	15.71	0.17	0.42
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.22	0.23	0.92	0.79	0.80	0.72	0.54	0.95	0.79	0.35	0.38
d, Delay for Lane Group [s/veh]	67.39	32.29	33.15	57.45	36.76	42.25	70.19	29.89	60.00	72.25	26.79	27.43
Lane Group LOS	E	C	C	E	D	D	E	C	E	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.32	2.48	2.50	7.13	14.21	14.87	1.72	7.66	18.51	2.27	4.66	4.64
50th-Percentile Queue Length [ft/ln]	58.02	62.03	62.47	178.23	355.34	371.65	43.00	191.57	462.82	56.80	116.61	116.08
95th-Percentile Queue Length [veh/ln]	4.18	4.47	4.50	11.51	20.40	21.19	3.10	12.20	25.57	4.09	8.21	8.18
95th-Percentile Queue Length [ft/ln]	104.44	111.65	112.45	287.70	509.92	529.74	77.40	305.06	639.23	102.25	205.16	204.43

Movement, Approach, & Intersection Results

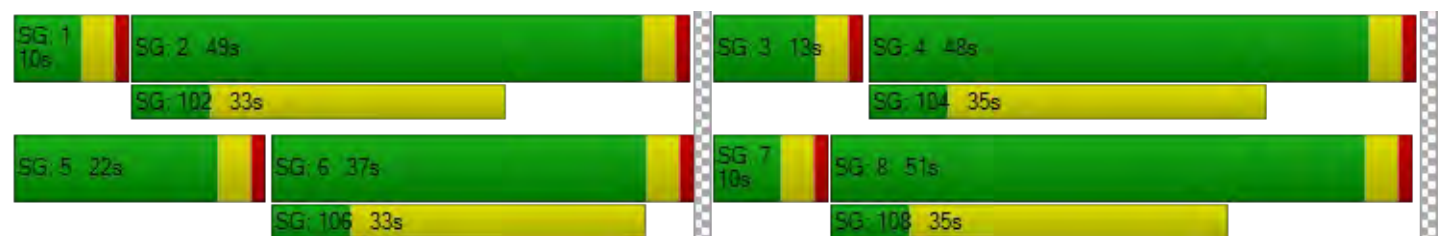
d_M, Delay for Movement [s/veh]	67.39	32.33	33.15	57.45	37.81	42.25	70.19	29.89	60.00	72.25	26.79	27.43
Movement LOS	E	C	C	E	D	D	E	C	E	E	C	C
d_A, Approach Delay [s/veh]	42.95			42.76			44.23			30.93		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	41.25											
Intersection LOS	D											
Intersection V/C	0.867											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.028			3.047			2.810			2.784		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			750			783			733		
d_b, Bicycle Delay [s]	31.54			23.44			22.20			24.07		
I_b,int, Bicycle LOS Score for Intersection	1.814			2.673			2.597			2.167		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	13.0
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.169

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	26	148	8	9	296	19	33	2	61	0	0	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	26	148	8	9	296	19	33	2	61	0	0	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	37	2	2	74	5	8	1	15	0	0	0
Total Analysis Volume [veh/h]	26	148	8	9	296	19	33	2	61	0	0	0
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	26	0	10	26	0	0	59	0	0	59	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	76	76	1	74	74	6	6	6	6
g / C, Green / Cycle	0.03	0.80	0.80	0.01	0.78	0.78	0.06	0.06	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.02	0.04	0.04	0.01	0.09	0.09	0.02	0.04	0.00	0.00
s, saturation flow rate [veh/h]	1687	1772	1740	1687	1772	1734	1417	1513	1339	1772
c, Capacity [veh/h]	55	1416	1390	25	1384	1355	135	91	80	106
d1, Uniform Delay [s]	45.17	2.01	2.01	46.39	2.50	2.50	44.64	43.80	0.00	0.00
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.23	0.07	0.08	8.89	0.17	0.17	0.92	9.05	0.00	0.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.47	0.06	0.06	0.37	0.11	0.12	0.24	0.69	0.00	0.00
d, Delay for Lane Group [s/veh]	51.40	2.08	2.08	55.28	2.67	2.68	45.56	52.85	0.00	0.00
Lane Group LOS	D	A	A	E	A	A	D	D	A	A
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.69	0.23	0.22	0.27	0.56	0.56	0.79	1.67	0.00	0.00
50th-Percentile Queue Length [ft/ln]	17.34	5.63	5.61	6.75	14.08	13.97	19.80	41.76	0.00	0.00
95th-Percentile Queue Length [veh/ln]	1.25	0.41	0.40	0.49	1.01	1.01	1.43	3.01	0.00	0.00
95th-Percentile Queue Length [ft/ln]	31.20	10.13	10.09	12.15	25.35	25.14	35.63	75.18	0.00	0.00

Movement, Approach, & Intersection Results

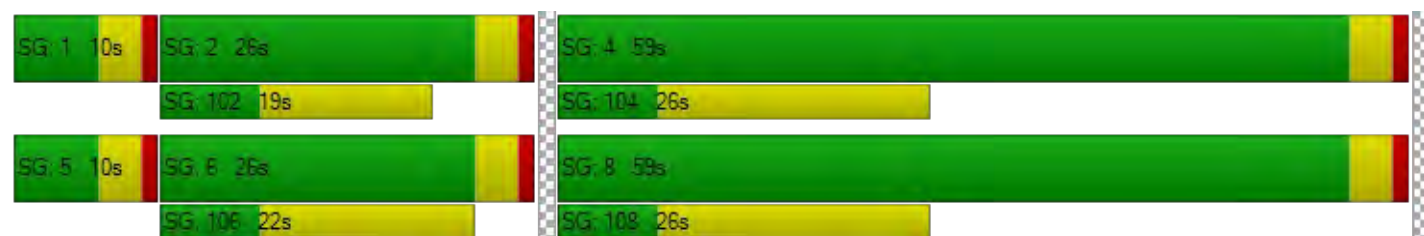
d_M, Delay for Movement [s/veh]	51.40	2.08	2.08	55.28	2.67	2.68	45.56	52.85	52.85	0.00	0.00	0.00
Movement LOS	D	A	A	E	A	A	D	D	D	A	A	A
d_A, Approach Delay [s/veh]	9.13			4.13			50.35			0.00		
Approach LOS	A			A			D			A		
d_I, Intersection Delay [s/veh]	13.01											
Intersection LOS	B											
Intersection V/C	0.169											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.407			2.448			1.988			1.949		
Crosswalk LOS	B			B			A			A		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	463			463			1158			1158		
d_b, Bicycle Delay [s]	28.05			28.05			8.42			8.42		
I_b,int, Bicycle LOS Score for Intersection	1.710			1.827			1.718			1.560		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type: Signalized
 Analysis Method: HCM 6th Edition
 Analysis Period: 15 minutes

Delay (sec / veh): 14.1
 Level Of Service: B
 Volume to Capacity (v/c): 0.158

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	13	168	129	32	145	8	1	0	3	110	0	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	13	168	129	32	145	8	1	0	3	110	0	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	42	32	8	36	2	0	0	1	28	0	5
Total Analysis Volume [veh/h]	13	168	129	32	145	8	1	0	3	110	0	19
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	29	0	10	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	81	74	74	81	76	76	1	1	6	6
g / C, Green / Cycle	0.81	0.74	0.74	0.81	0.76	0.76	0.01	0.01	0.06	0.06
(v / s)_i Volume / Saturation Flow Rate	0.01	0.09	0.09	0.03	0.04	0.04	0.00	0.00	0.04	0.04
s, saturation flow rate [veh/h]	1255	1772	1527	1124	1772	1739	1687	1506	1687	1629
c, Capacity [veh/h]	1107	1307	1126	984	1337	1313	12	10	101	97
d1, Uniform Delay [s]	1.77	3.78	3.80	1.83	3.15	3.15	49.38	49.44	46.01	46.04
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.18	0.23	0.06	0.08	0.08	3.10	14.48	6.73	7.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.01	0.12	0.13	0.03	0.06	0.06	0.09	0.29	0.65	0.66
d, Delay for Lane Group [s/veh]	1.77	3.96	4.03	1.89	3.23	3.23	52.48	63.92	52.74	53.35
Lane Group LOS	A	A	A	A	A	A	D	E	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	0.03	0.81	0.76	0.09	0.34	0.34	0.03	0.12	1.76	1.75
50th-Percentile Queue Length [ft/ln]	0.78	20.26	19.04	2.28	8.61	8.57	0.87	2.90	44.03	43.64
95th-Percentile Queue Length [veh/ln]	0.06	1.46	1.37	0.16	0.62	0.62	0.06	0.21	3.17	3.14
95th-Percentile Queue Length [ft/ln]	1.41	36.46	34.26	4.11	15.49	15.43	1.57	5.23	79.26	78.55

Movement, Approach, & Intersection Results

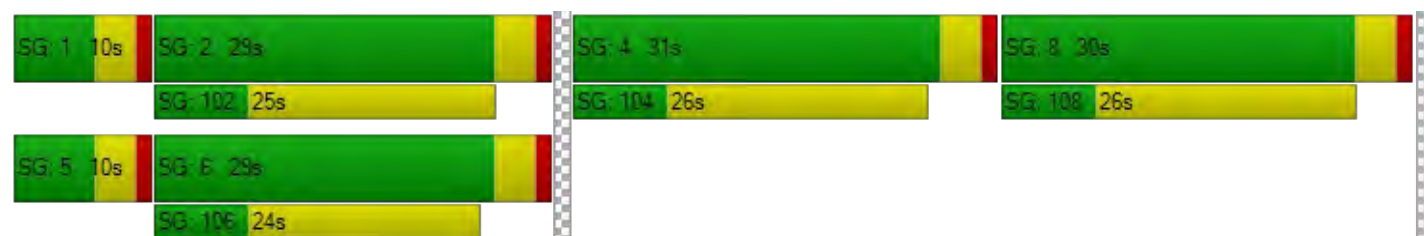
d_M, Delay for Movement [s/veh]	1.77	3.97	4.03	1.89	3.23	3.23	52.48	52.48	63.92	52.99	53.35	53.35
Movement LOS	A	A	A	A	A	A	D	D	E	D	D	D
d_A, Approach Delay [s/veh]	3.90			3.00			61.06			53.04		
Approach LOS	A			A			E			D		
d_I, Intersection Delay [s/veh]	14.09											
Intersection LOS	B											
Intersection V/C	0.158											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.415			2.377			1.967			2.074		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	500			500			520			540		
d_b, Bicycle Delay [s]	28.13			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	1.815			1.712			1.566			1.772		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	16.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.297

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	32	5	15	16	2	71	156	300	15	28	459	28
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	32	5	15	16	2	71	156	300	15	28	459	28
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	8	1	4	4	1	18	39	75	4	7	115	7
Total Analysis Volume [veh/h]	32	5	15	16	2	71	156	300	15	28	459	28
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	10	10	16	38	0	10	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	5	5	5	5	25	7	66	66	3	62	62
g / C, Green / Cycle	0.05	0.05	0.05	0.06	0.06	0.26	0.07	0.69	0.69	0.03	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.01	0.02	0.01	0.01	0.00	0.05	0.05	0.09	0.09	0.02	0.14	0.14
s, saturation flow rate [veh/h]	1417	1562	1506	1687	1612	1506	3277	1772	1742	1687	1772	1736
c, Capacity [veh/h]	119	144	73	98	94	393	231	1224	1204	58	1160	1137
d1, Uniform Delay [s]	43.39	43.79	43.52	42.61	42.26	27.26	43.16	4.99	4.99	45.12	6.58	6.59
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.28	0.64	1.38	0.77	0.09	0.22	3.41	0.22	0.22	6.14	0.42	0.43
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.08	0.19	0.21	0.16	0.02	0.18	0.67	0.13	0.13	0.48	0.21	0.21
d, Delay for Lane Group [s/veh]	43.67	44.42	44.90	43.38	42.35	27.47	46.57	5.21	5.21	51.26	7.00	7.01
Lane Group LOS	D	D	D	D	D	C	D	A	A	D	A	A
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.22	0.65	0.37	0.38	0.05	1.27	1.88	0.99	0.97	0.74	1.90	1.87
50th-Percentile Queue Length [ft/ln]	5.47	16.28	9.13	9.41	1.16	31.65	47.12	24.63	24.37	18.58	47.47	46.83
95th-Percentile Queue Length [veh/ln]	0.39	1.17	0.66	0.68	0.08	2.28	3.39	1.77	1.75	1.34	3.42	3.37
95th-Percentile Queue Length [ft/ln]	9.85	29.30	16.44	16.94	2.09	56.97	84.82	44.34	43.87	33.45	85.45	84.29

Movement, Approach, & Intersection Results

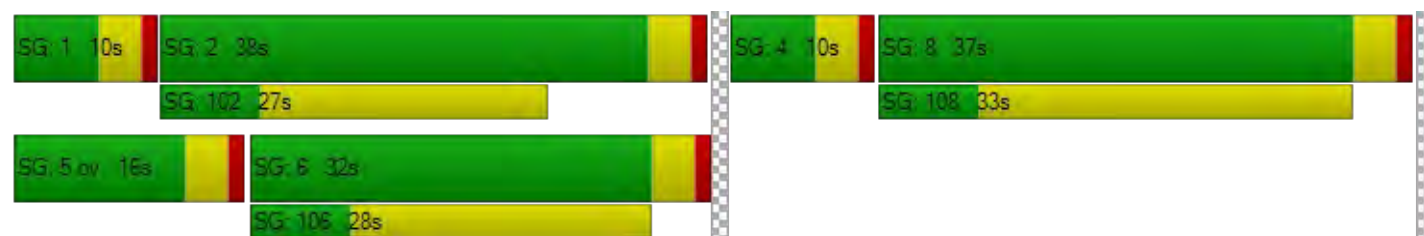
d_M, Delay for Movement [s/veh]	44.18	44.42	44.90	43.38	42.35	27.47	46.57	5.21	5.21	51.26	7.01	7.01
Movement LOS	D	D	D	D	D	C	D	A	A	D	A	A
d_A, Approach Delay [s/veh]	44.43			30.67			18.91			9.41		
Approach LOS	D			C			B			A		
d_I, Intersection Delay [s/veh]	16.68											
Intersection LOS	B											
Intersection V/C	0.297											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			0.00			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.321			2.356			0.000			2.467		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	695			126			716			589		
d_b, Bicycle Delay [s]	20.23			41.69			19.58			23.63		
I_b,int, Bicycle LOS Score for Intersection	1.645			1.633			1.948			1.984		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	57.4
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.031

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	180	71	62	349	79	77	413	93	78	311	44
Total Analysis Volume [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	42	0	13	40	0	17	50	0	15	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	38	38	9	36	36	13	46	46	11	44	44
g / C, Green / Cycle	0.09	0.32	0.32	0.08	0.30	0.30	0.11	0.38	0.38	0.09	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.10	0.15	0.19	0.08	0.29	0.21	0.09	0.40	0.41	0.10	0.26	0.12
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1613	3277	4826	1506
c, Capacity [veh/h]	301	1523	475	246	1442	450	355	1296	620	301	1774	554
d1, Uniform Delay [s]	54.50	33.05	34.59	55.50	41.49	37.27	52.65	36.94	36.94	54.50	32.33	27.13
k, delay calibration	0.11	0.11	0.16	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.57	0.23	1.72	29.71	5.73	4.17	6.45	37.30	59.09	34.57	2.35	1.48
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.04	0.47	0.59	1.01	0.97	0.70	0.87	1.04	1.08	1.04	0.70	0.31
d, Delay for Lane Group [s/veh]	89.07	33.28	36.31	85.21	47.22	41.43	59.10	74.25	96.04	89.07	34.68	28.61
Lane Group LOS	F	C	D	F	D	D	E	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.98	5.66	7.14	4.73	14.15	8.64	4.88	25.30	27.95	5.98	10.57	3.81
50th-Percentile Queue Length [ft/ln]	149.40	141.48	178.42	118.30	353.86	216.05	122.01	632.57	698.87	149.40	264.24	95.26
95th-Percentile Queue Length [veh/ln]	10.12	9.56	11.52	8.33	20.32	13.46	8.50	34.60	38.62	10.12	15.90	6.86
95th-Percentile Queue Length [ft/ln]	252.99	239.01	287.95	208.31	508.11	336.57	212.58	865.08	965.57	252.99	397.54	171.47

Movement, Approach, & Intersection Results

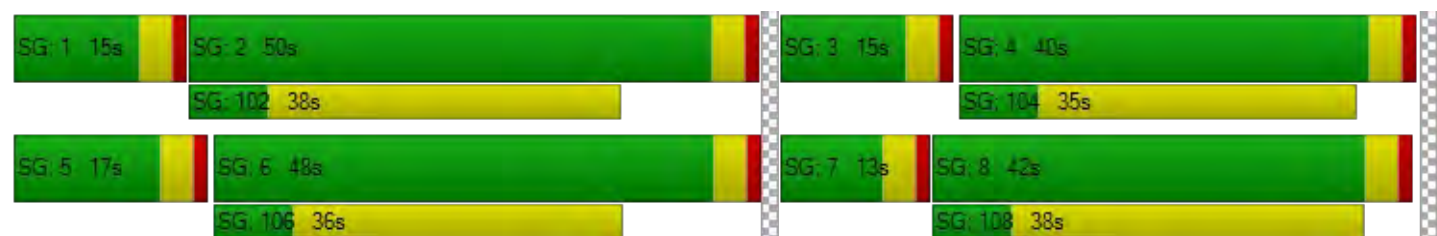
d_M, Delay for Movement [s/veh]	89.07	33.28	36.31	85.21	47.22	41.43	59.10	78.16	96.04	89.07	34.68	28.61
Movement LOS	F	C	D	F	D	D	E	E	F	F	C	C
d_A, Approach Delay [s/veh]	47.17			51.12			78.50			43.87		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	57.40											
Intersection LOS	E											
Intersection V/C	1.031											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.231			3.205			3.251			3.287		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			600			767			733		
d_b, Bicycle Delay [s]	28.02			29.40			22.82			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.283			2.637			2.841			2.512		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	25.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.701

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	66	132	168	175	96	198	285	1608	80	59	1509	175
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	66	132	168	175	96	198	285	1608	80	59	1509	175
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	33	42	44	24	50	71	402	20	15	377	44
Total Analysis Volume [veh/h]	66	132	168	175	96	198	285	1608	80	59	1509	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	33	37	0	30	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	26	26	26	20	62	62	5	47	47
g / C, Green / Cycle	0.25	0.25	0.25	0.25	0.25	0.25	0.19	0.59	0.59	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.05	0.07	0.11	0.14	0.03	0.13	0.17	0.33	0.33	0.03	0.31	0.12
s, saturation flow rate [veh/h]	1299	1772	1506	1258	3373	1506	1687	3373	1729	1687	4826	1506
c, Capacity [veh/h]	330	438	372	273	834	372	318	1992	1021	81	2171	677
d1, Uniform Delay [s]	35.28	32.14	33.48	42.79	30.61	34.25	41.59	13.14	13.16	49.32	23.11	17.97
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.15	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.29	0.38	0.86	2.51	0.06	1.18	11.74	1.14	2.23	11.91	1.86	0.92
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.20	0.30	0.45	0.64	0.12	0.53	0.90	0.56	0.56	0.73	0.70	0.26
d, Delay for Lane Group [s/veh]	35.57	32.52	34.33	45.30	30.67	35.42	53.33	14.29	15.39	61.23	24.98	18.90
Lane Group LOS	D	C	C	D	C	D	D	B	B	E	C	B
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.45	2.77	3.69	4.57	0.95	4.47	8.16	7.85	8.39	1.79	10.01	2.78
50th-Percentile Queue Length [ft/ln]	36.14	69.13	92.32	114.22	23.72	111.68	204.10	196.31	209.83	44.74	250.29	69.53
95th-Percentile Queue Length [veh/ln]	2.60	4.98	6.65	8.07	1.71	7.93	12.85	12.45	13.14	3.22	15.20	5.01
95th-Percentile Queue Length [ft/ln]	65.04	124.43	166.17	201.85	42.69	198.34	321.25	311.20	328.61	80.52	380.02	125.15

Movement, Approach, & Intersection Results

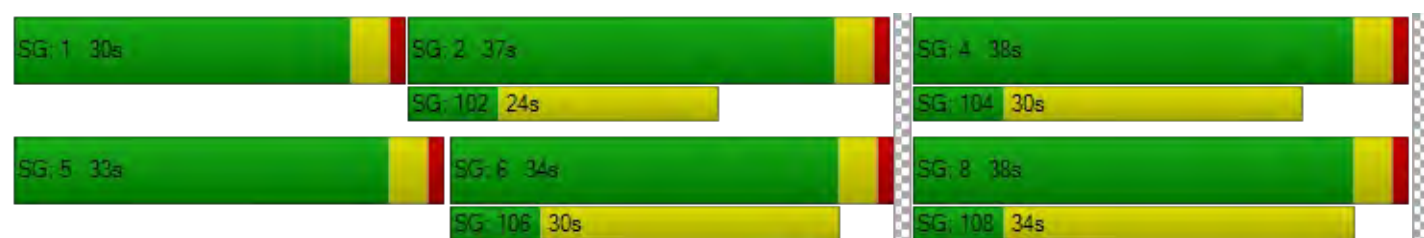
d_M, Delay for Movement [s/veh]	35.57	32.52	34.33	45.30	30.67	35.42	53.33	14.63	15.39	61.23	24.98	18.90
Movement LOS	D	C	C	D	C	D	D	B	B	E	C	B
d_A, Approach Delay [s/veh]	33.90			38.14			20.25			25.59		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	25.24											
Intersection LOS	C											
Intersection V/C	0.701											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.424			2.514			3.217			3.432		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	648			648			629			571		
d_b, Bicycle Delay [s]	24.00			24.00			24.69			26.79		
I_b,int, Bicycle LOS Score for Intersection	2.164			1.947			2.645			2.518		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	56.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.972

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	124	41	37	257	53	41	416	98	46	425	19
Total Analysis Volume [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	41	0	21	47	0	11	47	0	11	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	43	43	8	40	40	7	46	46	7	46	46
g / C, Green / Cycle	0.09	0.36	0.36	0.06	0.33	0.33	0.06	0.39	0.39	0.06	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.13	0.10	0.11	0.05	0.31	0.14	0.05	0.34	0.26	0.06	0.35	0.05
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	301	1727	539	206	1109	495	192	1869	583	192	1869	583
d1, Uniform Delay [s]	54.50	27.58	27.73	55.20	38.90	31.42	56.00	34.37	30.44	56.30	34.80	23.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	211.20	0.09	0.31	4.65	4.01	0.58	10.50	6.81	6.04	19.67	8.13	0.47
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.46	0.29	0.30	0.72	0.93	0.42	0.86	0.89	0.67	0.95	0.91	0.13
d, Delay for Lane Group [s/veh]	265.70	27.68	28.04	59.85	42.91	31.99	66.49	41.19	36.48	75.97	42.94	24.22
Lane Group LOS	F	C	C	E	D	C	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	13.38	3.43	3.41	2.33	15.04	4.83	2.76	16.01	10.25	3.27	16.77	1.50
50th-Percentile Queue Length [ft/ln]	334.55	85.81	85.15	58.28	375.92	120.81	68.91	400.21	256.15	81.79	419.36	37.50
95th-Percentile Queue Length [veh/ln]	21.86	6.18	6.13	4.20	21.40	8.44	4.96	22.57	15.50	5.89	23.49	2.70
95th-Percentile Queue Length [ft/ln]	546.40	154.46	153.26	104.90	534.90	210.93	124.04	564.25	387.39	147.22	587.28	67.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	265.70	27.68	28.04	59.85	42.91	31.99	66.49	41.19	36.48	75.97	42.94	24.22
Movement LOS	F	C	C	E	D	C	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	123.02			43.06			42.24			45.27		
Approach LOS	F			D			D			D		
d_I, Intersection Delay [s/veh]	56.63											
Intersection LOS	E											
Intersection V/C	0.972											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.068			2.998			3.358			3.289		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			717			717			717		
d_b, Bicycle Delay [s]	28.70			24.70			24.70			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.164			2.704			2.780			2.638		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	15.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.593

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	4	16	45	4	17	27	454	2	8	440	40
Total Analysis Volume [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	40	0	10	40	0	10	40	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	6	6	8	8	6	66	66	4	64	64
g / C, Green / Cycle	0.06	0.06	0.06	0.08	0.08	0.06	0.66	0.66	0.04	0.64	0.64
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.05	0.05	0.05	0.03	0.36	0.36	0.02	0.36	0.11
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1546	3277	3373	1767	1687	4826	1506
c, Capacity [veh/h]	108	113	87	266	126	190	2219	1163	63	3075	960
d1, Uniform Delay [s]	44.28	44.23	46.03	44.72	44.57	45.94	9.09	9.09	47.34	10.37	7.38
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.58	0.49	11.11	2.98	5.24	2.62	0.95	1.80	6.66	0.78	0.38
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.12	0.73	0.68	0.64	0.56	0.54	0.54	0.53	0.57	0.17
d, Delay for Lane Group [s/veh]	44.86	44.72	57.14	47.70	49.81	48.56	10.04	10.89	54.00	11.14	7.76
Lane Group LOS	D	D	E	D	D	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.37	0.34	1.82	2.27	2.10	1.36	6.41	7.00	0.92	6.83	1.39
50th-Percentile Queue Length [ft/ln]	9.20	8.55	45.61	56.72	52.38	33.96	160.27	174.90	23.01	170.63	34.80
95th-Percentile Queue Length [veh/ln]	0.66	0.62	3.28	4.08	3.77	2.45	10.56	11.33	1.66	11.11	2.51
95th-Percentile Queue Length [ft/ln]	16.55	15.39	82.09	102.09	94.29	61.14	264.09	283.34	41.42	277.75	62.65

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	44.86	44.72	57.14	47.70	49.81	49.81	48.56	10.33	10.89	54.00	11.14	7.76
Movement LOS	D	D	E	D	D	D	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	53.29			48.35			12.45			11.59		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	15.15											
Intersection LOS	B											
Intersection V/C	0.593											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.172			2.410			3.190			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	120			720			720			720		
d_b, Bicycle Delay [s]	44.18			20.48			20.48			20.48		
I_b,int, Bicycle LOS Score for Intersection	1.636			1.989			2.623			2.633		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	45.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.931

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	44	100	53	103	8	8	445	66	111	453	60
Total Analysis Volume [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	19	42	0	16	39	0	10	40	0	22	52	52
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	34	34	12	39	39	4	40	40	18	54	70
g / C, Green / Cycle	0.06	0.28	0.28	0.10	0.32	0.32	0.03	0.34	0.34	0.15	0.45	0.59
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.26	0.09	0.13	0.13	0.01	0.32	0.32	0.14	0.38	0.16
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1726	3277	4826	1625	3277	4826	1506
c, Capacity [veh/h]	196	948	423	237	570	555	111	1619	545	491	2179	881
d1, Uniform Delay [s]	55.42	32.71	42.17	53.39	31.65	31.66	56.60	38.79	38.79	50.16	28.90	12.27
k, delay calibration	0.11	0.11	0.34	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.71	0.09	24.02	11.51	0.45	0.46	1.48	12.56	27.03	6.38	3.88	0.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.71	0.18	0.94	0.90	0.40	0.40	0.30	0.94	0.94	0.90	0.83	0.27
d, Delay for Lane Group [s/veh]	60.13	32.80	66.19	64.90	32.10	32.12	58.08	51.35	65.83	56.53	32.78	13.02
Lane Group LOS	E	C	E	E	C	C	E	D	E	E	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.19	1.95	14.22	3.55	5.17	5.05	0.51	16.26	18.62	6.96	15.68	3.28
50th-Percentile Queue Length [ft/ln]	54.86	48.63	355.59	88.82	129.21	126.32	12.79	406.56	465.59	173.90	391.91	82.00
95th-Percentile Queue Length [veh/ln]	3.95	3.50	20.41	6.39	8.90	8.74	0.92	22.88	25.70	11.28	22.17	5.90
95th-Percentile Queue Length [ft/ln]	98.74	87.53	510.21	159.87	222.42	218.48	23.03	571.90	642.53	282.04	554.24	147.60

Movement, Approach, & Intersection Results

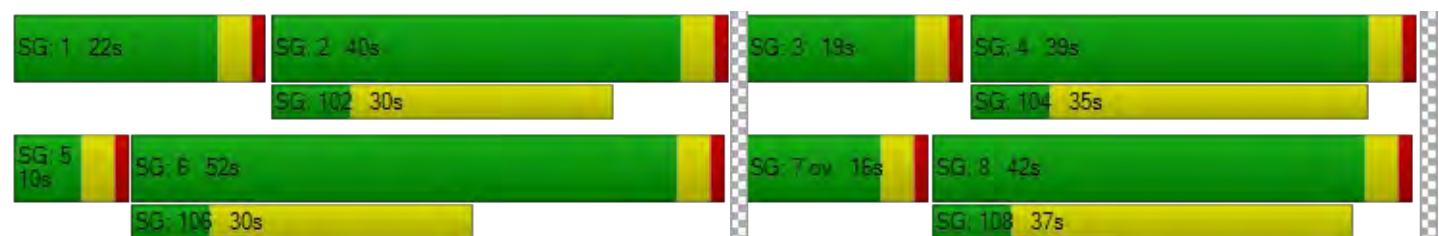
d_M, Delay for Movement [s/veh]	60.13	32.80	66.19	64.90	32.11	32.12	58.08	53.39	65.83	56.53	32.78	13.02
Movement LOS	E	C	E	E	C	C	E	D	E	E	C	B
d_A, Approach Delay [s/veh]	56.84			42.71			55.04			35.11		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	45.52											
Intersection LOS	D											
Intersection V/C	0.931											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.863			2.646			3.303			3.456		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			583			600			800		
d_b, Bicycle Delay [s]	28.02			30.10			29.40			21.60		
I_b,int, Bicycle LOS Score for Intersection	2.146			2.103			2.416			2.931		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	18.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.773

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	792	0	517	0	1729	805	0	1998	205
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	792	0	517	0	1729	805	0	1998	205
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	198	0	129	0	432	201	0	500	51
Total Analysis Volume [veh/h]	0	0	0	792	0	517	0	1729	805	0	1998	205
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	64	0	0	0	26	0	0	26	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		30	30	30	52	52
g / C, Green / Cycle		0.34	0.34	0.34	0.58	0.58
(v / s)_i Volume / Saturation Flow Rate		0.26	0.26	0.29	0.36	0.41
s, saturation flow rate [veh/h]		1687	1650	1506	4826	4826
c, Capacity [veh/h]		566	553	505	2778	2778
d1, Uniform Delay [s]		26.77	26.98	27.94	12.60	13.80
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.27	2.55	4.56	1.06	1.64
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.77	0.79	0.86	0.62	0.72
d, Delay for Lane Group [s/veh]		29.04	29.53	32.50	13.67	15.44
Lane Group LOS		C	C	C	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		8.42	8.52	9.06	7.21	9.20
50th-Percentile Queue Length [ft/ln]		210.52	212.99	226.44	180.33	230.11
95th-Percentile Queue Length [veh/ln]		13.18	13.31	13.99	11.62	14.18
95th-Percentile Queue Length [ft/ln]		329.50	332.66	349.84	290.45	354.50

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	29.26	0.00	32.04	0.00	13.67	0.00	0.00	15.44	0.00
Movement LOS				C		C		B			B	
d_A, Approach Delay [s/veh]	0.00			30.35			13.67			15.44		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	18.71											
Intersection LOS	B											
Intersection V/C	0.773											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			34.67			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.450			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			489			489		
d_b, Bicycle Delay [s]	45.00			45.00			25.69			25.69		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.292			2.511			2.659		
Bicycle LOS	D			F			B			B		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	32.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.817

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	50	212	0	0	36	47	455	135	0	362	5
Total Analysis Volume [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	68	0	0	0	19	19	52	0	0	33	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	49	49	49	15	15	63	44	44
g / C, Green / Cycle	0.41	0.41	0.41	0.13	0.13	0.52	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.32	0.34	0.36	0.05	0.11	0.38	0.23	0.21
s, saturation flow rate [veh/h]	3277	1605	1506	2665	1687	4826	4826	1754
c, Capacity [veh/h]	1345	659	618	334	211	2523	1757	639
d1, Uniform Delay [s]	30.62	31.38	32.45	48.48	51.66	21.93	31.41	30.66
k, delay calibration	0.11	0.19	0.23	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.00	4.54	7.88	0.87	12.32	1.82	1.70	3.73
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.82	0.87	0.43	0.89	0.72	0.63	0.57
d, Delay for Lane Group [s/veh]	31.62	35.92	40.34	49.35	63.98	23.75	33.11	34.39
Lane Group LOS	C	D	D	D	E	C	C	C
Critical Lane Group	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.07	14.43	15.42	2.02	6.31	13.11	8.97	9.15
50th-Percentile Queue Length [ft/ln]	326.83	360.76	385.50	50.62	157.86	327.80	224.34	228.78
95th-Percentile Queue Length [veh/ln]	19.00	20.66	21.86	3.64	10.44	19.05	13.89	14.11
95th-Percentile Queue Length [ft/ln]	475.08	516.51	546.50	91.12	260.89	476.27	347.15	352.81

Movement, Approach, & Intersection Results

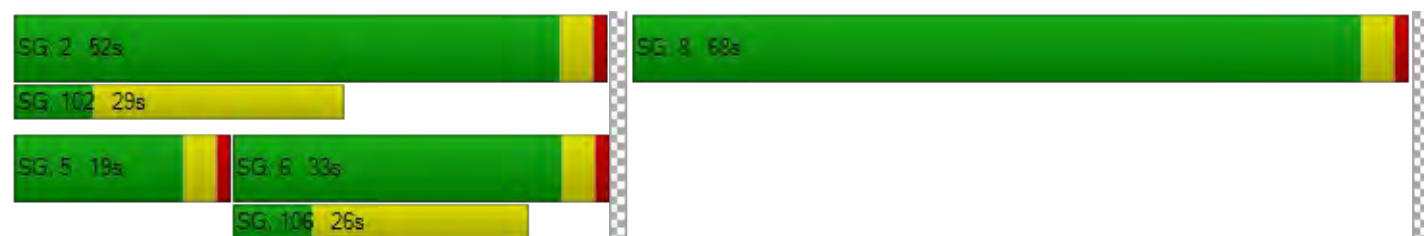
d_M, Delay for Movement [s/veh]	31.69	35.92	38.68	0.00	0.00	49.35	63.98	23.75	0.00	0.00	33.42	34.39
Movement LOS	C	D	D			D	E	C			C	C
d_A, Approach Delay [s/veh]	34.92			49.35			27.54			33.43		
Approach LOS	C			D			C			C		
d_I, Intersection Delay [s/veh]	32.32											
Intersection LOS	C											
Intersection V/C	0.817											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.728	2.133	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1067	0	800	483
d_b, Bicycle Delay [s]	13.07	60.00	21.60	34.50
I_b,int, Bicycle LOS Score for Intersection	5.066	4.132	2.665	2.165
Bicycle LOS	F	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	62.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.030

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	55	17	42	124	40	43	576	42	31	416	21
Total Analysis Volume [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	11	40	0	17	57	0	13	53	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	34	34	7	35	35	13	54	54	9	50	50
g / C, Green / Cycle	0.05	0.29	0.29	0.06	0.29	0.29	0.11	0.45	0.45	0.08	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.09	0.05	0.28	0.11	0.10	0.48	0.49	0.07	0.27	0.27
s, saturation flow rate [veh/h]	3277	1772	1632	3277	1772	1506	1687	3373	1712	1687	4826	1716
c, Capacity [veh/h]	164	505	465	191	520	442	183	1512	767	127	2002	712
d1, Uniform Delay [s]	56.78	33.48	33.56	56.04	41.64	33.55	53.15	33.10	33.10	55.37	28.03	28.03
k, delay calibration	0.11	0.11	0.11	0.11	0.41	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.12	0.32	0.36	11.26	26.52	0.50	20.36	46.37	63.27	30.85	1.61	4.45
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.29	0.30	0.87	0.96	0.36	0.95	1.08	1.10	0.97	0.64	0.64
d, Delay for Lane Group [s/veh]	75.90	33.80	33.92	67.30	68.16	34.05	73.51	79.47	96.38	86.22	29.64	32.48
Lane Group LOS	E	C	C	E	E	C	E	F	F	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.73	3.44	3.26	2.79	18.10	3.79	6.21	31.00	35.07	4.79	10.05	11.29
50th-Percentile Queue Length [ft/ln]	68.23	86.09	81.50	69.78	452.46	94.65	155.18	775.05	876.75	119.82	251.32	282.17
95th-Percentile Queue Length [veh/ln]	4.91	6.20	5.87	5.02	25.08	6.81	10.29	42.38	48.07	8.38	15.25	16.80
95th-Percentile Queue Length [ft/ln]	122.81	154.96	146.70	125.60	626.88	170.37	257.33	1059.59	1201.80	209.58	381.31	419.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	75.90	33.84	33.92	67.30	68.16	34.05	73.51	84.44	96.38	86.22	30.28	32.48
Movement LOS	E	C	C	E	E	C	E	F	F	F	C	C
d_A, Approach Delay [s/veh]	48.35			61.32			84.48			34.05		
Approach LOS	D			E			F			C		
d_I, Intersection Delay [s/veh]	62.09											
Intersection LOS	E											
Intersection V/C	1.030											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.553			2.678			3.302			3.276		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			600			883			817		
d_b, Bicycle Delay [s]	30.10			29.40			18.70			21.00		
I_b,int, Bicycle LOS Score for Intersection	1.923			2.919			3.013			2.331		
Bicycle LOS	A			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	22.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.825

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	187	12	145	25	28	14	13	2161	470	209	1482	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	187	12	145	25	28	14	13	2161	470	209	1482	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	47	3	36	6	7	4	3	540	118	52	371	8
Total Analysis Volume [veh/h]	187	12	145	25	28	14	13	2161	470	209	1482	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	26	0	0	10	0	10	36	0	28	54	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	5	5	2	52	52	14	65	65
g / C, Green / Cycle	0.12	0.12	0.12	0.05	0.05	0.02	0.52	0.52	0.14	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.06	0.06	0.10	0.01	0.03	0.01	0.45	0.31	0.12	0.30	0.30
s, saturation flow rate [veh/h]	1687	1697	1506	1687	1673	1687	4826	1506	1687	3373	1753
c, Capacity [veh/h]	204	205	182	87	87	33	2523	787	244	2187	1136
d1, Uniform Delay [s]	41.12	41.12	42.82	45.70	46.18	48.52	20.64	16.57	41.80	8.79	8.79
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.79	1.78	7.73	1.78	4.16	7.61	4.01	3.32	8.36	0.69	1.32
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.49	0.80	0.29	0.49	0.40	0.86	0.60	0.86	0.46	0.46
d, Delay for Lane Group [s/veh]	42.91	42.90	50.55	47.48	50.34	56.13	24.65	19.90	50.16	9.48	10.11
Lane Group LOS	D	D	D	D	D	E	C	B	D	A	B
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.37	2.39	3.85	0.64	1.11	0.39	14.44	7.80	5.55	5.05	5.45
50th-Percentile Queue Length [ft/ln]	59.37	59.67	96.24	15.98	27.80	9.72	360.95	194.98	138.84	126.33	136.35
95th-Percentile Queue Length [veh/ln]	4.27	4.30	6.93	1.15	2.00	0.70	20.67	12.38	9.42	8.74	9.28
95th-Percentile Queue Length [ft/ln]	106.87	107.40	173.23	28.76	50.04	17.49	516.74	309.48	235.45	218.49	232.11

Movement, Approach, & Intersection Results

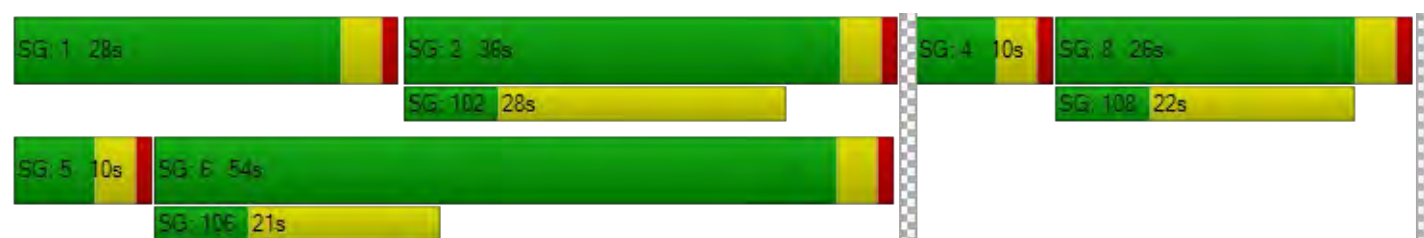
d_M, Delay for Movement [s/veh]	42.91	42.90	50.55	47.48	50.34	50.34	56.13	24.65	19.90	50.16	9.68	10.11
Movement LOS	D	D	D	D	D	D	E	C	B	D	A	B
d_A, Approach Delay [s/veh]	46.13			49.27			23.96			14.60		
Approach LOS	D			D			C			B		
d_I, Intersection Delay [s/veh]	22.54											
Intersection LOS	C											
Intersection V/C	0.825											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			0.00			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.392			1.985			0.000			3.163		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	440			120			640			1000		
d_b, Bicycle Delay [s]	30.42			44.18			23.12			12.50		
I_b,int, Bicycle LOS Score for Intersection	2.127			1.670			3.014			2.507		
Bicycle LOS	B			A			C			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	35.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TLOTR			TLOTR			TLOTR			TLOTR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	176	252	85	437	900	181	168	1549	298	71	1111	88
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	176	252	85	437	900	181	168	1549	298	71	1111	88
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	44	63	21	109	225	45	42	387	75	18	278	22
Total Analysis Volume [veh/h]	176	252	85	437	900	181	168	1549	298	71	1111	88
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	30	0	21	41	0	10	39	0	10	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	21	21	15	30	30	6	43	43	5	42	42
g / C, Green / Cycle	0.06	0.21	0.21	0.15	0.30	0.30	0.06	0.43	0.43	0.05	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.05	0.10	0.10	0.13	0.27	0.12	0.05	0.37	0.37	0.02	0.24	0.24
s, saturation flow rate [veh/h]	3277	1772	1622	3277	3373	1506	3277	3373	1630	3277	3373	1706
c, Capacity [veh/h]	199	365	335	505	1011	451	199	1440	696	173	1413	715
d1, Uniform Delay [s]	46.67	34.99	35.06	41.33	33.50	27.91	46.55	26.00	26.18	45.93	22.13	22.14
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.97	0.97	1.10	4.57	2.95	0.58	9.24	6.98	14.08	1.56	1.63	3.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.88	0.48	0.49	0.86	0.89	0.40	0.84	0.86	0.87	0.41	0.56	0.56
d, Delay for Lane Group [s/veh]	58.64	35.96	36.16	45.90	36.45	28.49	55.79	32.98	40.26	47.49	23.76	25.34
Lane Group LOS	E	D	D	D	D	C	E	C	D	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.49	3.81	3.57	5.52	10.59	3.48	2.31	14.17	15.30	0.89	7.22	7.62
50th-Percentile Queue Length [ft/ln]	62.30	95.17	89.25	138.10	264.82	87.10	57.82	354.20	382.47	22.22	180.58	190.59
95th-Percentile Queue Length [veh/ln]	4.49	6.85	6.43	9.38	15.93	6.27	4.16	20.34	21.71	1.60	11.63	12.15
95th-Percentile Queue Length [ft/ln]	112.14	171.31	160.64	234.46	398.27	156.78	104.08	508.52	542.83	40.00	290.77	303.80

Movement, Approach, & Intersection Results

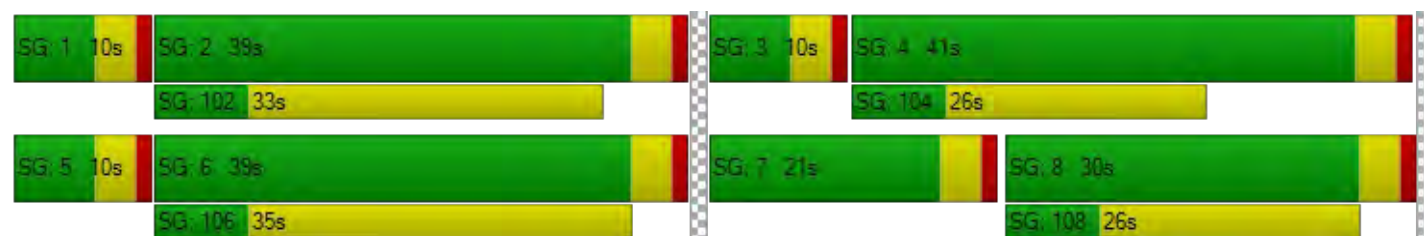
d_M, Delay for Movement [s/veh]	58.64	36.02	36.16	45.90	36.45	28.49	55.79	34.43	40.26	47.49	24.21	25.34
Movement LOS	E	D	D	D	D	C	E	C	D	D	C	C
d_A, Approach Delay [s/veh]	43.80			38.22			37.07			25.59		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	35.31											
Intersection LOS	D											
Intersection V/C	0.850											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.747			2.881			3.155			3.137		
Crosswalk LOS	B			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			740			700			700		
d_b, Bicycle Delay [s]	27.38			19.85			21.13			21.13		
I_b,int, Bicycle LOS Score for Intersection	1.983			2.812			2.668			2.258		
Bicycle LOS	A			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.855

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	149	612	255	248	1015	416	262	1200	165	339	1177	140
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	149	612	255	248	1015	416	262	1200	165	339	1177	140
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	37	153	64	62	254	104	66	300	41	85	294	35
Total Analysis Volume [veh/h]	149	612	255	248	1015	416	262	1200	165	339	1177	140
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	41	41	18	45	45	15	46	0	15	46	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	38	53	11	39	54	11	44	44	11	44	44
g / C, Green / Cycle	0.08	0.31	0.44	0.09	0.32	0.45	0.09	0.37	0.37	0.09	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.09	0.18	0.17	0.08	0.30	0.28	0.08	0.25	0.11	0.10	0.26	0.26
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1677
c, Capacity [veh/h]	141	1058	661	305	1090	675	301	1776	554	301	1242	617
d1, Uniform Delay [s]	55.00	34.53	22.74	53.42	39.35	25.24	53.79	31.89	26.91	54.50	32.41	32.43
k, delay calibration	0.11	0.11	0.21	0.11	0.11	0.32	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	50.89	0.50	0.73	5.27	4.27	2.71	7.62	2.08	1.37	66.20	3.43	6.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.06	0.58	0.39	0.81	0.93	0.62	0.87	0.68	0.30	1.13	0.71	0.71
d, Delay for Lane Group [s/veh]	105.88	35.04	23.47	58.69	43.62	27.95	61.41	33.97	28.28	120.70	35.84	39.18
Lane Group LOS	F	D	C	E	D	C	E	C	C	F	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	6.26	7.54	4.98	3.89	14.92	9.41	4.22	10.03	3.58	7.31	11.41	11.93
50th-Percentile Queue Length [ft/ln]	156.39	188.50	124.61	97.33	372.97	235.29	105.48	250.75	89.57	182.87	285.35	298.33
95th-Percentile Queue Length [veh/ln]	10.55	12.04	8.65	7.01	21.25	14.44	7.59	15.22	6.45	12.25	16.95	17.60
95th-Percentile Queue Length [ft/ln]	263.86	301.08	216.15	175.19	531.34	361.07	189.70	380.59	161.23	306.20	423.87	439.96

Movement, Approach, & Intersection Results

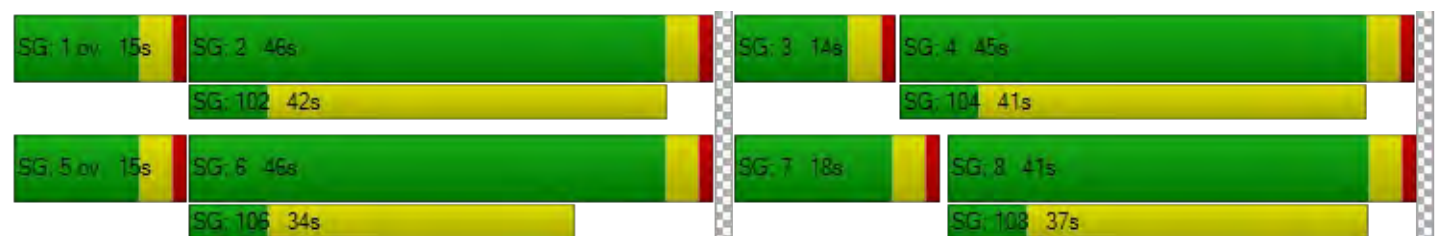
d_M, Delay for Movement [s/veh]	105.88	35.04	23.47	58.69	43.62	27.95	61.41	33.97	28.28	120.70	36.69	39.18
Movement LOS	F	D	C	E	D	C	E	C	C	F	D	D
d_A, Approach Delay [s/veh]	42.52			41.96			37.81			54.10		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.29											
Intersection LOS	D											
Intersection V/C	0.855											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.879			2.983			3.228			3.149		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			683			700			700		
d_b, Bicycle Delay [s]	28.70			26.00			25.35			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.398			2.945			2.454			2.470		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.920

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	278	293	15	161	1151	226	264	899	788	40	1046	112
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	278	293	15	161	1151	226	264	899	788	40	1046	112
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	70	73	4	40	288	57	66	225	197	10	262	28
Total Analysis Volume [veh/h]	278	293	15	161	1151	226	264	899	788	40	1046	112
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	16	49	0	11	44	44	16	50	50	10	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	38	7	33	49	12	54	70	4	47	47
g / C, Green / Cycle	0.10	0.32	0.06	0.28	0.41	0.10	0.45	0.59	0.04	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.08	0.09	0.05	0.24	0.15	0.08	0.27	0.52	0.01	0.23	0.23
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1685
c, Capacity [veh/h]	329	1070	193	1331	617	329	1527	883	124	1315	657
d1, Uniform Delay [s]	53.07	30.64	55.90	41.34	24.61	52.82	24.52	21.53	56.28	28.98	29.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.89	0.14	8.91	1.81	0.36	4.54	1.67	13.26	1.50	1.93	3.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.27	0.83	0.86	0.37	0.80	0.59	0.89	0.32	0.59	0.59
d, Delay for Lane Group [s/veh]	58.96	30.77	64.81	43.15	24.97	57.36	26.20	34.79	57.78	30.91	32.83
Lane Group LOS	E	C	E	D	C	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.39	3.21	2.65	10.93	4.53	4.10	9.76	21.26	0.62	9.08	9.44
50th-Percentile Queue Length [ft/ln]	109.70	80.20	66.31	273.30	113.24	102.51	244.04	531.57	15.43	227.09	236.06
95th-Percentile Queue Length [veh/ln]	7.82	5.77	4.77	16.35	8.02	7.38	14.89	28.82	1.11	14.03	14.48
95th-Percentile Queue Length [ft/ln]	195.58	144.35	119.36	408.85	200.50	184.51	372.14	720.62	27.78	350.66	362.04

Movement, Approach, & Intersection Results

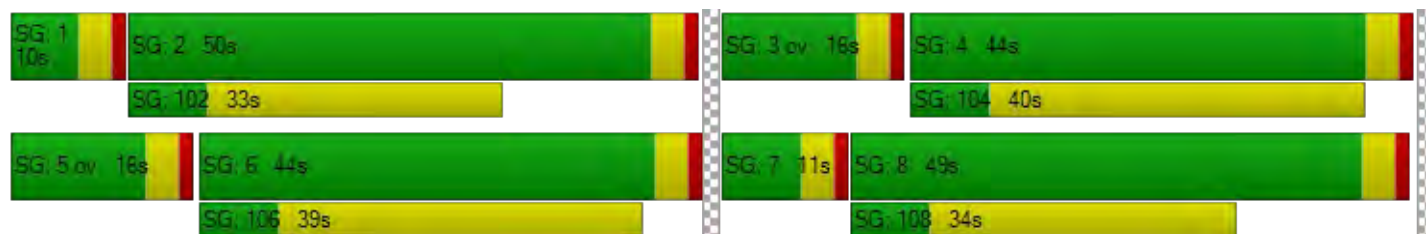
d_M, Delay for Movement [s/veh]	58.96	30.77	0.00	64.81	43.15	24.97	57.36	26.20	34.79	57.78	31.41	32.83
Movement LOS	E	C		E	D	C	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	44.50			42.74			33.88			32.43		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	37.30											
Intersection LOS	D											
Intersection V/C	0.920											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.050			3.008			3.166			2.922		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	750			667			767			667		
d_b, Bicycle Delay [s]	23.44			26.67			22.82			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.031			2.406			3.169			2.219		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.777

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	121	440	140	104	195	155	100	1461	76	84	1546	198
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	440	140	104	195	155	100	1461	76	84	1546	198
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	110	35	26	49	39	25	365	19	21	387	50
Total Analysis Volume [veh/h]	121	440	140	104	195	155	100	1461	76	84	1546	198
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	12	33	0	11	32	0	11	36	0	10	35	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	8	18	18	7	17	17	7	43	43	6	42	42
g / C, Green / Cycle	0.09	0.20	0.20	0.08	0.19	0.19	0.07	0.48	0.48	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.07	0.17	0.17	0.06	0.10	0.11	0.06	0.30	0.30	0.05	0.35	0.35
s, saturation flow rate [veh/h]	1687	1772	1627	1687	1772	1520	1687	3373	1727	1687	3373	1671
c, Capacity [veh/h]	151	357	328	131	337	289	127	1616	827	108	1578	782
d1, Uniform Delay [s]	40.29	34.63	34.68	40.85	33.01	33.17	40.99	17.51	17.52	41.58	19.51	19.55
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.51	5.46	6.12	10.11	1.39	1.78	10.24	1.87	3.61	11.36	3.14	6.25
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.84	0.85	0.79	0.55	0.57	0.79	0.63	0.63	0.78	0.74	0.74
d, Delay for Lane Group [s/veh]	49.80	40.09	40.80	50.96	34.40	34.95	51.23	19.38	21.13	52.93	22.65	25.80
Lane Group LOS	D	D	D	D	C	C	D	B	C	D	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.99	6.75	6.31	2.61	3.72	3.37	2.52	7.78	8.37	2.16	9.94	10.57
50th-Percentile Queue Length [ft/ln]	74.86	168.85	157.71	65.21	92.95	84.16	62.91	194.43	209.24	53.94	248.49	264.37
95th-Percentile Queue Length [veh/ln]	5.39	11.02	10.43	4.70	6.69	6.06	4.53	12.35	13.11	3.88	15.11	15.91
95th-Percentile Queue Length [ft/ln]	134.75	275.40	260.69	117.38	167.31	151.49	113.23	308.77	327.85	97.10	377.75	397.70

Movement, Approach, & Intersection Results

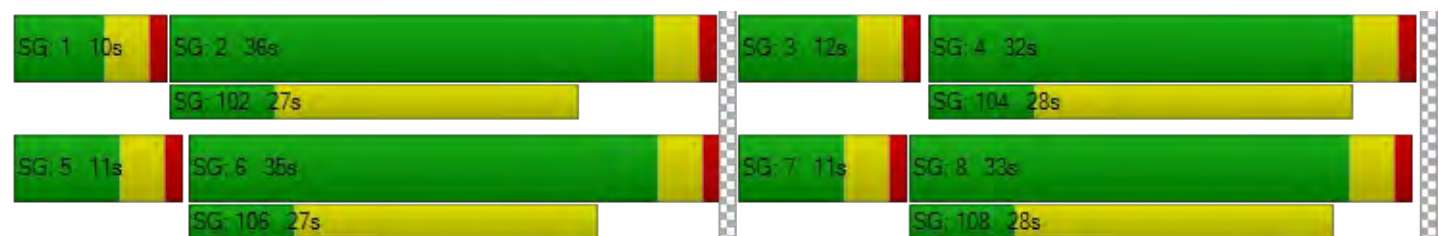
d_M, Delay for Movement [s/veh]	49.80	40.32	40.80	50.96	34.43	34.95	51.23	19.91	21.13	52.93	23.42	25.80
Movement LOS	D	D	D	D	C	C	D	B	C	D	C	C
d_A, Approach Delay [s/veh]	42.05			38.39			21.88			25.04		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	27.81											
Intersection LOS	C											
Intersection V/C	0.777											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.505			2.532			3.075			3.086		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	644			622			711			689		
d_b, Bicycle Delay [s]	20.67			21.36			18.69			19.34		
I_b,int, Bicycle LOS Score for Intersection	2.138			1.934			2.460			2.565		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.850

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	457	766	195	84	331	115	164	1543	388	236	1438	93
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	457	766	195	84	331	115	164	1543	388	236	1438	93
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	114	192	49	21	83	29	41	386	97	59	360	23
Total Analysis Volume [veh/h]	457	766	195	84	331	115	164	1543	388	236	1438	93
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	43	0	12	33	0	17	42	0	23	48	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	31	31	8	20	20	13	47	47	19	53	53
g / C, Green / Cycle	0.15	0.25	0.25	0.06	0.17	0.17	0.11	0.40	0.40	0.15	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.14	0.23	0.13	0.05	0.10	0.08	0.10	0.32	0.26	0.14	0.30	0.30
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1717
c, Capacity [veh/h]	494	857	383	107	562	251	184	1903	594	262	1485	756
d1, Uniform Delay [s]	50.35	43.24	38.39	55.47	46.25	45.16	52.78	32.38	29.68	49.84	26.91	26.93
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.13	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.96	3.55	1.05	12.04	0.99	1.30	13.34	3.88	5.52	12.53	2.57	4.98
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.93	0.89	0.51	0.79	0.59	0.46	0.89	0.81	0.65	0.90	0.68	0.68
d, Delay for Lane Group [s/veh]	58.31	46.79	39.44	67.52	47.24	46.46	66.12	36.26	35.19	62.37	29.48	31.91
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	C	C
Critical Lane Group	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.30	11.32	5.04	2.87	4.65	3.19	5.56	13.75	9.94	7.85	11.95	12.69
50th-Percentile Queue Length [ft/ln]	182.61	282.99	125.94	71.64	116.24	79.84	138.96	343.77	248.59	196.36	298.71	317.35
95th-Percentile Queue Length [veh/ln]	11.74	16.84	8.72	5.16	8.19	5.75	9.43	19.83	15.12	12.45	17.62	18.54
95th-Percentile Queue Length [ft/ln]	293.42	420.93	217.97	128.95	204.65	143.71	235.63	495.80	377.88	311.26	440.44	463.43

Movement, Approach, & Intersection Results

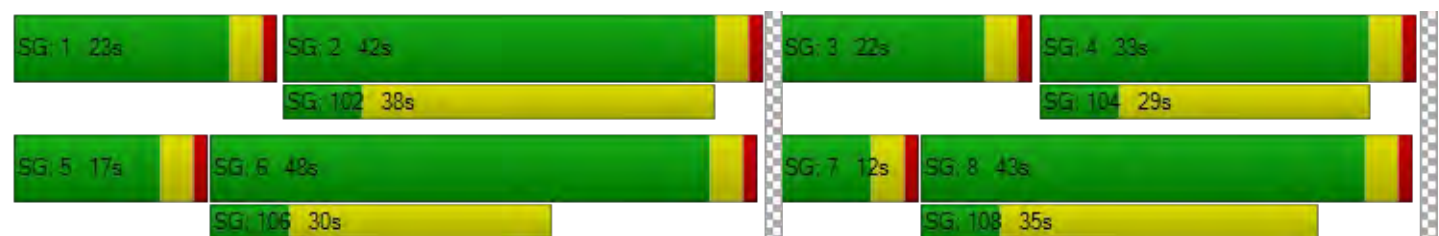
d_M, Delay for Movement [s/veh]	58.31	46.79	39.44	67.52	47.24	46.46	66.12	36.26	35.19	62.37	30.19	31.91
Movement LOS	E	D	D	E	D	D	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	49.49			50.28			38.40			34.58		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	41.03											
Intersection LOS	D											
Intersection V/C	0.850											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.938			2.719			3.240			3.108		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			483			633			733		
d_b, Bicycle Delay [s]	27.34			34.50			28.02			24.07		
I_b,int, Bicycle LOS Score for Intersection	2.729			1.997			2.712			2.531		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	43.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.880

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	350	600	323	562	389	16	39	1465	287	425	1211	732
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	350	600	323	562	389	16	39	1465	287	425	1211	732
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	88	150	81	141	97	4	10	366	72	106	303	183
Total Analysis Volume [veh/h]	350	600	323	562	389	16	39	1465	287	425	1211	732
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	36	0	25	44	0	10	39	0	20	49	49
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	25	25	25	21	33	33	4	42	42	16	53	78
g / C, Green / Cycle	0.11	0.21	0.21	0.21	0.18	0.28	0.28	0.04	0.35	0.35	0.13	0.44	0.65
(v / s)_i Volume / Saturation Flow Rate	0.11	0.18	0.18	0.19	0.17	0.12	0.12	0.01	0.27	0.27	0.13	0.25	0.49
s, saturation flow rate [veh/h]	3277	1772	1730	1506	3277	1772	1747	3277	4826	1586	3277	4826	1506
c, Capacity [veh/h]	357	375	366	319	574	493	486	122	1670	549	438	2135	980
d1, Uniform Delay [s]	53.38	45.67	45.70	45.82	49.29	35.35	35.35	56.31	35.32	35.33	51.76	24.91	14.23
k, delay calibration	0.11	0.22	0.23	0.23	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	18.18	11.67	12.11	14.89	13.19	0.56	0.56	1.49	3.88	11.04	14.06	1.10	5.18
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.98	0.87	0.87	0.88	0.98	0.41	0.41	0.32	0.79	0.79	0.97	0.57	0.75
d, Delay for Lane Group [s/veh]	71.56	57.34	57.80	60.71	62.48	35.91	35.91	57.80	39.21	46.38	65.83	26.01	19.40
Lane Group LOS	E	E	E	E	E	D	D	E	D	D	E	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	6.16	10.52	10.35	9.37	9.40	4.96	4.89	0.60	12.03	12.97	7.21	8.67	13.85
50th-Percentile Queue Length [ft/ln]	153.9	263.1	258.7	234.2	235.04	123.93	122.24	15.05	300.82	324.21	180.14	216.73	346.29
95th-Percentile Queue Length [veh/ln]	10.23	15.85	15.63	14.39	14.43	8.61	8.52	1.08	17.72	18.87	11.61	13.50	19.96
95th-Percentile Queue Length [ft/ln]	255.7	396.1	390.6	359.8	360.76	215.22	212.90	27.09	443.05	471.86	290.20	337.45	498.89

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	71.56	57.55	60.55	62.48	35.91	35.91	57.80	39.92	46.38	65.83	26.01	19.40
Movement LOS	E	E	E	E	D	D	E	D	D	E	C	B
d_A, Approach Delay [s/veh]	62.11			51.35			41.35			31.11		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	43.20											
Intersection LOS	D											
Intersection V/C	0.880											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.938			2.847			3.228			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	533			667			583			750		
d_b, Bicycle Delay [s]	32.27			26.67			30.10			23.44		
I_b,int, Bicycle LOS Score for Intersection	2.610			2.357			2.298			2.862		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	23.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.822

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	485	0	849	0	1421	848	249	1860	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	485	0	849	0	1421	848	249	1860	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	121	0	212	0	355	212	62	465	0
Total Analysis Volume [veh/h]	0	0	0	485	0	849	0	1421	848	249	1860	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	44	0	0	0	34	0	12	46	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		90	90	90	90	90	90
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		33	33	37	37	8	49
g / C, Green / Cycle		0.36	0.36	0.41	0.41	0.09	0.55
(v / s)_i Volume / Saturation Flow Rate		0.15	0.32	0.29	0.32	0.08	0.39
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1188	967	1999	1104	294	2647
d1, Uniform Delay [s]		21.46	26.83	21.90	22.66	40.37	14.94
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.23	2.76	2.18	5.14	6.64	1.59
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.41	0.88	0.71	0.77	0.85	0.70
d, Delay for Lane Group [s/veh]		21.69	29.60	24.07	27.80	47.01	16.53
Lane Group LOS		C	C	C	C	D	B
Critical Lane Group		No	Yes	No	Yes	Yes	No
50th-Percentile Queue Length [veh/ln]		3.75	8.50	8.29	8.10	2.95	8.87
50th-Percentile Queue Length [ft/ln]		93.84	212.60	207.28	202.38	73.78	221.70
95th-Percentile Queue Length [veh/ln]		6.76	13.29	13.01	12.76	5.31	13.75
95th-Percentile Queue Length [ft/ln]		168.90	332.16	325.33	319.04	132.80	343.79

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	21.69	0.00	29.60	0.00	24.07	27.80	47.01	16.53	0.00
Movement LOS				C		C		C	C	D	B	
d_A, Approach Delay [s/veh]	0.00			26.72			25.47			20.12		
Approach LOS	A			C			C			C		
d_I, Intersection Delay [s/veh]	23.79											
Intersection LOS	C											
Intersection V/C	0.822											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	34.67	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.249	2.456	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	667	933
d_b, Bicycle Delay [s]	45.00	45.00	20.00	12.80
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.808	2.720
Bicycle LOS	D	D	C	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	14.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.655

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	709	0	310	0	0	0	0	1543	571	0	1234	541
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	709	0	310	0	0	0	0	1543	571	0	1234	541
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	177	0	78	0	0	0	0	386	143	0	309	135
Total Analysis Volume [veh/h]	709	0	310	0	0	0	0	1543	571	0	1234	541
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	58	0	0	0	0	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	21	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	24	24		58	58	58	58
g / C, Green / Cycle	0.26	0.26		0.65	0.65	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.22	0.21		0.31	0.34	0.35	0.26
s, saturation flow rate [veh/h]	3277	1506		3373	1550	1506	4826
c, Capacity [veh/h]	857	394		2191	1007	978	3134
d1, Uniform Delay [s]	31.27	30.85		8.03	8.37	8.50	7.41
k, delay calibration	0.11	0.11		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.12	3.53		0.76	1.96	2.14	0.37
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.83	0.79		0.48	0.52	0.54	0.39
d, Delay for Lane Group [s/veh]	33.39	34.38		8.80	10.33	10.64	7.78
Lane Group LOS	C	C		A	B	B	A
Critical Lane Group	Yes	No		No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	7.29	6.46		4.76	5.26	5.37	3.36
50th-Percentile Queue Length [ft/ln]	182.17	161.40		118.97	131.59	134.26	83.95
95th-Percentile Queue Length [veh/ln]	11.71	10.62		8.34	9.03	9.17	6.04
95th-Percentile Queue Length [ft/ln]	292.85	265.57		208.41	225.66	229.28	151.12

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	33.39	0.00	34.38	0.00	0.00	0.00	0.00	8.93	10.62	0.00	7.78	0.00
Movement LOS	C		C					A	B		A	
d_A, Approach Delay [s/veh]	33.69			0.00			9.64			7.78		
Approach LOS	C			A			A			A		
d_I, Intersection Delay [s/veh]	14.73											
Intersection LOS	B											
Intersection V/C	0.655											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.609	0.000	0.000	0.000
Crosswalk LOS	B	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	622	622
d_b, Bicycle Delay [s]	45.00	45.00	21.36	21.36
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.722	2.238
Bicycle LOS	D	D	B	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	40.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	734	297	291	4	100	116	183	942	470	114	403	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	734	297	291	4	100	116	183	942	470	114	403	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	184	74	73	1	25	29	46	236	118	29	101	7
Total Analysis Volume [veh/h]	734	297	291	4	100	116	183	942	470	114	403	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	29	61	61	10	42	0	17	39	39	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	25	36	46	1	12	12	13	61	90	6	54	54
g / C, Green / Cycle	0.21	0.30	0.38	0.01	0.10	0.10	0.11	0.51	0.75	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.22	0.17	0.19	0.00	0.06	0.08	0.11	0.28	0.18	0.03	0.08	0.09
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1716
c, Capacity [veh/h]	683	528	575	12	171	146	184	1723	2006	166	1527	777
d1, Uniform Delay [s]	47.52	35.56	28.43	59.31	51.92	53.07	53.48	19.92	4.46	56.04	19.62	19.65
k, delay calibration	0.11	0.11	0.28	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	40.55	0.94	1.81	14.92	3.13	9.49	30.07	1.25	0.27	4.93	0.27	0.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.56	0.51	0.33	0.58	0.80	1.00	0.55	0.23	0.69	0.19	0.19
d, Delay for Lane Group [s/veh]	88.07	36.50	30.24	74.23	55.05	62.57	83.55	21.17	4.73	60.97	19.89	20.18
Lane Group LOS	F	D	C	E	E	E	F	C	A	E	B	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	13.98	7.46	6.68	0.17	3.04	3.81	7.04	9.06	1.60	1.81	2.43	2.57
50th-Percentile Queue Length [ft/ln]	349.61	186.51	167.10	4.29	75.91	95.19	176.07	226.45	40.03	45.33	60.86	64.19
95th-Percentile Queue Length [veh/ln]	20.90	11.94	10.92	0.31	5.47	6.85	11.39	13.99	2.88	3.26	4.38	4.62
95th-Percentile Queue Length [ft/ln]	522.54	298.49	273.10	7.72	136.63	171.35	284.87	349.85	72.05	81.60	109.55	115.53

Movement, Approach, & Intersection Results

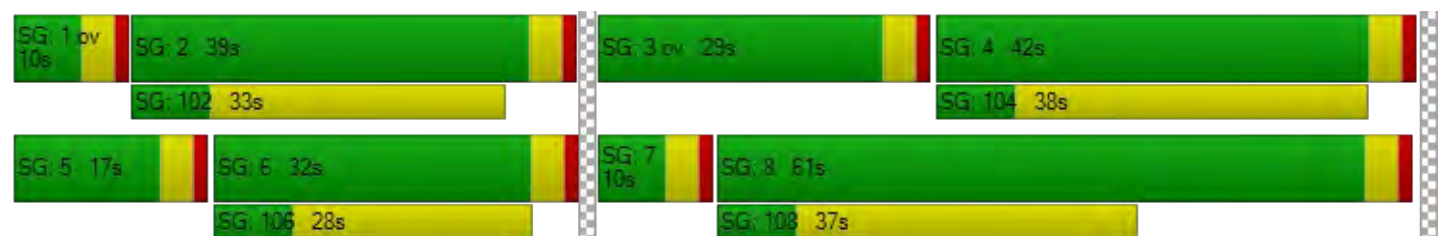
d_M, Delay for Movement [s/veh]	88.07	36.50	30.24	74.23	55.05	62.57	83.55	21.17	4.73	60.97	19.98	20.18
Movement LOS	F	D	C	E	E	E	F	C	A	E	B	C
d_A, Approach Delay [s/veh]	63.75			59.36			23.49			28.58		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	40.84											
Intersection LOS	D											
Intersection V/C	0.710											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.793			2.322			3.086			2.856		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	950			633			583			467		
d_b, Bicycle Delay [s]	16.54			28.02			30.10			35.27		
I_b,int, Bicycle LOS Score for Intersection	3.741			1.923			2.875			1.859		
Bicycle LOS	D			A			C			A		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	36.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.531

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	77	848	373	424	693	58	68	98	31	399	155	588
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	77	848	373	424	693	58	68	98	31	399	155	588
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	212	93	106	173	15	17	25	8	100	39	147
Total Analysis Volume [veh/h]	77	848	373	424	693	58	68	98	31	399	155	588
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	30	28	0	31	29	0	10	37	0	24	51	51
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	49	49	27	68	68	6	12	17	23	53
g / C, Green / Cycle	0.06	0.41	0.41	0.22	0.57	0.57	0.05	0.10	0.14	0.19	0.44
(v / s)_i Volume / Saturation Flow Rate	0.05	0.25	0.25	0.13	0.15	0.15	0.04	0.08	0.12	0.09	0.39
s, saturation flow rate [veh/h]	1687	3373	1509	3277	3373	1702	1687	1699	3277	1772	1506
c, Capacity [veh/h]	99	1367	612	731	1922	970	86	167	459	332	668
d1, Uniform Delay [s]	55.75	28.30	28.32	41.62	13.03	13.04	56.36	52.84	50.53	43.43	30.45
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.47
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	12.36	2.09	4.63	0.73	0.33	0.65	15.06	7.44	5.15	1.02	14.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.62	0.62	0.58	0.26	0.26	0.79	0.77	0.87	0.47	0.88
d, Delay for Lane Group [s/veh]	68.11	30.39	32.95	42.35	13.36	13.69	71.43	60.28	55.68	44.45	45.00
Lane Group LOS	E	C	C	D	B	B	E	E	E	D	D
Critical Lane Group	No	No	Yes	No	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.64	9.91	9.32	5.68	3.43	3.56	2.40	4.14	6.19	4.21	17.81
50th-Percentile Queue Length [ft/ln]	66.00	247.80	232.98	142.02	85.87	89.00	59.94	103.51	154.68	105.14	445.19
95th-Percentile Queue Length [veh/ln]	4.75	15.08	14.33	9.59	6.18	6.41	4.32	7.45	10.27	7.57	24.73
95th-Percentile Queue Length [ft/ln]	118.80	376.88	358.14	239.75	154.56	160.19	107.88	186.32	256.66	189.22	618.21

Movement, Approach, & Intersection Results

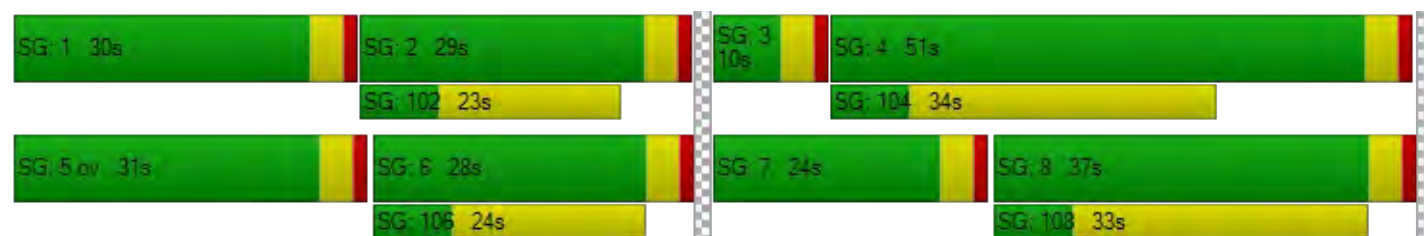
d_M, Delay for Movement [s/veh]	68.11	30.41	32.95	42.35	13.45	13.69	71.43	60.28	60.28	55.68	44.45	45.00
Movement LOS	E	C	C	D	B	B	E	E	E	E	D	D
d_A, Approach Delay [s/veh]	33.38			23.89			64.13			48.66		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	36.62											
Intersection LOS	D											
Intersection V/C	0.531											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.945			3.066			2.112			2.798		
Crosswalk LOS	C			C			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	400			417			550			783		
d_b, Bicycle Delay [s]	38.40			37.60			31.54			22.20		
I_b,int, Bicycle LOS Score for Intersection	2.274			2.206			1.885			3.444		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	22.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.550

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	138	58	171	50	48	109	79	703	114	195	1066	40
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	138	58	171	50	48	109	79	703	114	195	1066	40
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	15	43	13	12	27	20	176	29	49	267	10
Total Analysis Volume [veh/h]	138	58	171	50	48	109	79	703	114	195	1066	40
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	23	23	23	23	23	5	43	43	12	50	50
g / C, Green / Cycle	0.25	0.25	0.25	0.25	0.25	0.06	0.48	0.48	0.14	0.55	0.55
(v / s)_i Volume / Saturation Flow Rate	0.11	0.03	0.11	0.04	0.10	0.05	0.24	0.24	0.12	0.32	0.03
s, saturation flow rate [veh/h]	1229	1772	1506	1345	1578	1687	1772	1686	1687	3373	1506
c, Capacity [veh/h]	252	449	382	347	400	103	844	803	231	1864	832
d1, Uniform Delay [s]	37.50	25.94	28.31	30.04	27.86	41.67	16.16	16.16	37.92	13.18	9.26
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.85	0.13	0.82	0.19	0.63	11.44	2.08	2.18	8.17	1.28	0.11
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.55	0.13	0.45	0.14	0.39	0.77	0.50	0.50	0.84	0.57	0.05
d, Delay for Lane Group [s/veh]	39.35	26.07	29.13	30.23	28.49	53.10	18.24	18.35	46.10	14.47	9.37
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	3.02	0.96	3.13	0.91	2.82	2.03	6.08	5.81	4.65	6.79	0.37
50th-Percentile Queue Length [ft/ln]	75.60	24.07	78.32	22.74	70.55	50.86	151.92	145.26	116.22	169.86	9.15
95th-Percentile Queue Length [veh/ln]	5.44	1.73	5.64	1.64	5.08	3.66	10.12	9.76	8.18	11.07	0.66
95th-Percentile Queue Length [ft/ln]	136.09	43.32	140.98	40.93	126.99	91.55	252.99	244.09	204.62	276.73	16.47

Movement, Approach, & Intersection Results

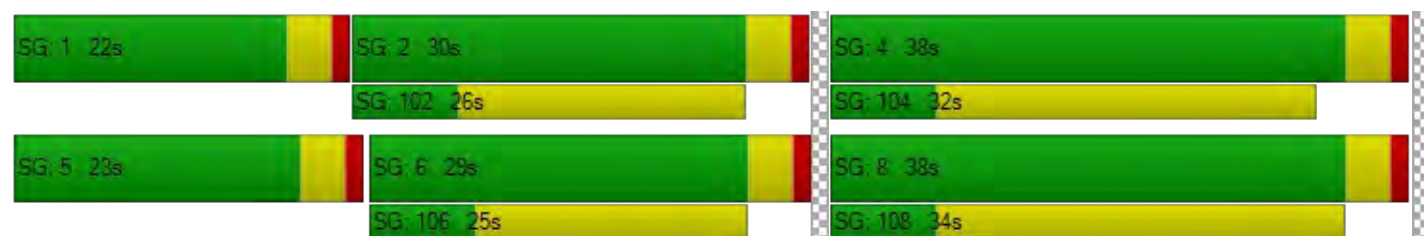
d_M, Delay for Movement [s/veh]	39.35	26.07	29.13	30.23	28.49	28.49	53.10	18.29	18.35	46.10	14.47	9.37
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	32.49			28.91			21.36			19.05		
Approach LOS	C			C			C			B		
d_I, Intersection Delay [s/veh]	22.31											
Intersection LOS	C											
Intersection V/C	0.550											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.307			2.065			2.926			2.885		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.165			1.901			2.299			2.633		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	40.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.913

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TOLR			TOLR			TOLR			TOLR		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	136	510	163	331	443	310	269	774	159	151	996	654
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	136	510	163	331	443	310	269	774	159	151	996	654
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	34	128	41	83	111	78	67	194	40	38	249	164
Total Analysis Volume [veh/h]	136	510	163	331	443	310	269	774	159	151	996	654
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	41	0	23	54	0	14	40	0	11	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	21	21	14	29	29	10	57	57	7	54	54
g / C, Green / Cycle	0.05	0.19	0.19	0.12	0.25	0.25	0.09	0.49	0.49	0.06	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.04	0.15	0.11	0.10	0.23	0.23	0.08	0.23	0.11	0.05	0.30	0.43
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1532	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	173	630	281	397	452	391	287	1657	740	202	1570	701
d1, Uniform Delay [s]	53.84	44.82	42.66	49.45	41.35	41.38	52.19	19.32	16.64	53.12	23.33	29.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.54	2.54	1.88	4.65	6.60	7.64	13.68	0.95	0.66	5.46	1.97	21.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.81	0.58	0.83	0.89	0.89	0.94	0.47	0.21	0.75	0.63	0.93
d, Delay for Lane Group [s/veh]	61.39	47.35	44.54	54.10	47.95	49.02	65.87	20.27	17.31	58.58	25.30	50.15
Lane Group LOS	E	D	D	D	D	D	E	C	B	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.13	7.16	4.37	4.90	11.76	10.31	4.40	6.92	2.51	2.30	10.44	20.49
50th-Percentile Queue Length [ft/ln]	53.13	179.11	109.28	122.44	294.08	257.66	109.91	172.95	62.70	57.48	261.08	512.20
95th-Percentile Queue Length [veh/ln]	3.83	11.55	7.80	8.53	17.39	15.57	7.83	11.23	4.51	4.14	15.74	27.91
95th-Percentile Queue Length [ft/ln]	95.63	288.86	195.00	213.18	434.70	389.28	195.87	280.79	112.86	103.46	393.58	697.78

Movement, Approach, & Intersection Results

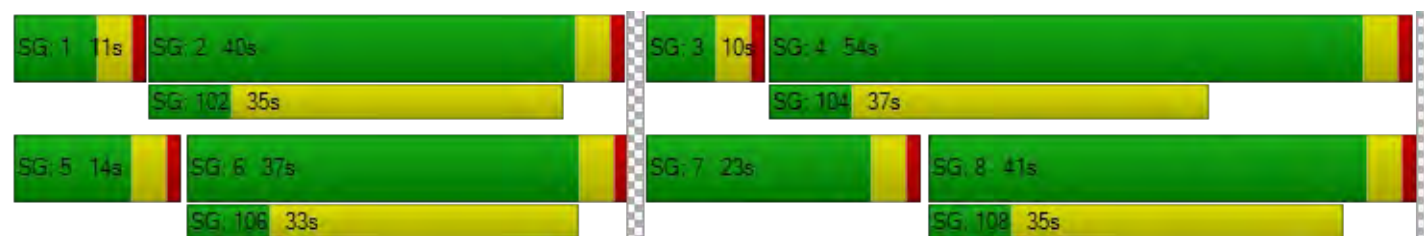
d_M, Delay for Movement [s/veh]	61.39	47.35	44.54	54.10	48.05	49.02	65.87	20.27	17.31	58.58	25.30	50.15
Movement LOS	E	D	D	D	D	D	E	C	B	E	C	D
d_A, Approach Delay [s/veh]	49.15			50.17			30.08			37.11		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	40.27											
Intersection LOS	D											
Intersection V/C	0.913											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.823			2.874			2.974			3.033		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	643			870			626			574		
d_b, Bicycle Delay [s]	26.45			18.37			27.13			29.23		
I_b,int, Bicycle LOS Score for Intersection	2.227			2.454			2.551			3.045		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	30.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.787

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	522	32	427	10	20	6	13	867	282	313	1263	16
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	522	32	427	10	20	6	13	867	282	313	1263	16
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	131	8	107	3	5	2	3	217	71	78	316	4
Total Analysis Volume [veh/h]	522	32	427	10	20	6	13	867	282	313	1263	16
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	28	65	65	0	37	0	10	38	0	17	45	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	21	32	49	6	6	2	63	63	13	74	74
g / C, Green / Cycle	0.18	0.26	0.41	0.05	0.05	0.02	0.53	0.53	0.11	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate	0.16	0.02	0.28	0.01	0.02	0.01	0.34	0.34	0.10	0.36	0.36
s, saturation flow rate [veh/h]	3277	1772	1506	1377	1702	1687	1772	1625	3277	1772	1764
c, Capacity [veh/h]	583	466	611	92	89	31	935	858	357	1095	1090
d1, Uniform Delay [s]	48.27	33.18	29.62	57.73	54.77	58.28	20.20	20.23	52.71	13.70	13.72
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.17	0.06	6.54	0.52	1.81	8.57	3.35	3.68	6.95	2.29	2.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.07	0.70	0.11	0.29	0.42	0.64	0.64	0.88	0.58	0.59
d, Delay for Lane Group [s/veh]	53.43	33.24	36.16	58.25	56.58	66.85	23.55	23.91	59.66	15.99	16.02
Lane Group LOS	D	C	D	E	E	E	C	C	E	B	B
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.03	0.71	11.21	0.31	0.80	0.47	12.48	11.58	4.99	10.55	10.54
50th-Percentile Queue Length [ft/ln]	200.87	17.86	280.24	7.81	20.07	11.64	312.08	289.42	124.70	263.86	263.54
95th-Percentile Queue Length [veh/ln]	12.68	1.29	16.70	0.56	1.44	0.84	18.28	17.16	8.65	15.88	15.87
95th-Percentile Queue Length [ft/ln]	317.09	32.15	417.51	14.05	36.12	20.95	456.93	428.92	216.27	397.06	396.66

Movement, Approach, & Intersection Results

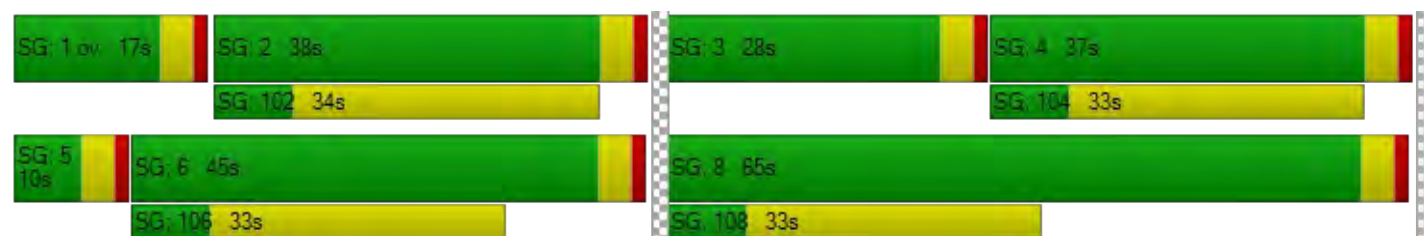
d_M, Delay for Movement [s/veh]	53.43	33.24	36.16	58.25	56.58	56.58	66.85	23.66	23.91	59.66	16.00	16.02
Movement LOS	D	C	D	E	E	E	E	C	C	E	B	B
d_A, Approach Delay [s/veh]	45.26			57.04			24.21			24.59		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.16											
Intersection LOS	C											
Intersection V/C	0.787											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.726			1.986			2.889			2.951		
Crosswalk LOS	B			A			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1017			550			567			683		
d_b, Bicycle Delay [s]	14.50			31.54			30.82			26.00		
I_b,int, Bicycle LOS Score for Intersection	3.178			1.619			2.518			2.873		
Bicycle LOS	C			A			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	25.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.844

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↵↵↵			↵↵↵			↵↵↵			↵↵↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	12	2	10	98	3	292	286	979	11	5	1336	137
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	12	2	10	98	3	292	286	979	11	5	1336	137
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	3	25	1	73	72	245	3	1	334	34
Total Analysis Volume [veh/h]	12	2	10	98	3	292	286	979	11	5	1336	137
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	39	61	0	10	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	3	3	18	18	52	22	77	77	1	55	55
g / C, Green / Cycle	0.03	0.03	0.03	0.16	0.16	0.45	0.19	0.67	0.67	0.01	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.03	0.03	0.19	0.17	0.28	0.28	0.00	0.40	0.09
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1692	1506	1687	1772	1765	1687	3373	1506
c, Capacity [veh/h]	84	52	44	265	265	677	328	1180	1176	15	1622	724
d1, Uniform Delay [s]	56.30	54.30	54.61	42.17	42.17	21.62	44.98	8.90	8.90	56.71	25.69	17.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.26	0.13	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.77	0.30	2.61	0.35	0.34	1.05	8.47	1.10	1.10	13.04	4.89	0.58
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.14	0.04	0.23	0.19	0.19	0.43	0.87	0.42	0.42	0.34	0.82	0.19
d, Delay for Lane Group [s/veh]	57.07	54.61	57.21	42.52	42.51	22.67	53.45	10.00	10.00	69.75	30.58	17.64
Lane Group LOS	E	D	E	D	D	C	D	A	B	E	C	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.36	0.06	0.32	1.28	1.28	5.53	8.65	5.70	5.68	0.20	16.25	2.18
50th-Percentile Queue Length [ft/ln]	9.11	1.52	7.88	31.89	31.97	138.20	216.17	142.56	142.11	4.94	406.27	54.52
95th-Percentile Queue Length [veh/ln]	0.66	0.11	0.57	2.30	2.30	9.38	13.47	9.62	9.59	0.36	22.86	3.93
95th-Percentile Queue Length [ft/ln]	16.39	2.73	14.18	57.40	57.55	234.60	336.74	240.46	239.86	8.90	571.55	98.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.07	54.61	57.21	42.52	42.51	22.67	53.45	10.00	10.00	69.75	30.58	17.64
Movement LOS	E	D	E	D	D	C	D	A	B	E	C	B
d_A, Approach Delay [s/veh]	56.93			27.77			19.74			29.51		
Approach LOS	E			C			B			C		
d_I, Intersection Delay [s/veh]	25.57											
Intersection LOS	C											
Intersection V/C	0.844											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.153			2.342			2.897			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	104			522			991			487		
d_b, Bicycle Delay [s]	51.66			31.41			14.63			32.91		
I_b,int, Bicycle LOS Score for Intersection	1.599			2.208			2.612			2.779		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	62.8
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.794

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	612	958	124	213	391	127	313	743	295	78	703	265
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	612	958	124	213	391	127	313	743	295	78	703	265
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	153	240	31	53	98	32	78	186	74	20	176	66
Total Analysis Volume [veh/h]	612	958	124	213	391	127	313	743	295	78	703	265
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	45	0	14	37	0	22	50	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	18	48	48	10	40	40	18	39	39	7	28	28
g / C, Green / Cycle	0.15	0.40	0.40	0.08	0.33	0.33	0.15	0.33	0.33	0.06	0.23	0.23
(v / s)_i Volume / Saturation Flow Rate	0.19	0.21	0.21	0.07	0.10	0.11	0.19	0.22	0.20	0.05	0.21	0.18
s, saturation flow rate [veh/h]	3277	3373	1670	3277	3373	1562	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	494	1348	667	268	1116	517	254	1101	491	100	792	354
d1, Uniform Delay [s]	51.02	27.57	27.58	54.15	30.02	30.13	51.02	34.96	33.90	55.75	44.42	42.68
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.26	0.11	0.11	0.11	0.11	0.17
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	111.95	1.54	3.09	5.30	0.74	1.66	121.21	0.73	1.18	12.43	3.62	4.85
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.24	0.54	0.54	0.79	0.31	0.32	1.23	0.67	0.60	0.78	0.89	0.75
d, Delay for Lane Group [s/veh]	162.97	29.11	30.67	59.45	30.76	31.79	172.22	35.69	35.08	68.18	48.04	47.53
Lane Group LOS	F	C	C	E	C	C	F	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	15.07	8.17	8.39	3.36	3.91	3.88	16.17	9.44	7.34	2.68	10.45	7.76
50th-Percentile Queue Length [ft/ln]	376.72	204.17	209.70	83.97	97.84	96.92	404.30	235.92	183.54	66.91	261.24	193.92
95th-Percentile Queue Length [veh/ln]	23.51	12.85	13.14	6.05	7.04	6.98	24.93	14.47	11.79	4.82	15.75	12.32
95th-Percentile Queue Length [ft/ln]	587.80	321.34	328.45	151.15	176.10	174.46	623.37	361.87	294.63	120.44	393.78	308.10

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	162.97	29.49	30.67	59.45	30.87	31.79	172.22	35.69	35.08	68.18	48.04	47.53
Movement LOS	F	C	C	E	C	C	F	D	D	E	D	D
d_A, Approach Delay [s/veh]	77.80			39.36			67.19			49.41		
Approach LOS	E			D			E			D		
d_I, Intersection Delay [s/veh]	62.84											
Intersection LOS	E											
Intersection V/C	0.794											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.039			3.016			2.921			2.812		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			550			767			583		
d_b, Bicycle Delay [s]	26.00			31.54			22.82			30.10		
I_b,int, Bicycle LOS Score for Intersection	2.491			1.962			2.674			2.423		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	17.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.206

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	47	330	42	28	273	28	62	4	51	75	4	38
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	47	330	42	28	273	28	62	4	51	75	4	38
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	12	83	11	7	68	7	16	1	13	19	1	10
Total Analysis Volume [veh/h]	47	330	42	28	273	28	62	4	51	75	4	38
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	11	26	0	10	25	0	0	59	0	0	59	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	68	68	3	66	66	12	12	12	12
g / C, Green / Cycle	0.05	0.71	0.71	0.03	0.70	0.70	0.13	0.13	0.13	0.13
(v / s)_i Volume / Saturation Flow Rate	0.03	0.11	0.11	0.02	0.09	0.09	0.05	0.04	0.06	0.03
s, saturation flow rate [veh/h]	1687	1772	1703	1687	1772	1715	1364	1522	1349	1528
c, Capacity [veh/h]	76	1258	1209	56	1237	1197	186	198	174	199
d1, Uniform Delay [s]	44.55	4.46	4.47	45.14	4.73	4.73	42.02	37.29	43.22	36.96
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.86	0.25	0.27	6.69	0.20	0.21	1.04	0.75	1.67	0.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.62	0.15	0.15	0.50	0.12	0.12	0.33	0.28	0.43	0.21
d, Delay for Lane Group [s/veh]	52.41	4.72	4.74	51.83	4.93	4.95	43.06	38.04	44.90	37.48
Lane Group LOS	D	A	A	D	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.25	1.09	1.07	0.75	0.91	0.90	1.44	1.19	1.80	0.90
50th-Percentile Queue Length [ft/ln]	31.13	27.25	26.66	18.72	22.78	22.45	36.05	29.68	44.89	22.40
95th-Percentile Queue Length [veh/ln]	2.24	1.96	1.92	1.35	1.64	1.62	2.60	2.14	3.23	1.61
95th-Percentile Queue Length [ft/ln]	56.04	49.06	47.98	33.69	41.01	40.41	64.89	53.42	80.79	40.32

Movement, Approach, & Intersection Results

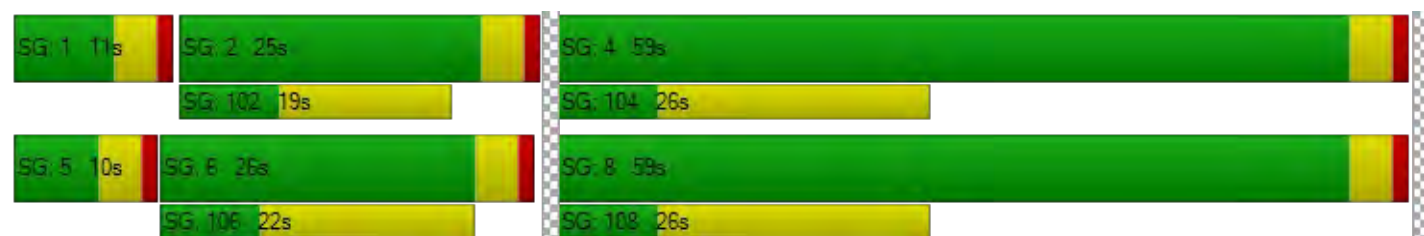
d_M, Delay for Movement [s/veh]	52.41	4.72	4.74	51.83	4.94	4.95	43.06	38.04	38.04	44.90	37.48	37.48
Movement LOS	D	A	A	D	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	10.07			8.93			40.70			42.23		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	17.17											
Intersection LOS	B											
Intersection V/C	0.206											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.568			2.538			2.006			2.005		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	463			442			1158			1158		
d_b, Bicycle Delay [s]	28.05			28.82			8.42			8.42		
I_b,int, Bicycle LOS Score for Intersection	1.905			1.831			1.753			1.753		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	19.8
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.479

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	15	323	422	56	356	20	17	4	11	327	4	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	323	422	56	356	20	17	4	11	327	4	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	81	106	14	89	5	4	1	3	82	1	14
Total Analysis Volume [veh/h]	15	323	422	56	356	20	17	4	11	327	4	57
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	70	61	61	70	64	64	4	4	14	14
g / C, Green / Cycle	0.70	0.61	0.61	0.70	0.64	0.64	0.04	0.04	0.14	0.14
(v / s)_i Volume / Saturation Flow Rate	0.01	0.18	0.28	0.07	0.11	0.11	0.01	0.01	0.12	0.12
s, saturation flow rate [veh/h]	1046	1772	1506	809	1772	1739	1703	1506	1687	1630
c, Capacity [veh/h]	791	1088	925	561	1135	1114	61	54	240	232
d1, Uniform Delay [s]	4.61	9.12	10.36	5.96	7.23	7.23	47.08	46.84	41.69	41.69
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.01	0.70	1.62	0.36	0.32	0.33	3.28	1.82	6.88	7.15
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.02	0.30	0.46	0.10	0.17	0.17	0.34	0.20	0.82	0.82
d, Delay for Lane Group [s/veh]	4.61	9.81	11.98	6.31	7.54	7.56	50.37	48.67	48.57	48.85
Lane Group LOS	A	A	B	A	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.08	3.30	5.00	0.37	1.60	1.58	0.56	0.29	5.14	4.99
50th-Percentile Queue Length [ft/ln]	2.09	82.50	125.05	9.19	39.96	39.52	14.11	7.31	128.47	124.73
95th-Percentile Queue Length [veh/ln]	0.15	5.94	8.67	0.66	2.88	2.85	1.02	0.53	8.86	8.65
95th-Percentile Queue Length [ft/ln]	3.76	148.50	216.75	16.53	71.93	71.14	25.39	13.16	221.41	216.31

Movement, Approach, & Intersection Results

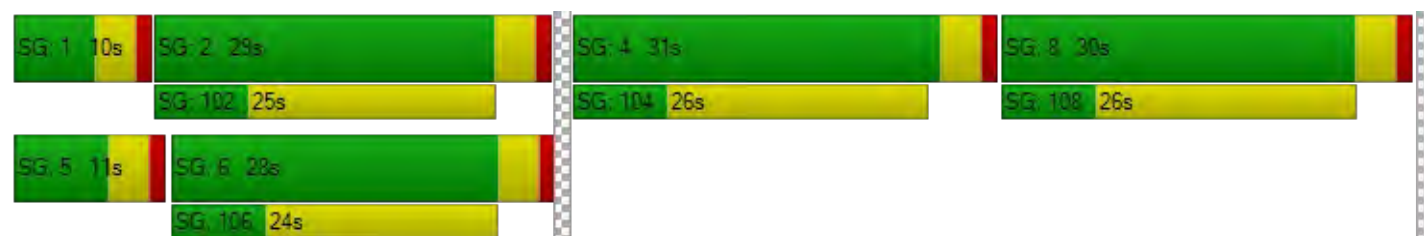
d_M, Delay for Movement [s/veh]	4.61	9.81	11.98	6.31	7.55	7.56	50.37	50.37	48.67	48.68	48.85	48.85
Movement LOS	A	A	B	A	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	10.91			7.39			49.78			48.71		
Approach LOS	B			A			D			D		
d_I, Intersection Delay [s/veh]	19.84											
Intersection LOS	B											
Intersection V/C	0.479											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.588			2.466			1.982			2.278		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	480			500			520			540		
d_b, Bicycle Delay [s]	28.88			28.13			27.38			26.65		
I_b,int, Bicycle LOS Score for Intersection	2.187			1.916			1.612			2.200		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.738

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	142	20	66	55	12	443	623	645	23	98	516	52
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	142	20	66	55	12	443	623	645	23	98	516	52
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	36	5	17	14	3	111	156	161	6	25	129	13
Total Analysis Volume [veh/h]	142	20	66	55	12	443	623	645	23	98	516	52
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	15	15	36	32	0	36	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	10	11	11	59	29	74	74	9	53	53
g / C, Green / Cycle	0.09	0.09	0.09	0.09	0.09	0.49	0.24	0.61	0.61	0.07	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.04	0.07	0.04	0.03	0.01	0.29	0.19	0.19	0.19	0.06	0.16	0.16
s, saturation flow rate [veh/h]	1417	1513	1506	1687	1612	1506	3277	1772	1750	1687	1772	1715
c, Capacity [veh/h]	163	186	131	157	150	736	793	1086	1073	124	788	763
d1, Uniform Delay [s]	52.29	53.60	52.35	51.10	49.80	22.25	42.59	11.08	11.09	54.72	22.11	22.13
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.34	2.59	2.97	1.34	0.23	3.63	1.76	0.74	0.75	10.50	1.31	1.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.36	0.56	0.50	0.35	0.08	0.60	0.79	0.31	0.31	0.79	0.37	0.37
d, Delay for Lane Group [s/veh]	53.62	56.19	55.32	52.44	50.03	25.88	44.35	11.82	11.84	65.21	23.42	23.49
Lane Group LOS	D	E	E	D	D	C	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.75	3.19	2.01	1.62	0.34	9.63	8.80	4.36	4.31	3.28	5.67	5.52
50th-Percentile Queue Length [ft/ln]	43.71	79.71	50.27	40.39	8.51	240.84	219.94	108.92	107.85	81.97	141.69	137.95
95th-Percentile Queue Length [veh/ln]	3.15	5.74	3.62	2.91	0.61	14.72	13.66	7.78	7.72	5.90	9.57	9.37
95th-Percentile Queue Length [ft/ln]	78.68	143.49	90.48	72.70	15.33	368.10	341.55	194.50	193.01	147.54	239.30	234.26

Movement, Approach, & Intersection Results

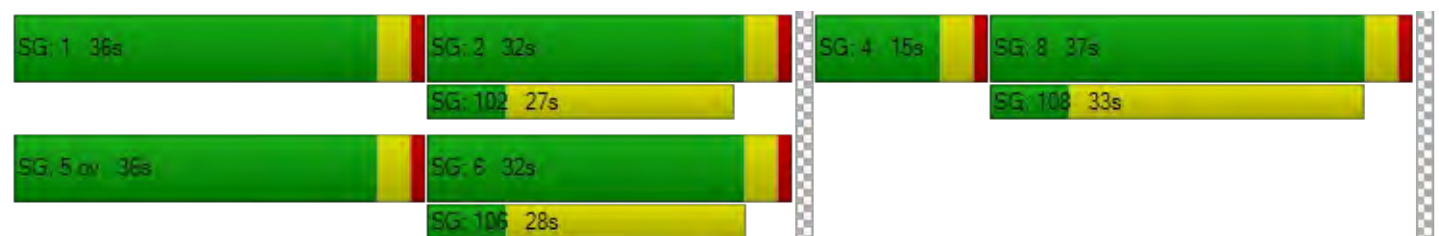
d_M, Delay for Movement [s/veh]	55.08	56.19	55.32	52.44	50.03	25.88	44.35	11.83	11.84	65.21	23.45	23.49
Movement LOS	E	E	E	D	D	C	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	55.28			29.31			27.53			29.60		
Approach LOS	E			C			C			C		
d_I, Intersection Delay [s/veh]	30.72											
Intersection LOS	C											
Intersection V/C	0.738											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.384			2.549			0.000			2.593		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			183			467			467		
d_b, Bicycle Delay [s]	31.54			49.50			35.27			35.27		
I_b,int, Bicycle LOS Score for Intersection	1.936			1.980			2.625			2.109		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	60.1
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.016

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	295	58	69	242	105	78	326	74	118	424	78
Total Analysis Volume [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	42	0	16	39	0	15	42	0	20	47	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	38	38	12	35	35	11	38	38	16	43	43
g / C, Green / Cycle	0.13	0.32	0.32	0.10	0.29	0.29	0.09	0.32	0.32	0.13	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.15	0.08	0.20	0.28	0.09	0.32	0.32	0.14	0.35	0.21
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1610	3277	4826	1506
c, Capacity [veh/h]	410	1522	475	327	1399	437	301	1073	512	437	1736	542
d1, Uniform Delay [s]	52.50	37.24	33.22	53.12	37.86	42.00	54.50	40.91	40.91	52.00	37.93	31.05
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.43	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	42.65	0.88	0.77	5.99	0.62	31.89	33.30	28.97	43.56	44.49	16.85	4.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.07	0.78	0.49	0.85	0.69	0.96	1.03	1.01	1.01	1.08	0.98	0.58
d, Delay for Lane Group [s/veh]	95.15	38.12	33.99	59.11	38.48	73.88	87.80	69.88	84.48	96.50	54.78	35.49
Lane Group LOS	F	D	C	E	D	E	F	F	F	F	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.59	10.50	5.53	4.36	8.47	16.00	5.93	19.96	21.13	9.26	18.83	7.97
50th-Percentile Queue Length [ft/ln]	214.63	262.54	138.37	109.00	211.77	399.97	148.20	498.92	528.33	231.54	470.78	199.25
95th-Percentile Queue Length [veh/ln]	13.78	15.82	9.39	7.78	13.24	22.56	10.04	27.40	28.96	14.71	25.95	12.60
95th-Percentile Queue Length [ft/ln]	344.43	395.40	234.82	194.62	331.09	563.96	251.00	684.89	724.02	367.84	648.70	315.00

Movement, Approach, & Intersection Results

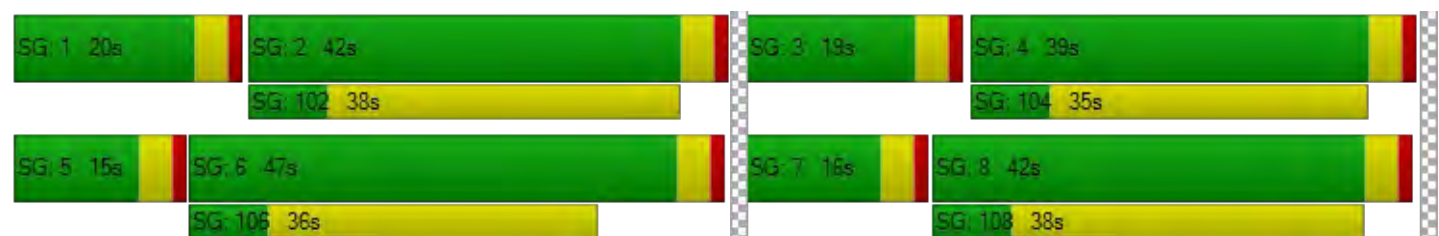
d_M, Delay for Movement [s/veh]	95.15	38.12	33.99	59.11	38.48	73.88	87.80	72.40	84.48	96.50	54.78	35.49
Movement LOS	F	D	C	E	D	E	F	E	F	F	D	D
d_A, Approach Delay [s/veh]	51.13			50.84			76.77			60.26		
Approach LOS	D			D			E			E		
d_I, Intersection Delay [s/veh]	60.13											
Intersection LOS	E											
Intersection V/C	1.016											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.251			3.239			3.284			3.328		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			583			633			717		
d_b, Bicycle Delay [s]	28.02			30.10			28.02			24.70		
I_b,int, Bicycle LOS Score for Intersection	2.578			2.476			2.611			2.924		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 17: Puente Street at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	20.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.700

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	36	48	95	183	126	219	129	1618	44	135	1881	269
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	36	48	95	183	126	219	129	1618	44	135	1881	269
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	9	12	24	46	32	55	32	405	11	34	470	67
Total Analysis Volume [veh/h]	36	48	95	183	126	219	129	1618	44	135	1881	269
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	28	0	29	34	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	20	20	20	20	20	9	54	54	9	54	54
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.21	0.21	0.09	0.56	0.56	0.10	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.03	0.03	0.06	0.13	0.04	0.15	0.08	0.32	0.32	0.08	0.39	0.18
s, saturation flow rate [veh/h]	1264	1772	1506	1357	3373	1506	1687	3373	1748	1687	4826	1506
c, Capacity [veh/h]	271	372	316	297	708	316	160	1904	987	167	2745	857
d1, Uniform Delay [s]	34.94	30.47	31.64	38.44	30.80	34.69	42.15	13.34	13.34	41.90	14.47	10.75
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.22	0.15	0.53	2.07	0.12	2.72	9.17	1.27	2.44	8.80	1.41	0.96
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.13	0.13	0.30	0.62	0.18	0.69	0.81	0.57	0.58	0.81	0.69	0.31
d, Delay for Lane Group [s/veh]	35.16	30.63	32.17	40.50	30.92	37.41	51.32	14.61	15.78	50.70	15.88	11.71
Lane Group LOS	D	C	C	D	C	D	D	B	B	D	B	B
Critical Lane Group	No	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.74	0.90	1.87	4.23	1.19	4.84	3.34	7.31	7.91	3.47	9.09	3.01
50th-Percentile Queue Length [ft/ln]	18.40	22.55	46.68	105.73	29.67	121.01	83.55	182.86	197.69	86.87	227.26	75.28
95th-Percentile Queue Length [veh/ln]	1.32	1.62	3.36	7.60	2.14	8.45	6.02	11.75	12.52	6.25	14.03	5.42
95th-Percentile Queue Length [ft/ln]	33.12	40.59	84.02	190.05	53.41	211.21	150.39	293.74	312.98	156.37	350.87	135.50

Movement, Approach, & Intersection Results

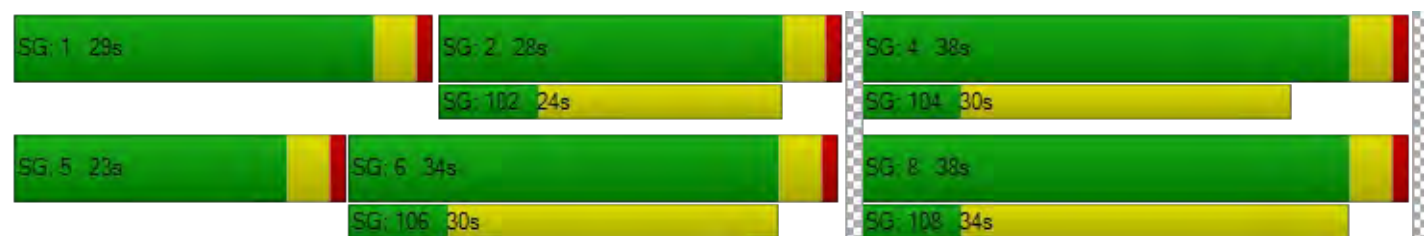
d_M, Delay for Movement [s/veh]	35.16	30.63	32.17	40.50	30.92	37.41	51.32	14.99	15.78	50.70	15.88	11.71
Movement LOS	D	C	C	D	C	D	D	B	B	D	B	B
d_A, Approach Delay [s/veh]	32.36			36.93			17.63			17.45		
Approach LOS	C			D			B			B		
d_I, Intersection Delay [s/veh]	20.22											
Intersection LOS	C											
Intersection V/C	0.700											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.396			2.492			3.194			3.498		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	716			716			505			632		
d_b, Bicycle Delay [s]	19.58			19.58			26.53			22.24		
I_b,int, Bicycle LOS Score for Intersection	1.855			1.995			2.545			2.816		
Bicycle LOS	A			A			B			C		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	50.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.966

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	215	69	58	171	53	62	456	105	62	461	38
Total Analysis Volume [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	48	0	14	39	0	12	41	0	12	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	36	36	10	27	27	8	45	45	8	45	45
g / C, Green / Cycle	0.17	0.31	0.31	0.09	0.23	0.23	0.07	0.39	0.39	0.07	0.39	0.39
(v / s)_i Volume / Saturation Flow Rate	0.17	0.18	0.18	0.07	0.20	0.14	0.08	0.38	0.28	0.08	0.38	0.10
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	543	1489	465	289	779	348	232	1899	592	232	1899	592
d1, Uniform Delay [s]	48.04	33.52	33.74	51.52	42.74	39.67	53.50	34.04	29.38	53.50	34.28	23.56
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	27.16	0.36	1.23	5.19	3.43	1.75	45.60	13.16	7.02	48.54	14.87	1.05
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.03	0.58	0.60	0.80	0.88	0.61	1.06	0.96	0.71	1.07	0.97	0.26
d, Delay for Lane Group [s/veh]	75.20	33.87	34.97	56.71	46.17	41.42	99.10	47.21	36.40	102.04	49.16	24.61
Lane Group LOS	F	C	C	E	D	D	F	D	D	F	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.79	6.76	6.68	3.49	9.70	5.56	4.83	18.40	10.75	4.93	19.00	2.96
50th-Percentile Queue Length [ft/ln]	244.80	169.07	167.05	87.24	242.53	138.88	120.77	459.95	268.71	123.14	474.97	73.91
95th-Percentile Queue Length [veh/ln]	15.16	11.03	10.92	6.28	14.81	9.42	8.59	25.43	16.12	8.75	26.15	5.32
95th-Percentile Queue Length [ft/ln]	378.95	275.69	273.04	157.02	370.23	235.51	214.86	635.81	403.12	218.72	653.68	133.04

Movement, Approach, & Intersection Results

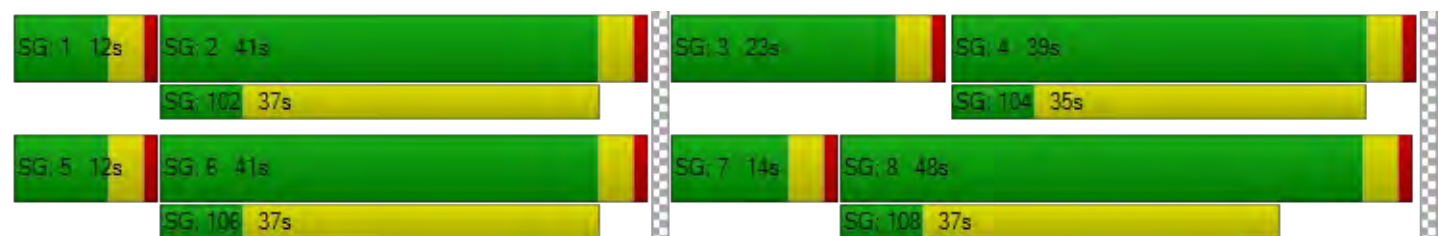
d_M, Delay for Movement [s/veh]	75.20	33.87	34.97	56.71	46.17	41.42	99.10	47.21	36.40	102.04	49.16	24.61
Movement LOS	F	C	C	E	D	D	F	D	D	F	D	C
d_A, Approach Delay [s/veh]	47.70			47.44			50.53			53.36		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	50.27											
Intersection LOS	D											
Intersection V/C	0.966											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	3.109			3.028			3.414			3.357		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	765			609			643			643		
d_b, Bicycle Delay [s]	21.92			27.83			26.45			26.45		
I_b,int, Bicycle LOS Score for Intersection	2.494			2.492			2.929			2.794		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	36.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	9	15	85	6	64	83	436	7	14	503	89
Total Analysis Volume [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	52	0	14	48	0	10	44	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	7	7	25	25	10	66	66	5	61	61
g / C, Green / Cycle	0.06	0.06	0.06	0.21	0.21	0.08	0.55	0.55	0.04	0.51	0.51
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.04	0.10	0.18	0.10	0.35	0.35	0.03	0.42	0.24
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1526	3277	3373	1757	1687	4826	1506
c, Capacity [veh/h]	106	111	86	684	319	275	1861	970	73	2467	770
d1, Uniform Delay [s]	54.15	53.77	55.19	41.91	45.98	54.99	18.43	18.45	56.85	24.59	18.77
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	2.59	1.53	10.24	0.56	7.55	100.82	1.60	3.07	16.01	3.10	1.99
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.31	0.71	0.50	0.88	1.21	0.63	0.63	0.78	0.82	0.46
d, Delay for Lane Group [s/veh]	56.73	55.30	65.43	42.47	53.53	155.81	20.03	21.51	72.86	27.69	20.75
Lane Group LOS	E	E	E	D	D	F	C	C	E	C	C
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.36	1.03	2.06	4.50	8.69	8.00	11.12	12.01	2.04	16.10	6.64
50th-Percentile Queue Length [ft/ln]	33.95	25.78	51.40	112.39	217.28	200.12	278.11	300.29	50.95	402.38	166.09
95th-Percentile Queue Length [veh/ln]	2.44	1.86	3.70	7.97	13.53	13.45	16.59	17.70	3.67	22.67	10.87
95th-Percentile Queue Length [ft/ln]	61.11	46.40	92.53	199.33	338.15	336.35	414.86	442.39	91.71	566.87	271.76

Movement, Approach, & Intersection Results

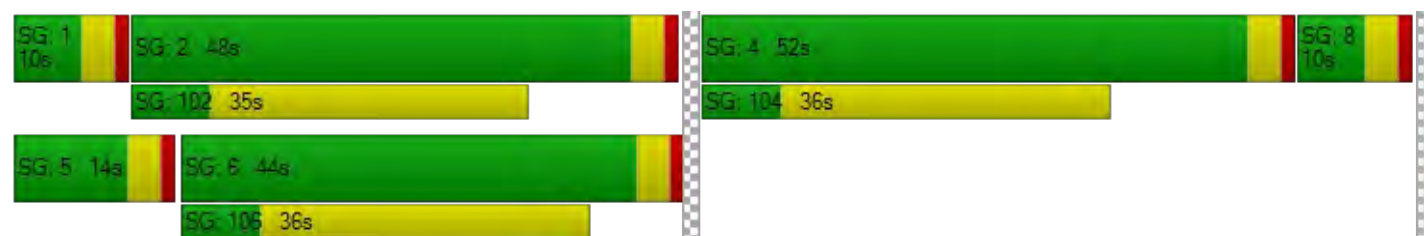
d_M, Delay for Movement [s/veh]	56.73	55.30	65.43	42.47	53.53	53.53	155.81	20.53	21.51	72.86	27.69	20.75
Movement LOS	E	E	E	D	D	D	F	C	C	E	C	C
d_A, Approach Delay [s/veh]	60.20			47.46			41.88			27.74		
Approach LOS	E			D			D			C		
d_I, Intersection Delay [s/veh]	36.53											
Intersection LOS	D											
Intersection V/C	0.860											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.206			2.575			3.277			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	100			800			733			667		
d_b, Bicycle Delay [s]	54.15			21.60			24.07			26.67		
I_b,int, Bicycle LOS Score for Intersection	1.674			2.579			2.717			2.892		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	83.5
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.047

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	155	89	136	81	24	27	480	27	108	481	170
Total Analysis Volume [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	14	41	0	27	54	0	10	34	0	18	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	10	31	31	23	44	44	6	36	36	14	44	71
g / C, Green / Cycle	0.08	0.26	0.26	0.19	0.37	0.37	0.05	0.30	0.30	0.12	0.37	0.59
(v / s)_i Volume / Saturation Flow Rate	0.11	0.18	0.24	0.23	0.12	0.12	0.03	0.31	0.31	0.13	0.40	0.45
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1633	3277	4826	1711	3277	4826	1506
c, Capacity [veh/h]	277	879	392	454	652	601	164	1432	508	385	1757	887
d1, Uniform Delay [s]	54.98	40.25	42.97	48.54	27.37	27.37	56.02	42.24	42.24	53.00	38.19	18.49
k, delay calibration	0.11	0.11	0.29	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	146.94	1.06	17.69	93.93	0.30	0.33	4.30	36.29	52.13	61.65	52.11	6.31
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.31	0.71	0.90	1.20	0.34	0.34	0.65	1.04	1.04	1.12	1.09	0.77
d, Delay for Lane Group [s/veh]	201.92	41.30	60.66	142.46	27.67	27.70	60.32	78.54	94.37	114.65	90.30	24.80
Lane Group LOS	F	D	E	F	C	C	E	F	F	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	9.84	8.42	12.05	12.69	4.59	4.23	1.69	18.76	22.19	9.10	25.33	14.96
50th-Percentile Queue Length [ft/ln]	245.99	210.44	301.13	317.22	114.70	105.82	42.30	468.93	554.70	227.43	633.19	373.99
95th-Percentile Queue Length [veh/ln]	16.35	13.18	17.74	20.15	8.10	7.61	3.05	26.58	30.77	14.68	35.69	21.30
95th-Percentile Queue Length [ft/ln]	408.81	329.40	443.43	503.87	202.51	190.17	76.15	664.57	769.36	367.09	892.25	532.57

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	201.92	41.30	60.66	142.46	27.68	27.70	60.32	82.04	94.37	114.65	90.30	24.80
Movement LOS	F	D	E	F	C	C	E	F	F	F	F	C
d_A, Approach Delay [s/veh]	90.06			92.45			81.56			79.06		
Approach LOS	F			F			F			E		
d_I, Intersection Delay [s/veh]	83.47											
Intersection LOS	F											
Intersection V/C	1.047											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.914			2.852			3.352			3.551		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			833			500			633		
d_b, Bicycle Delay [s]	28.70			20.42			33.75			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.665			2.355			2.439			3.229		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.869

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	682	0	553	0	1765	1072	0	2522	446
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	682	0	553	0	1765	1072	0	2522	446
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	171	0	138	0	441	268	0	631	112
Total Analysis Volume [veh/h]	0	0	0	682	0	553	0	1765	1072	0	2522	446
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	53	0	0	0	42	0	0	42	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		95	95	95	95	95
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		30	30	30	57	57
g / C, Green / Cycle		0.32	0.32	0.32	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate		0.24	0.25	0.27	0.37	0.52
s, saturation flow rate [veh/h]		1687	1620	1506	4826	4826
c, Capacity [veh/h]		530	509	473	2901	2901
d1, Uniform Delay [s]		29.47	29.86	30.66	11.89	15.79
k, delay calibration		0.11	0.11	0.11	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		2.48	3.10	5.31	0.96	3.87
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.78	0.81	0.87	0.61	0.87
d, Delay for Lane Group [s/veh]		31.94	32.97	35.97	12.84	19.66
Lane Group LOS		C	C	D	B	B
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		8.63	8.81	9.29	7.35	14.50
50th-Percentile Queue Length [ft/ln]		215.63	220.27	232.32	183.71	362.54
95th-Percentile Queue Length [veh/ln]		13.44	13.68	14.29	11.79	20.75
95th-Percentile Queue Length [ft/ln]		336.05	341.98	357.31	294.85	518.67

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	32.35	0.00	35.20	0.00	12.84	0.00	0.00	19.66	0.00
Movement LOS				C		D		B			B	
d_A, Approach Delay [s/veh]	0.00			33.63			12.84			19.66		
Approach LOS	A			C			B			B		
d_I, Intersection Delay [s/veh]	20.61											
Intersection LOS	C											
Intersection V/C	0.869											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			37.14			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.434			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			800			800		
d_b, Bicycle Delay [s]	47.50			47.50			17.10			17.10		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.170			2.530			2.947		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	33.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.906

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	281	20	113	0	0	74	54	463	109	0	634	15
Total Analysis Volume [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	50	0	0	0	18	18	65	0	0	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37	37	14	14	70	52	52
g / C, Green / Cycle	0.32	0.32	0.32	0.12	0.12	0.61	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.25	0.25	0.28	0.11	0.13	0.38	0.40	0.37
s, saturation flow rate [veh/h]	3277	1687	1506	2665	1687	4826	4826	1743
c, Capacity [veh/h]	1051	541	483	326	206	2943	2184	789
d1, Uniform Delay [s]	35.32	35.32	36.79	49.80	50.44	14.20	28.87	27.44
k, delay calibration	0.11	0.18	0.24	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.27	4.09	10.19	9.55	43.56	1.03	6.02	9.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.78	0.78	0.87	0.91	1.05	0.63	0.89	0.82
d, Delay for Lane Group [s/veh]	36.59	39.41	46.98	59.35	94.00	15.24	34.89	36.89
Lane Group LOS	D	D	D	E	F	B	C	D
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.40	11.14	12.33	4.62	8.41	9.88	17.09	17.16
50th-Percentile Queue Length [ft/ln]	260.02	278.38	308.13	115.51	210.34	247.05	427.32	429.01
95th-Percentile Queue Length [veh/ln]	15.69	16.61	18.08	8.15	13.45	15.04	23.87	23.95
95th-Percentile Queue Length [ft/ln]	392.25	415.20	452.07	203.64	336.19	375.93	596.83	598.85

Movement, Approach, & Intersection Results

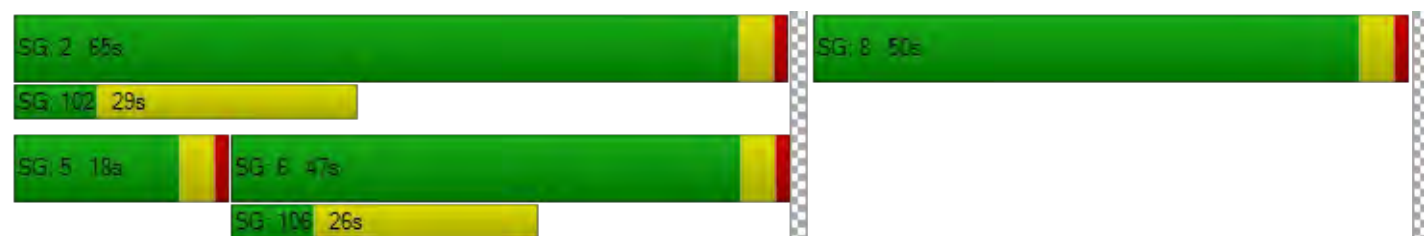
d_M, Delay for Movement [s/veh]	37.34	39.41	46.33	0.00	0.00	59.35	94.00	15.24	0.00	0.00	35.35	36.89
Movement LOS	D	D	D			E	F	B			D	D
d_A, Approach Delay [s/veh]	39.94			59.35			23.50			35.39		
Approach LOS	D			E			C			D		
d_I, Intersection Delay [s/veh]	33.88											
Intersection LOS	C											
Intersection V/C	0.906											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	47.03	47.03	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.634	2.164	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	800	0	1061	748
d_b, Bicycle Delay [s]	20.70	57.50	12.68	22.54
I_b,int, Bicycle LOS Score for Intersection	4.292	4.132	2.698	2.630
Bicycle LOS	E	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	45.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.898

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	78	28	80	90	57	64	443	36	46	471	46
Total Analysis Volume [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	14	39	0	16	41	0	23	42	0	18	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	24	24	12	26	26	19	49	49	14	44	44
g / C, Green / Cycle	0.09	0.21	0.21	0.10	0.23	0.23	0.17	0.42	0.42	0.12	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.08	0.12	0.13	0.10	0.20	0.15	0.15	0.38	0.38	0.11	0.32	0.32
s, saturation flow rate [veh/h]	3277	1772	1614	3277	1772	1506	1687	3373	1705	1687	4826	1670
c, Capacity [veh/h]	289	371	338	345	402	342	280	1428	722	207	1835	635
d1, Uniform Delay [s]	52.10	41.07	41.12	51.07	43.23	40.50	47.25	30.68	30.85	49.75	32.44	32.46
k, delay calibration	0.11	0.11	0.11	0.11	0.19	0.11	0.14	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.74	1.51	1.69	10.71	12.00	2.19	14.55	8.55	16.03	12.13	4.73	12.52
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.59	0.60	0.93	0.90	0.66	0.92	0.89	0.90	0.89	0.84	0.84
d, Delay for Lane Group [s/veh]	63.84	42.58	42.80	61.78	55.22	42.69	61.79	39.24	46.89	61.88	37.16	44.97
Lane Group LOS	E	D	D	E	E	D	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.28	5.78	5.33	5.08	11.24	6.01	8.31	17.46	19.38	5.90	13.49	15.41
50th-Percentile Queue Length [ft/ln]	106.89	144.53	133.19	126.91	281.00	150.37	207.76	436.52	484.49	147.42	337.24	385.20
95th-Percentile Queue Length [veh/ln]	7.67	9.72	9.11	8.77	16.74	10.04	13.04	24.31	26.60	9.88	19.51	21.85
95th-Percentile Queue Length [ft/ln]	191.67	243.11	227.82	219.28	418.45	250.92	325.96	607.85	664.99	246.98	487.82	546.14

Movement, Approach, & Intersection Results

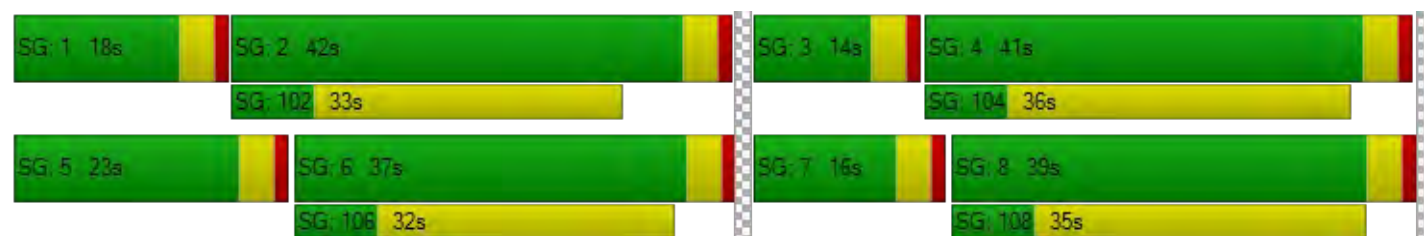
d_M, Delay for Movement [s/veh]	63.84	42.64	42.80	61.78	55.22	42.69	61.79	41.41	46.89	61.88	38.61	44.97
Movement LOS	E	D	D	E	E	D	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	50.87			54.41			44.18			41.03		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	45.31											
Intersection LOS	D											
Intersection V/C	0.898											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.580			2.734			3.291			3.280		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	609			643			661			574		
d_b, Bicycle Delay [s]	27.83			26.45			25.78			29.23		
I_b,int, Bicycle LOS Score for Intersection	2.127			3.056			2.754			2.489		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	30.7
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.839

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	312	47	285	25	23	14	19	1831	289	230	2001	57
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	47	285	25	23	14	19	1831	289	230	2001	57
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	12	71	6	6	4	5	458	72	58	500	14
Total Analysis Volume [veh/h]	312	47	285	25	23	14	19	1831	289	230	2001	57
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	45	0	0	10	0	10	32	0	33	55	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	26	26	26	5	5	3	55	55	18	70	70
g / C, Green / Cycle	0.21	0.21	0.21	0.04	0.04	0.02	0.46	0.46	0.15	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.11	0.11	0.19	0.01	0.02	0.01	0.38	0.19	0.14	0.40	0.40
s, saturation flow rate [veh/h]	1687	1708	1506	1687	1661	1687	4826	1506	1687	3373	1747
c, Capacity [veh/h]	360	365	322	75	74	41	2195	685	260	1971	1020
d1, Uniform Delay [s]	41.51	41.51	45.79	55.63	56.06	57.79	28.76	22.09	49.77	17.34	17.39
k, delay calibration	0.11	0.11	0.13	0.11	0.11	0.11	0.50	0.50	0.12	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.05	1.04	9.21	2.56	5.16	7.85	3.92	1.91	10.49	1.98	3.82
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.50	0.49	0.89	0.33	0.50	0.46	0.83	0.42	0.89	0.69	0.69
d, Delay for Lane Group [s/veh]	42.56	42.54	54.99	58.20	61.22	65.64	32.68	23.99	60.26	19.32	21.22
Lane Group LOS	D	D	D	E	E	E	C	C	E	B	C
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.76	4.82	9.03	0.79	1.20	0.66	15.82	5.82	7.50	12.92	14.00
50th-Percentile Queue Length [ft/ln]	119.10	120.39	225.67	19.73	30.07	16.49	395.46	145.62	187.58	323.02	350.06
95th-Percentile Queue Length [veh/ln]	8.34	8.41	13.95	1.42	2.17	1.19	22.34	9.78	12.00	18.82	20.14
95th-Percentile Queue Length [ft/ln]	208.58	210.36	348.85	35.51	54.13	29.69	558.53	244.57	299.89	470.40	503.49

Movement, Approach, & Intersection Results

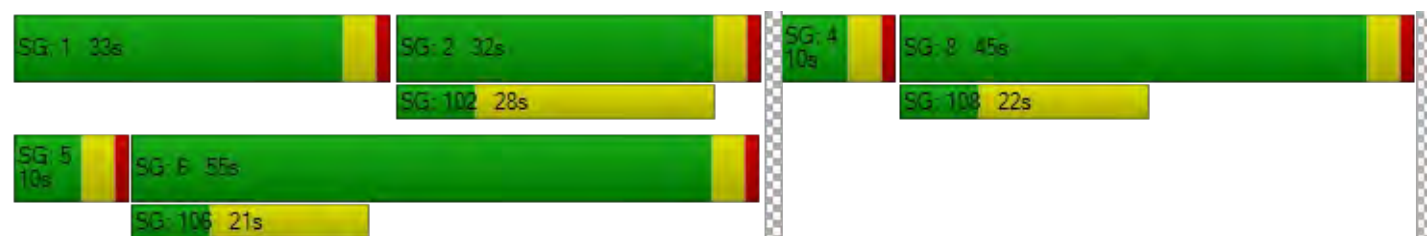
d_M, Delay for Movement [s/veh]	42.56	42.54	54.99	58.20	61.22	61.22	65.64	32.68	23.99	60.26	19.93	21.22
Movement LOS	D	D	D	E	E	E	E	C	C	E	B	C
d_A, Approach Delay [s/veh]	48.06			60.00			31.80			24.02		
Approach LOS	D			E			C			C		
d_I, Intersection Delay [s/veh]	30.71											
Intersection LOS	C											
Intersection V/C	0.839											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.434			2.014			0.000			3.225		
Crosswalk LOS	B			B			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	683			100			467			850		
d_b, Bicycle Delay [s]	26.00			54.15			35.27			19.84		
I_b,int, Bicycle LOS Score for Intersection	2.622			1.662			2.736			2.818		
Bicycle LOS	B			A			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	48.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.946

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	TLOTT			TLOTT			TLOTT			TLOTT		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	367	738	111	266	484	114	230	1353	213	203	1666	399
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	367	738	111	266	484	114	230	1353	213	203	1666	399
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	92	185	28	67	121	29	58	338	53	51	417	100
Total Analysis Volume [veh/h]	367	738	111	266	484	114	230	1353	213	203	1666	399
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	19	35	0	15	31	0	13	57	0	13	57	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	31	31	11	27	27	9	53	53	9	53	53
g / C, Green / Cycle	0.13	0.26	0.26	0.09	0.22	0.22	0.08	0.44	0.44	0.08	0.44	0.44
(v / s)_i Volume / Saturation Flow Rate	0.11	0.24	0.25	0.08	0.14	0.08	0.07	0.31	0.31	0.06	0.41	0.42
s, saturation flow rate [veh/h]	3277	1772	1692	3277	3373	1506	3277	3373	1651	3277	3373	1605
c, Capacity [veh/h]	410	456	435	301	755	337	246	1493	731	246	1493	711
d1, Uniform Delay [s]	51.73	43.85	43.89	53.87	42.21	39.11	55.21	27.06	27.10	54.72	31.63	32.30
k, delay calibration	0.11	0.41	0.42	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.08	28.19	29.61	8.54	0.91	0.59	15.02	2.80	5.66	6.86	11.48	24.50
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.95	0.95	0.88	0.64	0.34	0.93	0.70	0.71	0.83	0.93	0.96
d, Delay for Lane Group [s/veh]	58.81	72.03	73.50	62.42	43.12	39.70	70.22	29.86	32.77	61.59	43.11	56.80
Lane Group LOS	E	E	E	E	D	D	E	C	C	E	D	E
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	5.83	16.12	15.61	4.32	6.59	2.89	3.97	12.56	12.94	3.26	20.86	23.33
50th-Percentile Queue Length [ft/ln]	145.85	403.00	390.27	108.05	164.65	72.21	99.25	313.90	323.43	81.47	521.46	583.16
95th-Percentile Queue Length [veh/ln]	9.80	22.70	22.09	7.73	10.80	5.20	7.15	18.37	18.84	5.87	28.35	31.25
95th-Percentile Queue Length [ft/ln]	244.89	567.62	552.26	193.28	269.88	129.97	178.64	459.18	470.90	146.64	708.71	781.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.81	72.64	73.50	62.42	43.12	39.70	70.22	30.51	32.77	61.59	45.41	56.80
Movement LOS	E	E	E	E	D	D	E	C	C	E	D	E
d_A, Approach Delay [s/veh]	68.54			48.61			35.86			48.86		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	48.92											
Intersection LOS	D											
Intersection V/C	0.946											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.810			2.918			3.220			3.226		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	517			450			883			883		
d_b, Bicycle Delay [s]	33.00			36.04			18.70			18.70		
I_b,int, Bicycle LOS Score for Intersection	2.563			2.272			2.547			2.807		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	44.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.920

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	81	930	347	167	657	356	589	1337	71	331	1178	268
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	81	930	347	167	657	356	589	1337	71	331	1178	268
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	20	233	87	42	164	89	147	334	18	83	295	67
Total Analysis Volume [veh/h]	81	930	347	167	657	356	589	1337	71	331	1178	268
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	44	44	11	45	45	27	47	0	18	38	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	36	54	7	37	64	23	47	47	14	38	38
g / C, Green / Cycle	0.05	0.30	0.45	0.06	0.31	0.53	0.19	0.39	0.39	0.12	0.32	0.32
(v / s)_i Volume / Saturation Flow Rate	0.05	0.28	0.23	0.05	0.19	0.24	0.18	0.28	0.05	0.10	0.29	0.29
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1609
c, Capacity [veh/h]	85	1015	679	192	1043	804	628	1883	588	383	1064	508
d1, Uniform Delay [s]	56.85	40.51	23.50	56.03	35.57	17.05	47.80	30.86	23.41	52.06	39.60	39.67
k, delay calibration	0.11	0.11	0.39	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	34.96	3.82	2.16	11.22	0.63	0.83	7.37	2.30	0.42	5.89	13.87	24.75
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.92	0.51	0.87	0.63	0.44	0.94	0.71	0.12	0.86	0.92	0.92
d, Delay for Lane Group [s/veh]	91.81	44.33	25.66	67.25	36.21	17.88	55.17	33.16	23.84	57.96	53.47	64.42
Lane Group LOS	F	D	C	E	D	B	E	C	C	E	D	E
Critical Lane Group	No	Yes	No	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.27	13.64	7.35	2.81	8.30	6.07	9.28	11.16	1.37	5.20	15.78	16.67
50th-Percentile Queue Length [ft/ln]	81.86	340.97	183.79	70.19	207.57	151.80	232.06	278.99	34.23	130.08	394.53	416.77
95th-Percentile Queue Length [veh/ln]	5.89	19.70	11.80	5.05	13.03	10.11	14.28	16.64	2.46	8.94	22.30	23.37
95th-Percentile Queue Length [ft/ln]	147.34	492.38	294.95	126.34	325.72	252.83	356.97	415.95	61.61	223.60	557.40	584.18

Movement, Approach, & Intersection Results

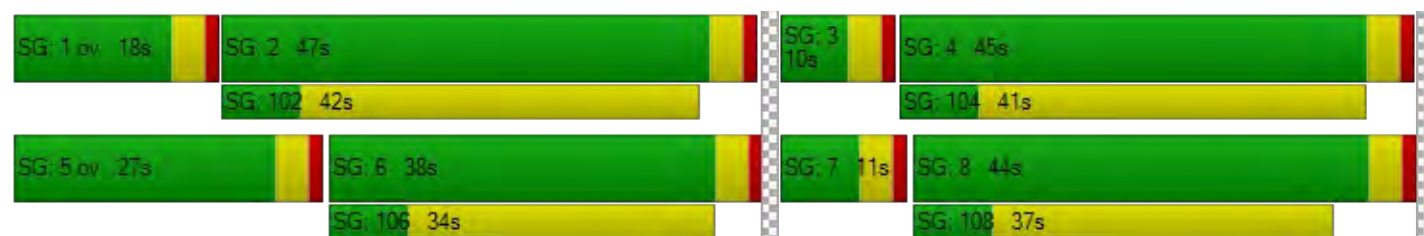
d_M, Delay for Movement [s/veh]	91.81	44.33	25.66	67.25	36.21	17.88	55.17	33.16	23.84	57.96	55.33	64.42
Movement LOS	F	D	C	E	D	B	E	C	C	E	E	E
d_A, Approach Delay [s/veh]	42.39			35.07			39.32			57.19		
Approach LOS	D			D			D			E		
d_I, Intersection Delay [s/veh]	44.22											
Intersection LOS	D											
Intersection V/C	0.920											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.859			3.021			3.254			3.181		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	667			683			717			567		
d_b, Bicycle Delay [s]	26.67			26.00			24.70			30.82		
I_b,int, Bicycle LOS Score for Intersection	2.680			2.533			2.658			2.537		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	61.3
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.881

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	536	1116	32	142	416	254	356	1139	311	21	1069	318
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	536	1116	32	142	416	254	356	1139	311	21	1069	318
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	134	279	8	36	104	64	89	285	78	5	267	80
Total Analysis Volume [veh/h]	536	1116	32	142	416	254	356	1139	311	21	1069	318
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	48	0	15	44	44	14	47	47	10	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	43	7	35	49	10	51	70	3	44	44
g / C, Green / Cycle	0.13	0.36	0.06	0.29	0.41	0.08	0.43	0.58	0.03	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.16	0.33	0.04	0.09	0.17	0.11	0.34	0.21	0.01	0.28	0.28
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1572
c, Capacity [veh/h]	410	1199	197	1401	613	274	1436	880	84	1240	578
d1, Uniform Delay [s]	52.50	37.26	55.43	33.08	25.37	55.00	29.90	13.08	57.35	33.36	33.36
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	141.85	3.88	4.95	0.12	0.45	140.49	4.59	1.12	1.54	4.49	9.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.31	0.93	0.72	0.30	0.41	1.30	0.79	0.35	0.25	0.76	0.76
d, Delay for Lane Group [s/veh]	194.35	41.14	60.38	33.20	25.82	195.49	34.49	14.20	58.88	37.85	42.60
Lane Group LOS	F	D	E	C	C	F	C	B	E	D	D
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	14.25	16.14	2.25	3.17	5.23	9.48	14.91	4.58	0.33	12.75	12.64
50th-Percentile Queue Length [ft/ln]	356.14	403.55	56.18	79.13	130.72	237.12	372.69	114.51	8.27	318.63	316.02
95th-Percentile Queue Length [veh/ln]	22.66	22.73	4.04	5.70	8.98	15.81	21.24	8.09	0.60	18.60	18.47
95th-Percentile Queue Length [ft/ln]	566.42	568.27	101.12	142.44	224.47	395.17	530.99	202.26	14.89	465.00	461.79

Movement, Approach, & Intersection Results

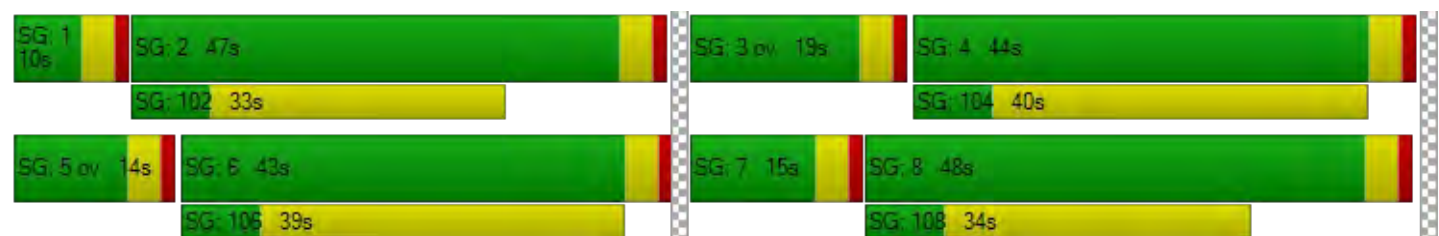
d_M, Delay for Movement [s/veh]	194.35	41.14	0.00	60.38	33.20	25.82	195.49	34.49	14.20	58.88	38.39	42.60
Movement LOS	F	D		E	C	C	F	C	B	E	D	D
d_A, Approach Delay [s/veh]	90.85			35.64			62.73			39.65		
Approach LOS	F			D			E			D		
d_I, Intersection Delay [s/veh]	61.31											
Intersection LOS	E											
Intersection V/C	0.881											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.032			3.056			3.186			2.982		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	733			667			717			650		
d_b, Bicycle Delay [s]	24.07			26.67			24.70			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.923			2.006			3.050			2.334		
Bicycle LOS	C			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 1: Puente Street at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	18.3
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.526

Intersection Setup

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	74	139	55	103	146	86	76	1256	53	47	1268	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	74	139	55	103	146	86	76	1256	53	47	1268	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	19	35	14	26	37	22	19	314	13	12	317	23
Total Analysis Volume [veh/h]	74	139	55	103	146	86	76	1256	53	47	1268	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	32	0	17	32	0	10	31	0	10	31	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	21	0	0	21	0	0	20	0	0	20	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	5	8	8	7	9	9	5	55	55	4	54	54
g / C, Green / Cycle	0.06	0.08	0.08	0.08	0.10	0.10	0.06	0.61	0.61	0.05	0.60	0.60
(v / s)_i Volume / Saturation Flow Rate	0.04	0.06	0.06	0.06	0.07	0.07	0.05	0.26	0.26	0.03	0.27	0.27
s, saturation flow rate [veh/h]	1687	1772	1607	1687	1772	1560	1687	3373	1735	1687	3373	1711
c, Capacity [veh/h]	97	150	136	132	187	164	98	2065	1062	80	2029	1029
d1, Uniform Delay [s]	41.89	40.02	40.14	40.81	38.72	38.87	41.88	9.11	9.11	42.09	9.77	9.77
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	11.64	4.91	6.24	9.59	3.69	4.85	12.16	0.63	1.21	6.68	0.71	1.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.76	0.66	0.70	0.78	0.64	0.68	0.77	0.42	0.42	0.59	0.44	0.44
d, Delay for Lane Group [s/veh]	53.53	44.92	46.38	50.40	42.41	43.72	54.05	9.74	10.33	48.76	10.48	11.17
Lane Group LOS	D	D	D	D	D	D	D	A	B	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	1.92	2.31	2.25	2.57	2.71	2.57	1.98	4.12	4.41	1.16	4.54	4.80
50th-Percentile Queue Length [ft/ln]	47.92	57.81	56.30	64.18	67.77	64.23	49.48	102.94	110.25	29.06	113.46	120.00
95th-Percentile Queue Length [veh/ln]	3.45	4.16	4.05	4.62	4.88	4.62	3.56	7.41	7.85	2.09	8.03	8.39
95th-Percentile Queue Length [ft/ln]	86.26	104.05	101.34	115.53	121.99	115.61	89.06	185.29	196.35	52.30	200.81	209.83

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.53	45.34	46.38	50.40	42.64	43.72	54.05	9.92	10.33	48.76	10.68	11.17
Movement LOS	D	D	D	D	D	D	D	A	B	D	B	B
d_A, Approach Delay [s/veh]	47.81			45.30			12.36			11.98		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	18.25											
Intersection LOS	B											
Intersection V/C	0.526											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.400			2.425			2.985			2.986		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	622			622			600			600		
d_b, Bicycle Delay [s]	21.36			21.36			22.05			22.05		
I_b,int, Bicycle LOS Score for Intersection	1.781			1.836			2.321			2.333		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 2: Brea Boulevard at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	39.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.805

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	308	404	173	163	717	175	68	1197	272	242	1057	54
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	308	404	173	163	717	175	68	1197	272	242	1057	54
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	77	101	43	41	179	44	17	299	68	61	264	14
Total Analysis Volume [veh/h]	308	404	173	163	717	175	68	1197	272	242	1057	54
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	39	0	17	39	0	10	42	0	22	54	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	22	0	0	31	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	28	28	13	28	28	6	44	44	18	56	56
g / C, Green / Cycle	0.11	0.24	0.24	0.11	0.24	0.24	0.05	0.37	0.37	0.15	0.47	0.47
(v / s)_i Volume / Saturation Flow Rate	0.09	0.12	0.11	0.10	0.21	0.12	0.04	0.25	0.18	0.14	0.22	0.22
s, saturation flow rate [veh/h]	3277	3373	1506	1687	3373	1506	1687	4826	1506	1687	3373	1728
c, Capacity [veh/h]	358	799	357	184	799	357	87	1785	557	254	1582	810
d1, Uniform Delay [s]	52.59	39.73	39.51	52.74	44.42	39.57	56.30	31.71	29.10	50.59	21.65	21.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.14	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.07	0.50	1.02	12.86	3.92	1.04	14.07	2.02	3.04	20.15	0.98	1.91
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.51	0.48	0.88	0.90	0.49	0.78	0.67	0.49	0.95	0.46	0.46
d, Delay for Lane Group [s/veh]	58.67	40.23	40.54	65.60	48.34	40.62	70.38	33.73	32.14	70.73	22.63	23.56
Lane Group LOS	E	D	D	E	D	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.86	5.23	4.51	5.50	10.71	4.57	2.38	9.94	6.48	8.61	7.16	7.55
50th-Percentile Queue Length [ft/ln]	121.60	130.81	112.77	137.53	267.64	114.27	59.46	248.60	162.06	215.33	179.02	188.66
95th-Percentile Queue Length [veh/ln]	8.48	8.98	7.99	9.35	16.07	8.08	4.28	15.12	10.66	13.43	11.55	12.05
95th-Percentile Queue Length [ft/ln]	212.02	224.59	199.84	233.69	401.80	201.92	107.03	377.89	266.45	335.66	288.74	301.29

Movement, Approach, & Intersection Results

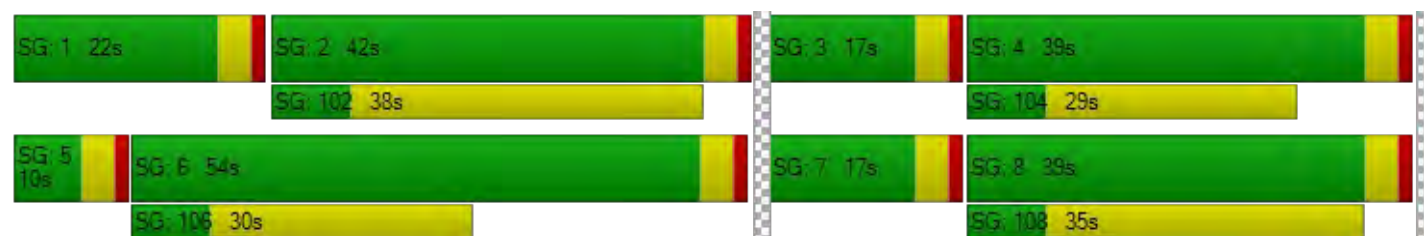
d_M, Delay for Movement [s/veh]	58.67	40.23	40.54	65.60	48.34	40.62	70.38	33.73	32.14	70.73	22.91	23.56
Movement LOS	E	D	D	E	D	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	46.71			49.72			35.07			31.49		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	39.40											
Intersection LOS	D											
Intersection V/C	0.805											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.902			2.724			3.114			3.010		
Crosswalk LOS	C			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			583			633			833		
d_b, Bicycle Delay [s]	30.10			30.10			28.02			20.42		
I_b,int, Bicycle LOS Score for Intersection	2.290			2.430			2.405			2.304		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 3: State College Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	49.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.882

Intersection Setup

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	State College Boulevard			State College Boulevard			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	167	262	428	510	365	6	19	1161	301	765	1598	728
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	167	262	428	510	365	6	19	1161	301	765	1598	728
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	42	66	107	128	91	2	5	290	75	191	400	182
Total Analysis Volume [veh/h]	167	262	428	510	365	6	19	1161	301	765	1598	728
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	30	0	24	44	0	22	39	0	27	44	44
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	33	0	0	28	0	0	22	22
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	6	20	20	20	20	34	34	3	41	41	23	61	85
g / C, Green / Cycle	0.05	0.17	0.17	0.17	0.17	0.28	0.28	0.02	0.34	0.34	0.19	0.51	0.71
(v / s)_i Volume / Saturation Flow Rate	0.05	0.14	0.14	0.14	0.16	0.11	0.11	0.01	0.23	0.23	0.23	0.33	0.48
s, saturation flow rate [veh/h]	3277	1772	1513	1506	3277	1772	1761	3277	4826	1542	3277	4826	1506
c, Capacity [veh/h]	166	297	253	252	547	502	499	80	1644	525	628	2452	1067
d1, Uniform Delay [s]	56.98	48.61	48.63	48.63	49.35	34.43	34.43	57.47	33.86	33.93	48.52	21.72	9.89
k, delay calibration	0.11	0.14	0.14	0.14	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	33.47	9.03	10.56	10.61	7.82	0.45	0.46	1.51	2.22	6.88	101.15	1.36	3.54
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.00	0.86	0.86	0.86	0.93	0.37	0.37	0.24	0.67	0.68	1.22	0.65	0.68
d, Delay for Lane Group [s/veh]	90.45	57.64	59.18	59.23	57.17	34.89	34.89	58.98	36.08	40.82	149.67	23.08	13.43
Lane Group LOS	F	E	E	E	E	C	C	E	D	D	F	C	B
Critical Lane Group	No	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.29	8.15	7.08	7.05	8.11	4.43	4.40	0.30	9.47	9.84	18.18	11.06	10.67
50th-Percentile Queue Length [ft/ln]	82.35	203.7	177.0	176.3	202.83	110.70	110.09	7.50	236.74	246.01	454.61	276.45	266.70
95th-Percentile Queue Length [veh/ln]	5.93	12.83	11.45	11.41	12.78	7.88	7.84	0.54	14.52	14.99	27.69	16.51	16.02
95th-Percentile Queue Length [ft/ln]	148.2	320.7	286.2	285.2	319.61	196.98	196.12	13.51	362.90	374.63	692.23	412.79	400.61

Movement, Approach, & Intersection Results

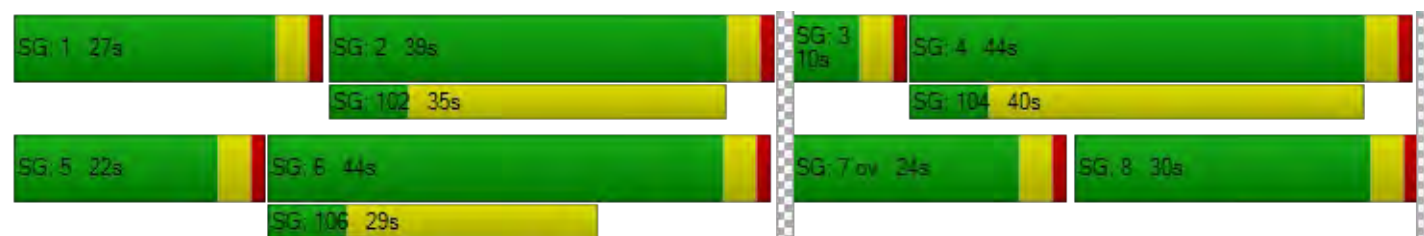
d_M, Delay for Movement [s/veh]	90.45	57.68	59.21	57.17	34.89	34.89	58.98	36.30	40.82	149.67	23.08	13.43
Movement LOS	F	E	E	E	C	C	E	D	D	F	C	B
d_A, Approach Delay [s/veh]	64.83			47.78			37.51			52.14		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	49.82											
Intersection LOS	D											
Intersection V/C	0.882											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.926			2.774			3.215			0.000		
Crosswalk LOS	C			C			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	433			667			583			667		
d_b, Bicycle Delay [s]	36.82			26.67			30.10			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.267			2.286			2.171			3.260		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 4: SR-57 SB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	37.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.940

Intersection Setup

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				rrrr			llllrr			rrllll		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 SB Ramps			SR-57 SB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	0	0	0	844	0	1190	0	1504	580	185	1926	0
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	844	0	1190	0	1504	580	185	1926	0
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	211	0	298	0	376	145	46	482	0
Total Analysis Volume [veh/h]	0	0	0	844	0	1190	0	1504	580	185	1926	0
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	0	0	7	0	0	0	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	Lead	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	6	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	30	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	70	0	0	0	38	0	12	50	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	12	0	0	14	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall				No				No		No	No	
Maximum Recall				No				No		No	No	
Pedestrian Recall				No				No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	R	C	R	L	C
C, Cycle Length [s]		120	120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		59	59	41	41	8	53
g / C, Green / Cycle		0.49	0.49	0.34	0.34	0.07	0.44
(v / s)_i Volume / Saturation Flow Rate		0.26	0.45	0.31	0.22	0.06	0.40
s, saturation flow rate [veh/h]		3277	2665	4826	2665	3277	4826
c, Capacity [veh/h]		1608	1308	1649	911	221	2135
d1, Uniform Delay [s]		20.94	28.08	37.76	33.22	55.28	31.03
k, delay calibration		0.11	0.11	0.50	0.50	0.11	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		0.27	2.80	9.20	3.40	8.18	6.74
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.52	0.91	0.91	0.64	0.84	0.90
d, Delay for Lane Group [s/veh]		21.20	30.88	46.95	36.61	63.46	37.77
Lane Group LOS		C	C	D	D	E	D
Critical Lane Group		No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]		8.06	15.64	15.28	7.49	3.02	18.11
50th-Percentile Queue Length [ft/ln]		201.52	390.97	381.90	187.23	75.40	452.70
95th-Percentile Queue Length [veh/ln]		12.72	22.12	21.69	11.98	5.43	25.09
95th-Percentile Queue Length [ft/ln]		317.92	553.11	542.15	299.43	135.72	627.17

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	21.20	0.00	30.88	0.00	46.95	36.61	63.46	37.77	0.00
Movement LOS				C		C		D	D	E	D	
d_A, Approach Delay [s/veh]	0.00			26.86			44.08			40.02		
Approach LOS	A			C			D			D		
d_I, Intersection Delay [s/veh]	37.08											
Intersection LOS	D											
Intersection V/C	0.940											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.102	2.641	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	567	767
d_b, Bicycle Delay [s]	60.00	60.00	30.82	22.82
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.706	2.721
Bicycle LOS	D	D	B	B

Sequence

Ring 1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 5: SR-57 NB Ramps at Lambert Road

Control Type:	Signalized	Delay (sec / veh):	22.2
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.862

Intersection Setup

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	↶↶↶						↷↷↷			↷↷↷		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	0	1	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No						No			No		
Crosswalk	Yes			No			No			No		

Volumes

Name	SR-57 NB Ramps			SR-57 NB Ramps			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	1169	0	477	0	0	0	0	1636	713	0	963	438
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1169	0	477	0	0	0	0	1636	713	0	963	438
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	292	0	119	0	0	0	0	409	178	0	241	110
Total Analysis Volume [veh/h]	1169	0	477	0	0	0	0	1636	713	0	963	438
Presence of On-Street Parking	No		No				No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Permiss	Split	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Unsigna
Signal Group	3	0	0	0	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	-	-	-	-	-	-	-	-	-
Minimum Green [s]	6	0	0	0	0	0	0	6	0	0	6	0
Maximum Green [s]	30	0	0	0	0	0	0	30	0	0	30	0
Amber [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	58	0	0	0	0	0	0	32	0	0	32	0
Vehicle Extension [s]	3.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	0	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	21	0	0	0	0
Rest In Walk	No							No			No	
I1, Start-Up Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No							No			No	
Maximum Recall	No							No			No	
Pedestrian Recall	No							No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	R		C	C	R	C
C, Cycle Length [s]	90	90		90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00		4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00		0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00		2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	37	37		45	45	45	45
g / C, Green / Cycle	0.41	0.41		0.50	0.50	0.50	0.50
(v / s)_i Volume / Saturation Flow Rate	0.36	0.32		0.35	0.38	0.39	0.20
s, saturation flow rate [veh/h]	3277	1506		3373	1526	1506	4826
c, Capacity [veh/h]	1353	622		1680	760	750	2403
d1, Uniform Delay [s]	24.07	22.66		17.36	18.39	18.55	14.14
k, delay calibration	0.11	0.11		0.50	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00		1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.78	2.14		2.45	7.49	8.01	0.50
d3, Initial Queue Delay [s]	0.00	0.00		0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00		1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00		1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.77		0.70	0.77	0.78	0.40
d, Delay for Lane Group [s/veh]	25.84	24.80		19.81	25.89	26.56	14.64
Lane Group LOS	C	C		B	C	C	B
Critical Lane Group	Yes	No		No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	11.02	8.58		9.28	10.81	10.97	3.99
50th-Percentile Queue Length [ft/ln]	275.62	214.58		231.96	270.18	274.30	99.68
95th-Percentile Queue Length [veh/ln]	16.47	13.39		14.27	16.20	16.40	7.18
95th-Percentile Queue Length [ft/ln]	411.76	334.70		356.84	404.97	410.10	179.42

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	25.84	0.00	24.80	0.00	0.00	0.00	0.00	20.07	26.44	0.00	14.64	0.00
Movement LOS	C		C					C	C		B	
d_A, Approach Delay [s/veh]	25.54			0.00			23.02			14.64		
Approach LOS	C			A			C			B		
d_I, Intersection Delay [s/veh]	22.23											
Intersection LOS	C											
Intersection V/C	0.862											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	0.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	34.67	0.00	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.759	0.000	0.000	0.000
Crosswalk LOS	C	F	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	0	0	622	622
d_b, Bicycle Delay [s]	45.00	45.00	21.36	21.36
I_b,int, Bicycle LOS Score for Intersection	4.132	4.132	2.852	2.089
Bicycle LOS	D	D	C	B

Sequence

Ring 1	-	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 6: Santa Fe Road/Kraemer Boulevard at Lambert Road**

Control Type:	Signalized	Delay (sec / veh):	27.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.644

Intersection Setup

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Santa Fe Road			Lambert Road			Lambert Road		
Base Volume Input [veh/h]	378	147	129	1	148	213	156	853	656	134	732	7
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	378	147	129	1	148	213	156	853	656	134	732	7
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	95	37	32	0	37	53	39	213	164	34	183	2
Total Analysis Volume [veh/h]	378	147	129	1	148	213	156	853	656	134	732	7
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups			1,8						2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	6	6	6	0
Maximum Green [s]	30	30	30	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	19	52	52	10	43	0	16	38	38	10	32	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	7	0	7	0
Pedestrian Clearance [s]	0	30	30	0	31	0	0	26	26	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No		No	No	No	No	No	
Maximum Recall	No	No	No	No	No		No	No	No	No	No	
Pedestrian Recall	No	No	No	No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	15	33	43	0	18	18	12	55	74	6	49	49
g / C, Green / Cycle	0.13	0.30	0.39	0.00	0.16	0.16	0.11	0.50	0.67	0.05	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.12	0.08	0.09	0.00	0.08	0.14	0.09	0.25	0.25	0.04	0.14	0.14
s, saturation flow rate [veh/h]	3277	1772	1506	1687	1772	1506	1687	3373	2665	3277	3373	1763
c, Capacity [veh/h]	440	524	584	5	291	248	184	1689	1789	181	1508	788
d1, Uniform Delay [s]	46.65	29.76	22.58	54.79	41.94	44.77	48.18	18.37	7.89	51.22	19.65	19.65
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.01	0.29	0.19	22.41	1.37	8.51	10.39	1.08	0.58	5.78	0.56	1.08
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.28	0.22	0.22	0.51	0.86	0.85	0.51	0.37	0.74	0.32	0.32
d, Delay for Lane Group [s/veh]	51.66	30.05	22.77	77.20	43.31	53.28	58.56	19.45	8.47	57.01	20.21	20.73
Lane Group LOS	D	C	C	E	D	D	E	B	A	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.35	3.03	2.27	0.06	3.77	6.21	4.72	7.31	3.25	1.96	4.08	4.38
50th-Percentile Queue Length [ft/ln]	133.66	75.75	56.67	1.40	94.28	155.22	117.97	182.63	81.35	49.06	102.05	109.59
95th-Percentile Queue Length [veh/ln]	9.14	5.45	4.08	0.10	6.79	10.30	8.28	11.74	5.86	3.53	7.35	7.82
95th-Percentile Queue Length [ft/ln]	228.47	136.35	102.00	2.52	169.71	257.39	207.03	293.44	146.44	88.31	183.69	195.44

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	51.66	30.05	22.77	77.20	43.31	53.28	58.56	19.45	8.47	57.01	20.39	20.73
Movement LOS	D	C	C	E	D	D	E	B	A	E	C	C
d_A, Approach Delay [s/veh]	41.10			49.27			18.79			26.01		
Approach LOS	D			D			B			C		
d_I, Intersection Delay [s/veh]	27.78											
Intersection LOS	C											
Intersection V/C	0.644											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.721			2.304			3.099			2.862		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	873			709			618			509		
d_b, Bicycle Delay [s]	17.47			22.91			26.25			30.56		
I_b,int, Bicycle LOS Score for Intersection	2.639			2.157			2.933			2.040		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 7: Brea Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	30.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.649

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	99	474	307	371	924	101	87	126	39	345	140	338
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	99	474	307	371	924	101	87	126	39	345	140	338
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	25	119	77	93	231	25	22	32	10	86	35	85
Total Analysis Volume [veh/h]	99	474	307	371	924	101	87	126	39	345	140	338
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	1	6	0	5	2	0	3	8	0	7	4	4
Auxiliary Signal Groups												4,5
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	21	28	0	21	28	0	23	38	0	23	38	38
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	17	0	0	16	0	0	26	0	0	27	27
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	8	50	50	17	59	59	7	13	14	19	40
g / C, Green / Cycle	0.07	0.46	0.46	0.15	0.54	0.54	0.07	0.12	0.13	0.18	0.37
(v / s)_i Volume / Saturation Flow Rate	0.06	0.14	0.20	0.11	0.20	0.20	0.05	0.10	0.11	0.08	0.22
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1684	1687	1701	3277	1772	1506
c, Capacity [veh/h]	125	1542	688	507	1815	906	111	198	414	313	554
d1, Uniform Delay [s]	50.15	18.88	20.38	44.34	14.74	14.74	50.65	47.61	46.95	40.50	28.35
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.12
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.72	0.52	2.09	2.05	0.60	1.20	11.28	8.86	4.41	1.00	1.24
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.31	0.45	0.73	0.38	0.38	0.78	0.83	0.83	0.45	0.61
d, Delay for Lane Group [s/veh]	60.87	19.40	22.47	46.39	15.34	15.94	61.93	56.47	51.36	41.50	29.59
Lane Group LOS	E	B	C	D	B	B	E	E	D	D	C
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	3.05	3.89	5.68	4.95	4.96	5.10	2.70	4.90	4.85	3.47	7.36
50th-Percentile Queue Length [ft/ln]	76.17	97.15	141.97	123.66	123.94	127.50	67.61	122.44	121.20	86.87	183.94
95th-Percentile Queue Length [veh/ln]	5.48	6.99	9.59	8.59	8.61	8.80	4.87	8.53	8.46	6.25	11.81
95th-Percentile Queue Length [ft/ln]	137.11	174.87	239.67	214.85	215.23	220.10	121.70	213.18	211.48	156.36	295.16

Movement, Approach, & Intersection Results

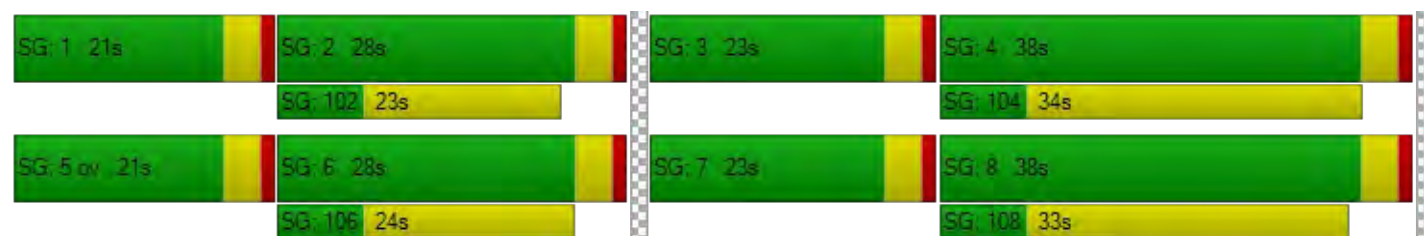
d_M, Delay for Movement [s/veh]	60.87	19.40	22.47	46.39	15.49	15.94	61.93	56.47	56.47	51.36	41.50	29.59
Movement LOS	E	B	C	D	B	B	E	E	E	D	D	C
d_A, Approach Delay [s/veh]	25.14			23.74			58.35			40.74		
Approach LOS	C			C			E			D		
d_I, Intersection Delay [s/veh]	30.88											
Intersection LOS	C											
Intersection V/C	0.649											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.908			3.015			2.142			2.727		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	436			436			618			618		
d_b, Bicycle Delay [s]	33.62			33.62			26.25			26.25		
I_b,int, Bicycle LOS Score for Intersection	2.044			2.327			1.975			2.918		
Bicycle LOS	B			B			A			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 8: Randolph Avenue at Birch Street

Control Type:	Signalized	Delay (sec / veh):	20.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.510

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Birch Street			Birch Street		
Base Volume Input [veh/h]	113	77	177	53	37	79	88	660	135	158	811	27
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	113	77	177	53	37	79	88	660	135	158	811	27
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	28	19	44	13	9	20	22	165	34	40	203	7
Total Analysis Volume [veh/h]	113	77	177	53	37	79	88	660	135	158	811	27
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	90
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	23	30	0	22	29	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	25	0	0	19	0	0	18	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	R
C, Cycle Length [s]	90	90	90	90	90	90	90	90	90	90	90
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	19	19	19	19	6	49	49	10	53	53
g / C, Green / Cycle	0.21	0.21	0.21	0.21	0.21	0.07	0.54	0.54	0.11	0.59	0.59
(v / s)_i Volume / Saturation Flow Rate	0.09	0.04	0.12	0.04	0.07	0.05	0.23	0.23	0.09	0.24	0.02
s, saturation flow rate [veh/h]	1276	1772	1506	1322	1581	1687	1772	1668	1687	3373	1506
c, Capacity [veh/h]	231	370	315	272	330	113	963	907	192	1993	890
d1, Uniform Delay [s]	38.41	29.45	31.92	34.28	30.40	41.34	12.18	12.19	38.99	9.92	7.68
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.61	0.28	1.58	0.35	0.64	10.92	1.37	1.46	8.43	0.62	0.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.49	0.21	0.56	0.20	0.35	0.78	0.42	0.43	0.82	0.41	0.03
d, Delay for Lane Group [s/veh]	40.02	29.72	33.50	34.62	31.03	52.26	13.56	13.64	47.42	10.54	7.74
Lane Group LOS	D	C	C	C	C	D	B	B	D	B	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.48	1.39	3.53	1.05	2.17	2.24	4.90	4.64	3.81	4.09	0.22
50th-Percentile Queue Length [ft/ln]	62.01	34.73	88.20	26.19	54.36	56.03	122.44	115.93	95.25	102.16	5.43
95th-Percentile Queue Length [veh/ln]	4.46	2.50	6.35	1.89	3.91	4.03	8.53	8.17	6.86	7.36	0.39
95th-Percentile Queue Length [ft/ln]	111.62	62.51	158.77	47.14	97.84	100.86	213.18	204.22	171.46	183.90	9.78

Movement, Approach, & Intersection Results

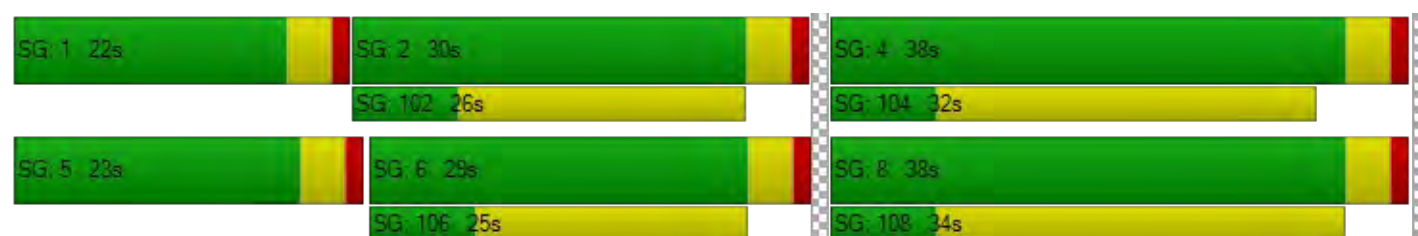
d_M, Delay for Movement [s/veh]	40.02	29.72	33.50	34.62	31.03	31.03	52.26	13.59	13.64	47.42	10.54	7.74
Movement LOS	D	C	C	C	C	C	D	B	B	D	B	A
d_A, Approach Delay [s/veh]	34.71			32.16			17.45			16.32		
Approach LOS	C			C			B			B		
d_I, Intersection Delay [s/veh]	20.64											
Intersection LOS	C											
Intersection V/C	0.510											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	34.67			34.67			34.67			34.67		
I_p,int, Pedestrian LOS Score for Intersection	2.300			2.057			2.828			2.834		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	756			756			578			556		
d_b, Bicycle Delay [s]	17.42			17.42			22.76			23.47		
I_b,int, Bicycle LOS Score for Intersection	2.165			1.838			2.288			2.381		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 9: State College Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	44.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.826

Intersection Setup

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	121	429	185	277	718	511	300	723	167	176	699	240
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	121	429	185	277	718	511	300	723	167	176	699	240
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	30	107	46	69	180	128	75	181	42	44	175	60
Total Analysis Volume [veh/h]	121	429	185	277	718	511	300	723	167	176	699	240
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	28	57	0	16	41	0	12	37	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	30	0	0	28	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	42	42	13	48	48	12	42	42	8	38	38
g / C, Green / Cycle	0.05	0.35	0.35	0.10	0.40	0.40	0.10	0.35	0.35	0.07	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.04	0.13	0.12	0.08	0.36	0.38	0.09	0.21	0.11	0.05	0.21	0.16
s, saturation flow rate [veh/h]	3277	3373	1506	3277	1772	1534	3277	3373	1506	3277	3373	1506
c, Capacity [veh/h]	164	1172	523	343	712	616	328	1174	524	219	1061	474
d1, Uniform Delay [s]	56.21	29.28	29.14	52.56	33.81	34.64	53.49	32.48	28.70	55.22	35.56	33.53
k, delay calibration	0.11	0.11	0.11	0.11	0.34	0.37	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.26	0.19	0.41	4.55	12.92	20.36	10.04	2.43	1.60	6.75	3.21	3.83
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.74	0.37	0.35	0.81	0.91	0.95	0.91	0.62	0.32	0.80	0.66	0.51
d, Delay for Lane Group [s/veh]	62.47	29.48	29.55	57.10	46.73	55.00	63.53	34.91	30.30	61.97	38.76	37.37
Lane Group LOS	E	C	C	E	D	D	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.95	4.66	4.03	4.30	19.88	19.50	4.93	9.08	3.78	2.83	9.28	6.21
50th-Percentile Queue Length [ft/ln]	48.77	116.59	100.87	107.41	496.94	487.53	123.37	226.97	94.44	70.76	232.05	155.24
95th-Percentile Queue Length [veh/ln]	3.51	8.21	7.26	7.70	27.19	26.74	8.58	14.02	6.80	5.09	14.28	10.30
95th-Percentile Queue Length [ft/ln]	87.79	205.13	181.56	192.39	679.73	668.59	214.45	350.51	169.98	127.36	356.96	257.41

Movement, Approach, & Intersection Results

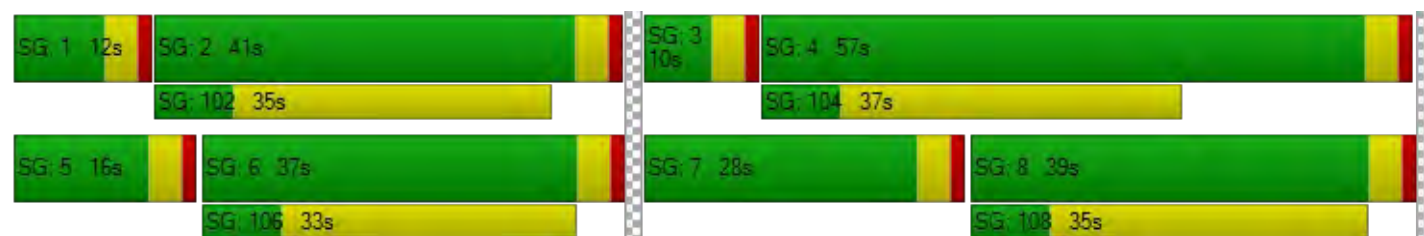
d_M, Delay for Movement [s/veh]	62.47	29.48	29.55	57.10	47.56	55.00	63.53	34.91	30.30	61.97	38.76	37.37
Movement LOS	E	C	C	E	D	D	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	34.93			51.84			41.48			42.13		
Approach LOS	C			D			D			D		
d_I, Intersection Delay [s/veh]	44.01											
Intersection LOS	D											
Intersection V/C	0.826											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.858			2.869			2.959			2.928		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			883			617			550		
d_b, Bicycle Delay [s]	30.10			18.70			28.70			31.54		
I_b,int, Bicycle LOS Score for Intersection	2.166			2.802			2.541			2.479		
Bicycle LOS	B			C			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 10: S Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	22.8
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.591

Intersection Setup

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	S Associated Road			S Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	359	19	222	12	21	13	8	731	330	181	724	12
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	359	19	222	12	21	13	8	731	330	181	724	12
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	90	5	56	3	5	3	2	183	83	45	181	3
Total Analysis Volume [veh/h]	359	19	222	12	21	13	8	731	330	181	724	12
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups			1,8									
Lead / Lag	Lead	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	0	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	30	0	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	60	60	0	37	0	10	38	0	12	40	0
Vehicle Extension [s]	3.0	3.0	3.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	26	0	26	0	0	27	0	0	26	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No		No		No	No		No	No	
Maximum Recall	No	No	No		No		No	No		No	No	
Pedestrian Recall	No	No	No		No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	C	L	C	C
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	23	35	5	5	1	67	67	8	74	74
g / C, Green / Cycle	0.13	0.21	0.32	0.04	0.04	0.01	0.61	0.61	0.07	0.67	0.67
(v / s)_i Volume / Saturation Flow Rate	0.11	0.01	0.15	0.01	0.02	0.00	0.32	0.32	0.06	0.21	0.21
s, saturation flow rate [veh/h]	3277	1772	1506	1393	1660	1687	1772	1587	3277	1772	1761
c, Capacity [veh/h]	427	369	478	89	69	21	1080	968	239	1187	1181
d1, Uniform Delay [s]	46.74	34.86	30.04	53.65	51.59	53.93	12.26	12.26	50.04	7.56	7.56
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.53	0.06	0.74	0.68	5.32	11.13	1.78	1.99	4.82	0.68	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.05	0.46	0.14	0.49	0.38	0.52	0.52	0.76	0.31	0.31
d, Delay for Lane Group [s/veh]	51.27	34.92	30.78	54.34	56.91	65.06	14.04	14.25	54.86	8.24	8.24
Lane Group LOS	D	C	C	D	E	E	B	B	D	A	A
Critical Lane Group	No	No	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.05	0.42	4.78	0.35	1.02	0.28	7.92	7.16	2.60	3.57	3.55
50th-Percentile Queue Length [ft/ln]	126.16	10.39	119.52	8.64	25.47	7.10	197.89	178.95	64.95	89.23	88.75
95th-Percentile Queue Length [veh/ln]	8.73	0.75	8.37	0.62	1.83	0.51	12.53	11.55	4.68	6.42	6.39
95th-Percentile Queue Length [ft/ln]	218.26	18.69	209.17	15.56	45.85	12.78	313.24	288.65	116.92	160.61	159.75

Movement, Approach, & Intersection Results

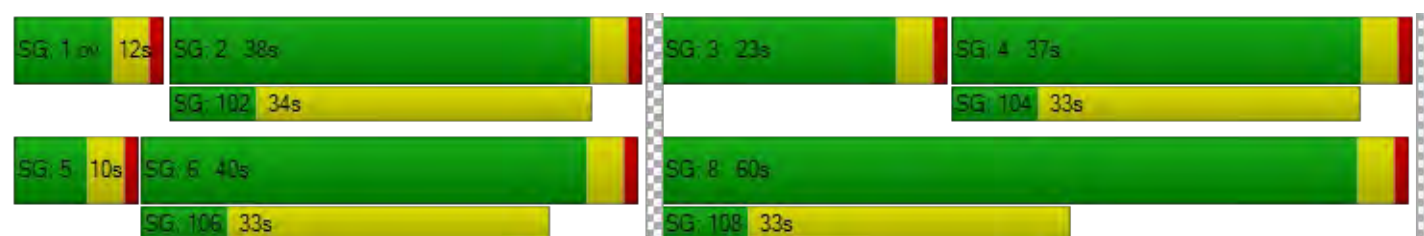
d_M, Delay for Movement [s/veh]	51.27	34.92	30.78	54.34	56.91	56.91	65.06	14.09	14.25	54.86	8.24	8.24
Movement LOS	D	C	C	D	E	E	E	B	B	D	A	A
d_A, Approach Delay [s/veh]	43.17			56.24			14.52			17.44		
Approach LOS	D			E			B			B		
d_I, Intersection Delay [s/veh]	22.80											
Intersection LOS	C											
Intersection V/C	0.591											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.646			1.977			2.732			2.785		
Crosswalk LOS	B			A			B			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	1018			600			618			655		
d_b, Bicycle Delay [s]	13.25			26.95			26.25			24.89		
I_b,int, Bicycle LOS Score for Intersection	2.550			1.636			2.442			2.316		
Bicycle LOS	B			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 11: N Associated Road at Birch Street**

Control Type:	Signalized	Delay (sec / veh):	17.7
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.494

Intersection Setup

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	N Associated Road			N Associated Road			Birch Street			Birch Street		
Base Volume Input [veh/h]	10	2	8	94	4	207	172	835	5	11	661	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	10	2	8	94	4	207	172	835	5	11	661	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	3	1	2	24	1	52	43	209	1	3	165	19
Total Analysis Volume [veh/h]	10	2	8	94	4	207	172	835	5	11	661	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	10	0	0	34	34	34	38	0	28	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	23	23	0	18	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	3	3	14	14	39	14	75	75	2	63	63
g / C, Green / Cycle	0.03	0.03	0.03	0.13	0.13	0.35	0.13	0.69	0.69	0.02	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.01	0.00	0.01	0.03	0.03	0.14	0.10	0.24	0.24	0.01	0.20	0.05
s, saturation flow rate [veh/h]	1417	1772	1506	1687	1694	1506	1687	1772	1768	1687	3373	1506
c, Capacity [veh/h]	82	46	39	215	215	534	217	1213	1211	28	1932	863
d1, Uniform Delay [s]	54.18	52.27	52.49	43.19	43.19	26.59	46.55	7.17	7.17	53.58	12.50	10.59
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.66	0.38	2.50	0.53	0.53	0.46	6.41	0.78	0.79	8.65	0.48	0.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.12	0.04	0.20	0.23	0.23	0.39	0.79	0.35	0.35	0.39	0.34	0.09
d, Delay for Lane Group [s/veh]	54.85	52.65	54.99	43.73	43.73	27.05	52.96	7.96	7.96	62.23	12.98	10.79
Lane Group LOS	D	D	D	D	D	C	D	A	A	E	B	B
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.29	0.06	0.24	1.23	1.23	4.11	4.94	3.97	3.96	0.37	4.31	0.87
50th-Percentile Queue Length [ft/ln]	7.26	1.47	6.09	30.76	30.86	102.86	123.41	99.31	99.12	9.21	107.69	21.84
95th-Percentile Queue Length [veh/ln]	0.52	0.11	0.44	2.21	2.22	7.41	8.58	7.15	7.14	0.66	7.71	1.57
95th-Percentile Queue Length [ft/ln]	13.07	2.64	10.97	55.37	55.55	185.15	214.50	178.77	178.42	16.58	192.79	39.32

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	54.85	52.65	54.99	43.73	43.73	27.05	52.96	7.96	7.96	62.23	12.98	10.79
Movement LOS	D	D	D	D	D	C	D	A	A	E	B	B
d_A, Approach Delay [s/veh]	54.68			32.41			15.61			13.48		
Approach LOS	D			C			B			B		
d_I, Intersection Delay [s/veh]	17.67											
Intersection LOS	B											
Intersection V/C	0.494											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.150			2.276			2.692			0.000		
Crosswalk LOS	B			B			B			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			545			618			509		
d_b, Bicycle Delay [s]	49.16			29.09			26.25			30.56		
I_b,int, Bicycle LOS Score for Intersection	1.593			2.063			2.395			2.178		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 12: Kraemer Boulevard at Birch Street

Control Type:	Signalized	Delay (sec / veh):	35.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.553

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Birch Street			Birch Street		
Base Volume Input [veh/h]	240	426	63	164	662	133	177	471	309	58	388	116
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	240	426	63	164	662	133	177	471	309	58	388	116
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	60	107	16	41	166	33	44	118	77	15	97	29
Total Analysis Volume [veh/h]	240	426	63	164	662	133	177	471	309	58	388	116
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	1	6	0	5	2	0	3	8	0	7	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	37	0	15	37	0	19	47	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	26	0	0	28	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	R	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	56	56	8	53	53	13	26	26	5	17	17
g / C, Green / Cycle	0.09	0.51	0.51	0.07	0.48	0.48	0.12	0.23	0.23	0.05	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.07	0.10	0.10	0.05	0.16	0.16	0.10	0.14	0.21	0.03	0.12	0.08
s, saturation flow rate [veh/h]	3277	3373	1658	3277	3373	1625	1687	3373	1506	1687	3373	1506
c, Capacity [veh/h]	300	1705	838	225	1629	785	206	790	353	78	534	239
d1, Uniform Delay [s]	49.04	14.90	14.93	50.25	17.49	17.52	47.42	37.53	40.63	51.86	44.06	42.24
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.96	0.25	0.52	4.44	0.54	1.13	10.07	0.73	6.96	13.00	1.90	1.53
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.80	0.19	0.19	0.73	0.33	0.33	0.86	0.60	0.88	0.74	0.73	0.49
d, Delay for Lane Group [s/veh]	53.99	15.15	15.44	54.69	18.03	18.66	57.49	38.26	47.59	64.86	45.95	43.77
Lane Group LOS	D	B	B	D	B	B	E	D	D	E	D	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	3.43	2.26	2.32	2.35	4.22	4.24	5.32	5.70	8.67	1.86	5.15	2.97
50th-Percentile Queue Length [ft/ln]	85.77	56.52	58.11	58.71	105.47	106.02	132.88	142.52	216.65	46.51	128.77	74.35
95th-Percentile Queue Length [veh/ln]	6.18	4.07	4.18	4.23	7.59	7.62	9.10	9.62	13.49	3.35	8.87	5.35
95th-Percentile Queue Length [ft/ln]	154.38	101.74	104.61	105.68	189.69	190.45	227.40	240.41	337.34	83.73	221.82	133.82

Movement, Approach, & Intersection Results

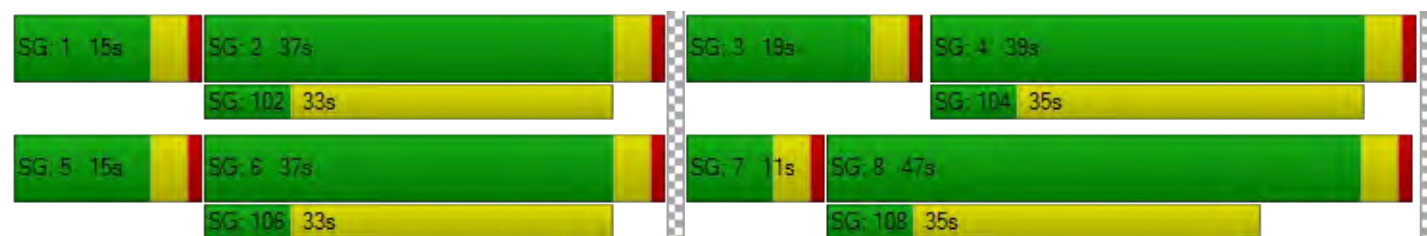
d_M, Delay for Movement [s/veh]	53.99	15.22	15.44	54.69	18.15	18.66	57.49	38.26	47.59	64.86	45.95	43.77
Movement LOS	D	B	B	D	B	B	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	28.00			24.47			44.83			47.46		
Approach LOS	C			C			D			D		
d_I, Intersection Delay [s/veh]	35.38											
Intersection LOS	D											
Intersection V/C	0.553											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			44.55		
I_p,int, Pedestrian LOS Score for Intersection	2.949			2.940			2.742			2.667		
Crosswalk LOS	C			C			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	600			600			782			636		
d_b, Bicycle Delay [s]	26.95			26.95			20.40			25.57		
I_b,int, Bicycle LOS Score for Intersection	1.961			2.087			2.349			2.023		
Bicycle LOS	A			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 13: Randolph Avenue at Madison Way

Control Type:	Signalized	Delay (sec / veh):	18.2
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.262

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Madison Way			Madison Way		
Base Volume Input [veh/h]	22	303	114	71	282	21	35	11	60	82	4	59
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	22	303	114	71	282	21	35	11	60	82	4	59
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	76	29	18	71	5	9	3	15	21	1	15
Total Analysis Volume [veh/h]	22	303	114	71	282	21	35	11	60	82	4	59
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	26	26	0	39	39	0	0	30	0	0	30	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	12	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	L	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	2.00	0.00	2.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	3	64	64	5	66	66	14	14	14	14
g / C, Green / Cycle	0.03	0.67	0.67	0.05	0.70	0.70	0.15	0.15	0.15	0.15
(v / s)_i Volume / Saturation Flow Rate	0.01	0.12	0.13	0.04	0.09	0.09	0.03	0.05	0.06	0.04
s, saturation flow rate [veh/h]	1687	1772	1611	1687	1772	1729	1339	1542	1329	1520
c, Capacity [veh/h]	47	1191	1083	92	1238	1208	191	227	184	223
d1, Uniform Delay [s]	45.46	5.81	5.83	44.34	4.72	4.73	40.78	36.23	42.72	36.06
k, delay calibration	0.11	0.50	0.50	0.11	0.50	0.50	0.11	0.11	0.11	0.11
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.90	0.33	0.38	12.89	0.20	0.21	0.46	0.78	1.69	0.68
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.46	0.18	0.19	0.77	0.12	0.12	0.18	0.31	0.45	0.28
d, Delay for Lane Group [s/veh]	52.36	6.14	6.21	57.23	4.93	4.94	41.24	37.01	44.42	36.74
Lane Group LOS	D	A	A	E	A	A	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.60	1.52	1.44	1.96	0.92	0.90	0.79	1.51	1.95	1.33
50th-Percentile Queue Length [ft/ln]	14.96	38.05	35.97	49.11	22.88	22.60	19.70	37.76	48.84	33.32
95th-Percentile Queue Length [veh/ln]	1.08	2.74	2.59	3.54	1.65	1.63	1.42	2.72	3.52	2.40
95th-Percentile Queue Length [ft/ln]	26.93	68.48	64.74	88.40	41.19	40.68	35.46	67.97	87.91	59.97

Movement, Approach, & Intersection Results

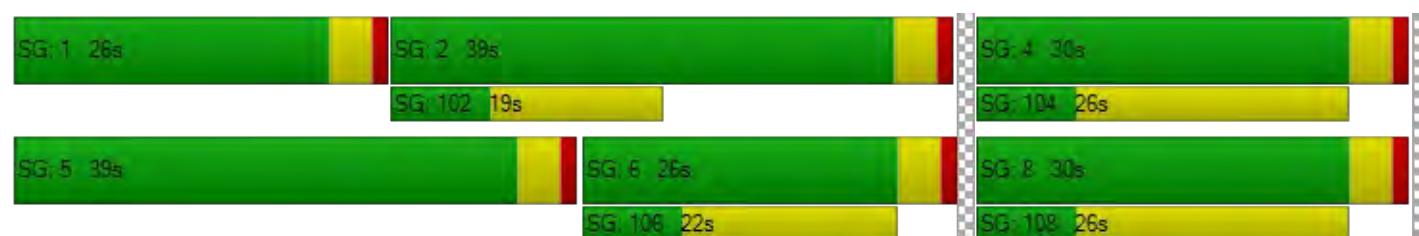
d_M, Delay for Movement [s/veh]	52.36	6.16	6.21	57.23	4.93	4.94	41.24	37.01	37.01	44.42	36.74	36.74
Movement LOS	D	A	A	E	A	A	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	8.49			14.86			38.41			41.08		
Approach LOS	A			B			D			D		
d_I, Intersection Delay [s/veh]	18.15											
Intersection LOS	B											
Intersection V/C	0.262											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.587			2.502			1.992			2.053		
Crosswalk LOS	B			B			A			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	463			737			547			547		
d_b, Bicycle Delay [s]	28.05			18.95			25.06			25.06		
I_b,int, Bicycle LOS Score for Intersection	1.922			1.868			1.735			1.799		
Bicycle LOS	A			A			A			A		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 14: Randolph Avenue at Brea Mall

Control Type:	Signalized	Delay (sec / veh):	27.3
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.615

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	0	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Randolph Avenue			Randolph Avenue			Brea Mall			Brea Mall		
Base Volume Input [veh/h]	23	334	493	55	300	22	25	18	27	489	8	92
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	23	334	493	55	300	22	25	18	27	489	8	92
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	6	84	123	14	75	6	6	5	7	122	2	23
Total Analysis Volume [veh/h]	23	334	493	55	300	22	25	18	27	489	8	92
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	105
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	Split	Split	Split	Split	Split	Split
Signal Group	1	6	0	5	2	0	0	8	0	0	4	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	6	6	0	6	6	0	0	6	0	0	6	0
Maximum Green [s]	30	30	0	30	30	0	0	30	0	0	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	10	28	0	11	29	0	0	30	0	0	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	17	0	0	18	0	0	19	0	0	19	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall	No	No		No	No			No			No	
Maximum Recall	No	No		No	No			No			No	
Pedestrian Recall	No	No		No	No			No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	C	R	L	C
C, Cycle Length [s]	105	105	105	105	105	105	105	105	105	105
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	66	58	58	66	59	59	5	5	21	21
g / C, Green / Cycle	0.63	0.55	0.55	0.63	0.57	0.57	0.05	0.05	0.20	0.20
(v / s)_i Volume / Saturation Flow Rate	0.02	0.19	0.33	0.07	0.09	0.09	0.02	0.02	0.18	0.18
s, saturation flow rate [veh/h]	1105	1772	1506	768	1772	1730	1722	1506	1687	1627
c, Capacity [veh/h]	747	970	825	435	1001	978	86	76	344	331
d1, Uniform Delay [s]	7.35	13.25	15.99	10.34	10.93	10.94	48.60	48.25	40.50	40.51
k, delay calibration	0.11	0.50	0.50	0.50	0.50	0.50	0.11	0.11	0.15	0.15
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.02	0.97	3.19	0.60	0.35	0.36	4.37	2.83	9.00	9.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.03	0.34	0.60	0.13	0.16	0.16	0.50	0.36	0.87	0.87
d, Delay for Lane Group [s/veh]	7.36	14.22	19.18	10.93	11.28	11.30	52.97	51.08	49.50	49.93
Lane Group LOS	A	B	B	B	B	B	D	D	D	D
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.19	4.50	8.28	0.52	1.84	1.82	1.20	0.74	8.27	8.03
50th-Percentile Queue Length [ft/ln]	4.66	112.49	206.94	12.96	46.07	45.49	30.00	18.55	206.86	200.76
95th-Percentile Queue Length [veh/ln]	0.34	7.98	13.00	0.93	3.32	3.27	2.16	1.34	12.99	12.68
95th-Percentile Queue Length [ft/ln]	8.39	199.47	324.90	23.32	82.93	81.87	54.00	33.40	324.79	316.95

Movement, Approach, & Intersection Results

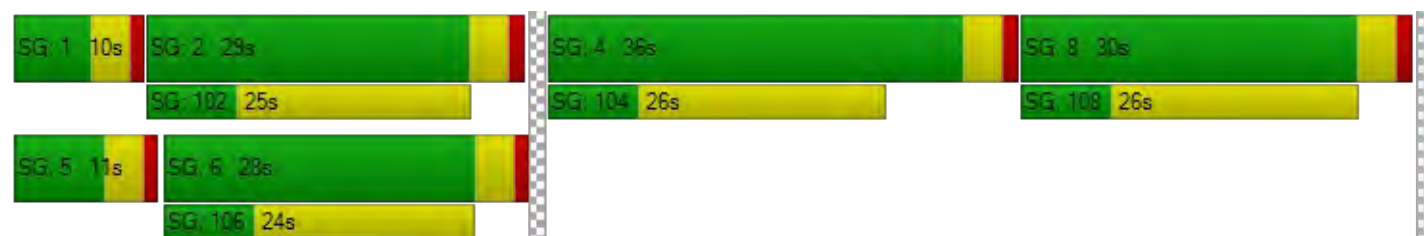
d_M, Delay for Movement [s/veh]	7.36	14.22	19.18	10.93	11.29	11.30	52.97	52.97	51.08	49.67	49.93	49.93
Movement LOS	A	B	B	B	B	B	D	D	D	D	D	D
d_A, Approach Delay [s/veh]	16.91			11.24			52.24			49.71		
Approach LOS	B			B			D			D		
d_I, Intersection Delay [s/veh]	27.33											
Intersection LOS	C											
Intersection V/C	0.615											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	42.08			42.08			42.08			42.08		
I_p,int, Pedestrian LOS Score for Intersection	2.632			2.469			2.007			2.367		
Crosswalk LOS	B			B			B			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	457			476			495			610		
d_b, Bicycle Delay [s]	31.24			30.48			29.72			25.38		
I_b,int, Bicycle LOS Score for Intersection	2.261			1.871			1.675			2.531		
Bicycle LOS	B			A			A			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 15: Brea Mall South at State College Boulevard**

Control Type:	Signalized	Delay (sec / veh):	35.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.910

Intersection Setup

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Brea Mall South			Brea Mall South			State College Boulevard			State College Boulevard		
Base Volume Input [veh/h]	173	25	93	87	20	653	749	500	29	88	740	51
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	173	25	93	87	20	653	749	500	29	88	740	51
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	43	6	23	22	5	163	187	125	7	22	185	13
Total Analysis Volume [veh/h]	173	25	93	87	20	653	749	500	29	88	740	51
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	6	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	37	0	0	14	14	37	31	0	38	32	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	26	0	0	0	0	0	20	0	0	21	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	12	12	10	10	62	32	74	74	8	50	50
g / C, Green / Cycle	0.10	0.10	0.10	0.08	0.08	0.52	0.26	0.62	0.62	0.07	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.06	0.05	0.01	0.43	0.23	0.15	0.15	0.05	0.23	0.23
s, saturation flow rate [veh/h]	1417	1512	1506	1687	1612	1506	3277	1772	1738	1687	1772	1732
c, Capacity [veh/h]	181	208	153	141	135	779	870	1090	1069	111	737	720
d1, Uniform Delay [s]	51.15	52.65	51.63	53.14	51.03	24.69	41.98	10.45	10.46	55.23	26.44	26.44
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.50	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.45	2.78	3.85	4.32	0.50	10.47	2.66	0.53	0.55	11.66	2.86	2.93
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.40	0.60	0.61	0.62	0.15	0.84	0.86	0.24	0.25	0.79	0.54	0.54
d, Delay for Lane Group [s/veh]	52.60	55.43	55.48	57.46	51.53	35.15	44.64	10.99	11.00	66.89	29.30	29.36
Lane Group LOS	D	E	E	E	D	D	D	B	B	E	C	C
Critical Lane Group	No	Yes	No	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.16	3.84	2.85	2.71	0.58	17.51	10.82	3.28	3.23	2.98	9.14	8.95
50th-Percentile Queue Length [ft/ln]	54.08	95.94	71.15	67.69	14.48	437.79	270.49	82.07	80.75	74.61	228.60	223.84
95th-Percentile Queue Length [veh/ln]	3.89	6.91	5.12	4.87	1.04	24.37	16.21	5.91	5.81	5.37	14.10	13.86
95th-Percentile Queue Length [ft/ln]	97.35	172.70	128.06	121.84	26.06	609.36	405.35	147.72	145.36	134.30	352.58	346.53

Movement, Approach, & Intersection Results

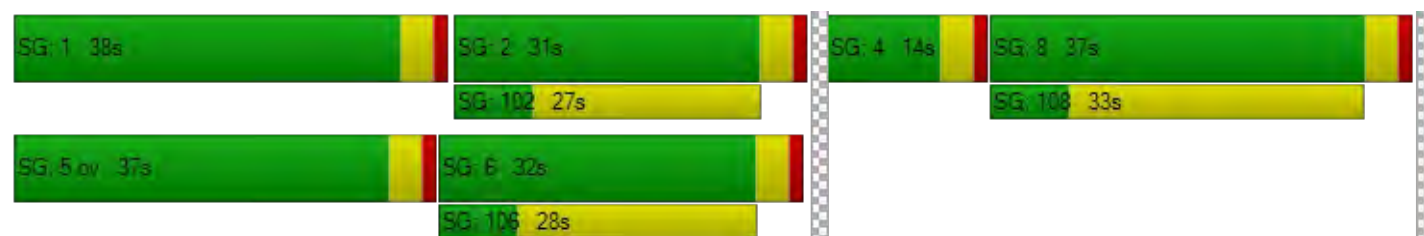
d_M, Delay for Movement [s/veh]	54.18	55.43	55.48	57.46	51.53	35.15	44.64	10.99	11.00	66.89	29.33	29.36
Movement LOS	D	E	E	E	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	54.73			38.14			30.71			33.09		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	35.30											
Intersection LOS	D											
Intersection V/C	0.910											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			0.00			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.397			2.623			0.000			2.618		
Crosswalk LOS	B			B			F			B		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	550			167			450			467		
d_b, Bicycle Delay [s]	31.54			50.42			36.04			35.27		
I_b,int, Bicycle LOS Score for Intersection	2.040			2.187			2.614			2.285		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.860

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	204	54	67	210	82	93	304	70	97	347	64
Total Analysis Volume [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	42	0	15	39	0	19	43	0	20	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	28	0	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	33	33	11	30	30	15	44	44	16	45	45
g / C, Green / Cycle	0.12	0.27	0.27	0.09	0.25	0.25	0.13	0.37	0.37	0.13	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.11	0.17	0.14	0.08	0.17	0.22	0.11	0.30	0.30	0.12	0.29	0.17
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	3373	1608	3277	4826	1506
c, Capacity [veh/h]	385	1311	409	304	1191	372	412	1243	593	438	1817	567
d1, Uniform Delay [s]	52.43	38.33	37.23	53.83	41.25	43.55	51.74	34.17	34.27	51.11	32.76	28.13
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.27	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.14	0.48	1.07	8.23	0.78	15.42	7.14	5.84	11.90	6.03	3.10	2.59
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.92	0.62	0.53	0.88	0.71	0.88	0.90	0.81	0.82	0.88	0.76	0.45
d, Delay for Lane Group [s/veh]	61.57	38.81	38.30	62.06	42.02	58.97	58.88	40.01	46.17	57.14	35.86	30.72
Lane Group LOS	E	D	D	E	D	E	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.76	7.04	5.54	4.34	7.62	10.91	5.89	14.09	14.55	6.08	12.12	5.93
50th-Percentile Queue Length [ft/ln]	143.99	176.01	138.61	108.62	190.46	272.75	147.26	352.21	363.84	151.90	303.01	148.18
95th-Percentile Queue Length [veh/ln]	9.70	11.39	9.41	7.76	12.15	16.33	9.87	20.24	20.81	10.12	17.83	9.92
95th-Percentile Queue Length [ft/ln]	242.39	284.79	235.16	194.08	303.63	408.17	246.76	506.10	520.25	252.97	445.75	247.99

Movement, Approach, & Intersection Results

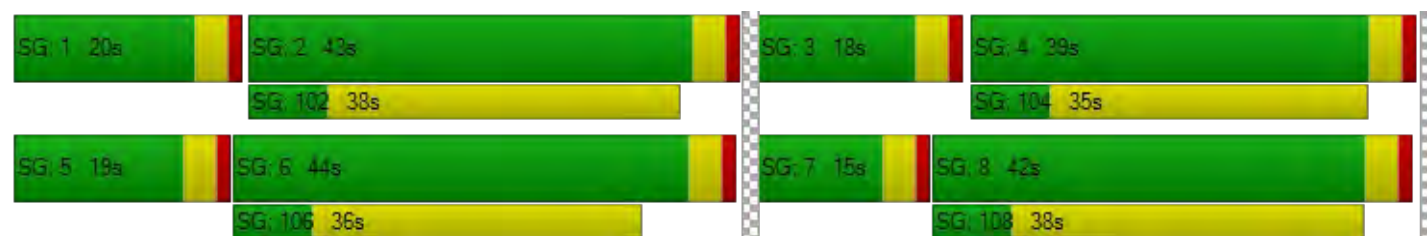
d_M, Delay for Movement [s/veh]	61.57	38.81	38.30	62.06	42.02	58.97	58.88	41.05	46.17	57.14	35.86	30.72
Movement LOS	E	D	D	E	D	E	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	44.55			49.63			45.36			39.27		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.26											
Intersection LOS	D											
Intersection V/C	0.860											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.176			3.175			3.218			3.267		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			583			650			667		
d_b, Bicycle Delay [s]	28.02			30.10			27.34			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.321			2.349			2.585			2.676		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 17: Puente Street at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.519

Intersection Setup

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Puente Street			Puente Street			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	27	32	110	136	51	123	68	1360	42	104	1517	165
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	27	32	110	136	51	123	68	1360	42	104	1517	165
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	7	8	28	34	13	31	17	340	11	26	379	41
Total Analysis Volume [veh/h]	27	32	110	136	51	123	68	1360	42	104	1517	165
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	38	0	0	38	0	10	28	0	29	47	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	27	0	0	23	0	0	17	0	0	23	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	95	95	95	95	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	0.00	0.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	16	16	16	16	16	16	5	60	60	7	62	62
g / C, Green / Cycle	0.16	0.16	0.16	0.16	0.16	0.16	0.05	0.63	0.63	0.08	0.66	0.66
(v / s)_i Volume / Saturation Flow Rate	0.02	0.02	0.07	0.10	0.02	0.08	0.04	0.27	0.27	0.06	0.31	0.11
s, saturation flow rate [veh/h]	1353	1772	1506	1377	3373	1506	1687	3373	1745	1687	4826	1506
c, Capacity [veh/h]	245	289	245	245	549	245	90	2133	1103	132	3174	990
d1, Uniform Delay [s]	37.10	33.90	35.91	40.58	33.80	36.25	44.38	8.84	8.84	43.00	8.12	6.25
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.20	0.17	1.28	1.97	0.07	1.58	12.19	0.64	1.24	9.83	0.52	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.11	0.11	0.45	0.56	0.09	0.50	0.76	0.43	0.43	0.79	0.48	0.17
d, Delay for Lane Group [s/veh]	37.30	34.07	37.20	42.55	33.87	37.84	56.57	9.48	10.08	52.83	8.64	6.62
Lane Group LOS	D	C	D	D	C	D	E	A	B	D	A	A
Critical Lane Group	No	No	No	Yes	No	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.57	0.64	2.36	3.19	0.50	2.68	1.87	4.54	4.88	2.74	4.70	1.24
50th-Percentile Queue Length [ft/ln]	14.23	15.97	59.10	79.73	12.56	66.94	46.76	113.51	122.00	68.44	117.54	31.07
95th-Percentile Queue Length [veh/ln]	1.02	1.15	4.26	5.74	0.90	4.82	3.37	8.04	8.50	4.93	8.26	2.24
95th-Percentile Queue Length [ft/ln]	25.62	28.74	106.38	143.52	22.60	120.48	84.17	200.88	212.57	123.19	206.44	55.93

Movement, Approach, & Intersection Results

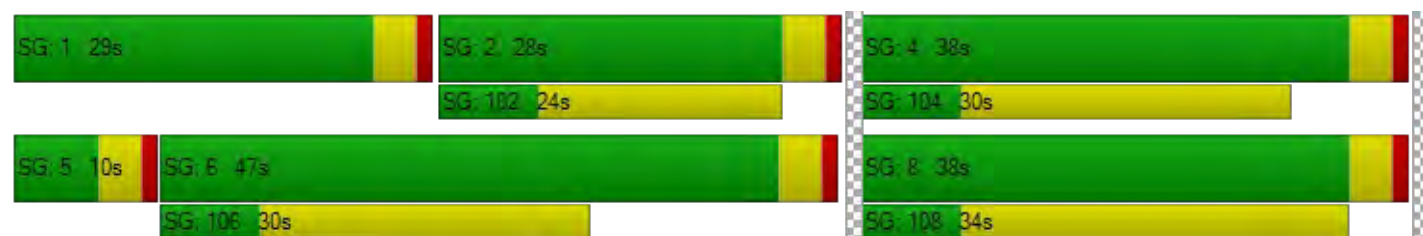
d_M, Delay for Movement [s/veh]	37.30	34.07	37.20	42.55	33.87	37.84	56.57	9.67	10.08	52.83	8.64	6.62
Movement LOS	D	C	D	D	C	D	E	A	B	D	A	A
d_A, Approach Delay [s/veh]	36.62			39.25			11.86			11.03		
Approach LOS	D			D			B			B		
d_I, Intersection Delay [s/veh]	14.85											
Intersection LOS	B											
Intersection V/C	0.519											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			37.14			37.14		
I_p,int, Pedestrian LOS Score for Intersection	2.373			2.414			3.072			3.335		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	716			716			505			905		
d_b, Bicycle Delay [s]	19.58			19.58			26.53			14.23		
I_b,int, Bicycle LOS Score for Intersection	1.838			1.815			2.368			2.542		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	48.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.955

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	136	71	74	227	57	61	373	67	95	365	41
Total Analysis Volume [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	41	0	19	39	0	14	41	0	19	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	38	38	13	34	34	10	38	38	15	43	43
g / C, Green / Cycle	0.14	0.32	0.32	0.11	0.28	0.28	0.08	0.32	0.32	0.13	0.36	0.36
(v / s)_i Volume / Saturation Flow Rate	0.13	0.11	0.19	0.09	0.27	0.15	0.07	0.31	0.18	0.12	0.30	0.11
s, saturation flow rate [veh/h]	3277	4826	1506	3277	3373	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	465	1537	480	352	958	428	274	1523	475	410	1724	538
d1, Uniform Delay [s]	51.07	31.41	34.38	52.57	42.06	36.22	54.43	40.68	34.14	51.92	35.57	27.83
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.63	0.14	1.63	5.45	5.72	1.02	9.38	18.57	4.70	8.88	5.39	1.46
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.35	0.59	0.84	0.95	0.53	0.89	0.98	0.56	0.92	0.85	0.30
d, Delay for Lane Group [s/veh]	61.70	31.55	36.01	58.02	47.78	37.25	63.82	59.25	38.85	60.80	40.95	29.29
Lane Group LOS	E	C	D	E	D	D	E	E	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.24	4.07	7.18	4.64	13.75	5.73	3.99	16.96	7.06	6.12	13.82	3.63
50th-Percentile Queue Length [ft/ln]	181.03	101.75	179.59	115.99	343.70	143.16	99.71	424.05	176.59	153.03	345.48	90.83
95th-Percentile Queue Length [veh/ln]	11.65	7.33	11.58	8.17	19.83	9.65	7.18	23.72	11.42	10.18	19.92	6.54
95th-Percentile Queue Length [ft/ln]	291.36	183.14	289.48	204.30	495.73	241.27	179.48	592.90	285.55	254.47	497.89	163.49

Movement, Approach, & Intersection Results

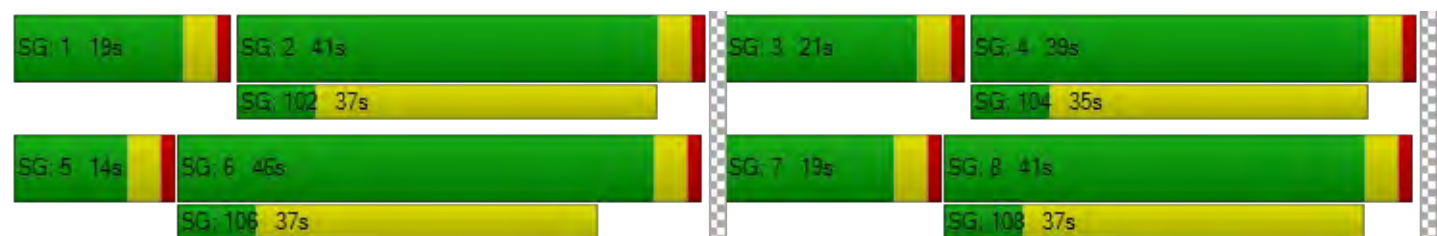
d_M, Delay for Movement [s/veh]	61.70	31.55	36.01	58.02	47.78	37.25	63.82	59.25	38.85	60.80	40.95	29.29
Movement LOS	E	C	D	E	D	D	E	E	D	E	D	C
d_A, Approach Delay [s/veh]	43.02			48.23			57.09			43.74		
Approach LOS	D			D			E			D		
d_I, Intersection Delay [s/veh]	48.55											
Intersection LOS	D											
Intersection V/C	0.955											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.083			3.029			3.310			3.304		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			617			700		
d_b, Bicycle Delay [s]	28.70			30.10			28.70			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.258			2.739			2.660			2.661		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	63.9
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.023

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	⇐⇐⇐			⇐⇐⇐			⇐⇐⇐⇐⇐			⇐⇐⇐⇐⇐		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	10	43	108	20	92	91	386	8	29	436	121
Total Analysis Volume [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	18	0	0	40	0	17	45	0	17	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	0	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	29	0	0	28	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	14	14	36	36	13	44	44	10	41	41
g / C, Green / Cycle	0.12	0.12	0.12	0.30	0.30	0.11	0.37	0.37	0.08	0.34	0.34
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.12	0.13	0.29	0.11	0.31	0.31	0.07	0.36	0.32
s, saturation flow rate [veh/h]	1687	1772	1370	3277	1546	3277	3373	1753	1687	4826	1506
c, Capacity [veh/h]	199	209	161	982	464	356	1236	642	140	1643	513
d1, Uniform Delay [s]	48.69	47.75	52.94	33.88	41.39	53.50	34.78	34.80	54.19	39.58	38.40
k, delay calibration	0.11	0.11	0.11	0.11	0.43	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.04	0.43	49.61	0.31	30.94	28.23	6.90	12.49	11.42	40.57	27.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.35	0.19	1.06	0.44	0.96	1.02	0.84	0.84	0.82	1.06	0.94
d, Delay for Lane Group [s/veh]	49.73	48.18	102.55	34.19	72.33	81.73	41.68	47.29	65.61	80.15	65.76
Lane Group LOS	D	D	F	C	E	F	D	D	E	F	E
Critical Lane Group	No	No	Yes	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.97	1.08	7.08	5.12	16.85	6.75	14.81	16.41	3.86	22.02	17.43
50th-Percentile Queue Length [ft/ln]	49.17	27.08	177.11	127.95	421.14	168.77	370.22	410.24	96.53	550.49	435.66
95th-Percentile Queue Length [veh/ln]	3.54	1.95	11.71	8.83	23.58	11.11	21.12	23.05	6.95	30.92	24.27
95th-Percentile Queue Length [ft/ln]	88.50	48.75	292.79	220.70	589.41	277.77	528.00	576.33	173.76	773.06	606.82

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	49.73	48.18	102.55	34.19	72.33	72.33	81.73	43.52	47.29	65.61	80.15	65.76
Movement LOS	D	D	F	C	E	E	F	D	D	E	F	E
d_A, Approach Delay [s/veh]	81.89			53.61			50.76			76.48		
Approach LOS	F			D			D			E		
d_I, Intersection Delay [s/veh]	63.89											
Intersection LOS	E											
Intersection V/C	1.023											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.268			2.657			3.241			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	233			600			683			683		
d_b, Bicycle Delay [s]	46.82			29.40			26.00			26.00		
I_b,int, Bicycle LOS Score for Intersection	1.790			3.008			2.626			2.847		
Bicycle LOS	A			C			B			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	164.8
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.435

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	142	145	195	114	45	34	405	49	158	476	278
Total Analysis Volume [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	0	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	18	41	0	27	50	0	10	34	0	18	42	42
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	0	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	C	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	37	37	23	47	47	6	30	30	14	38	65
g / C, Green / Cycle	0.10	0.31	0.31	0.19	0.39	0.39	0.05	0.25	0.25	0.12	0.32	0.54
(v / s)_i Volume / Saturation Flow Rate	0.09	0.17	0.38	0.33	0.19	0.19	0.04	0.28	0.28	0.19	0.39	0.74
s, saturation flow rate [veh/h]	3277	3373	1506	2366	1772	1604	3277	4826	1648	3277	4826	1506
c, Capacity [veh/h]	343	1035	462	454	698	632	165	1212	414	383	1533	817
d1, Uniform Delay [s]	52.75	34.69	41.60	48.51	27.10	27.23	56.48	44.94	44.94	53.00	40.95	27.44
k, delay calibration	0.11	0.11	0.50	0.20	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.60	0.46	130.69	326.39	0.50	0.57	10.15	64.10	79.82	292.74	113.95	169.61
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.55	1.25	1.72	0.47	0.48	0.83	1.12	1.12	1.64	1.24	1.36
d, Delay for Lane Group [s/veh]	58.35	35.14	172.29	374.90	27.60	27.80	66.64	109.03	124.76	345.74	154.89	197.05
Lane Group LOS	E	D	F	F	C	C	E	F	F	F	F	F
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.54	6.98	30.24	27.32	7.12	6.61	2.29	19.12	21.40	21.33	31.07	60.63
50th-Percentile Queue Length [ft/ln]	113.51	174.48	756.01	683.03	177.88	165.29	57.26	478.01	535.02	533.32	776.70	1515.78
95th-Percentile Queue Length [veh/ln]	8.03	11.31	44.76	44.04	11.49	10.83	4.12	27.99	30.89	34.05	45.70	90.56
95th-Percentile Queue Length [ft/ln]	200.87	282.79	1118.96	1101.11	287.24	270.72	103.06	699.83	772.30	851.24	1142.39	2263.94

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	58.35	35.14	172.29	374.90	27.66	27.80	66.64	111.62	124.76	345.74	154.89	197.05
Movement LOS	E	D	F	F	C	C	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	95.07			218.98			109.78			200.75		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	164.79											
Intersection LOS	F											
Intersection V/C	1.435											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.986			2.992			3.331			3.626		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			767			500			633		
d_b, Bicycle Delay [s]	28.70			22.82			33.75			28.02		
I_b,int, Bicycle LOS Score for Intersection	2.745			2.726			2.365			3.563		
Bicycle LOS	B			B			B			D		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 21: SR-57 SB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	29.6
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.933

Intersection Setup

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration				↵↵↵			↵			↵		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	0	0	0	1	0	1	0	0	1	0	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present				No			No			No		
Crosswalk	No			Yes			No			No		

Volumes

Name				SR-57 SB Ramps			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	0	0	0	563	0	749	0	2050	1227	0	2801	409
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	563	0	749	0	2050	1227	0	2801	409
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	141	0	187	0	513	307	0	700	102
Total Analysis Volume [veh/h]	0	0	0	563	0	749	0	2050	1227	0	2801	409
Presence of On-Street Parking				No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	8.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Split	Permiss	Split	Permiss	Permiss	Unsigna	Permiss	Permiss	Unsigna
Signal Group	0	0	0	7	0	0	0	2	0	0	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	Lead	-	-	-	-	-	-	-	-
Minimum Green [s]	0	0	0	6	0	0	0	6	0	0	6	0
Maximum Green [s]	0	0	0	30	0	0	0	30	0	0	30	0
Amber [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	0.0	0.0	1.0	0.0	0.0	0.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	0	0	44	0	0	0	76	0	0	76	0
Vehicle Extension [s]	0.0	0.0	0.0	3.0	0.0	0.0	0.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	0	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	0	0	0	15	0
Rest In Walk				No				No			No	
I1, Start-Up Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	0.0	0.0	2.0	0.0	0.0	0.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall				No				No			No	
Maximum Recall				No				No			No	
Pedestrian Recall				No				No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group		L	C	R	C	C
C, Cycle Length [s]		120	120	120	120	120
L, Total Lost Time per Cycle [s]		4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]		0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]		2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]		37	37	37	74	74
g / C, Green / Cycle		0.31	0.31	0.31	0.62	0.62
(v / s)_i Volume / Saturation Flow Rate		0.26	0.28	0.29	0.42	0.58
s, saturation flow rate [veh/h]		1687	1554	1506	4826	4826
c, Capacity [veh/h]		526	485	470	2998	2998
d1, Uniform Delay [s]		38.27	39.46	39.96	14.94	20.48
k, delay calibration		0.30	0.35	0.37	0.50	0.50
l, Upstream Filtering Factor		1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]		8.89	17.05	22.07	1.29	6.92
d3, Initial Queue Delay [s]		0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio		1.00	1.00	1.00	1.00	1.00
PF, progression factor		1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity		0.83	0.90	0.93	0.68	0.93
d, Delay for Lane Group [s/veh]		47.17	56.51	62.02	16.23	27.40
Lane Group LOS		D	E	E	B	C
Critical Lane Group		No	No	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]		13.12	14.48	15.21	11.94	23.61
50th-Percentile Queue Length [ft/ln]		327.88	361.91	380.36	298.38	590.20
95th-Percentile Queue Length [veh/ln]		19.05	20.72	21.61	17.60	31.58
95th-Percentile Queue Length [ft/ln]		476.36	517.91	540.29	440.02	789.41

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	49.25	0.00	59.73	0.00	16.23	0.00	0.00	27.40	0.00
Movement LOS				D		E		B			C	
d_A, Approach Delay [s/veh]	0.00			55.23			16.23			27.40		
Approach LOS	A			E			B			C		
d_I, Intersection Delay [s/veh]	29.61											
Intersection LOS	C											
Intersection V/C	0.933											

Other Modes

g_Walk,mi, Effective Walk Time [s]	0.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	0.00			49.50			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	0.000			2.465			0.000			0.000		
Crosswalk LOS	F			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	0			0			1200			1200		
d_b, Bicycle Delay [s]	60.00			60.00			9.60			9.60		
I_b,int, Bicycle LOS Score for Intersection	4.132			6.297			2.687			3.100		
Bicycle LOS	D			F			B			C		

Sequence

Ring 1	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	-	6	7	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

SG 2 76s

SG 6 76s

SG 106 22s

SG 7 44s

Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	73.6
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.972

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	378	44	150	0	0	68	72	464	167	0	503	11
Total Analysis Volume [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	60	0	0	0	12	12	60	0	0	48	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	51	51	51	8	8	61	49	49
g / C, Green / Cycle	0.43	0.43	0.43	0.07	0.07	0.51	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.34	0.34	0.39	0.10	0.17	0.38	0.32	0.29
s, saturation flow rate [veh/h]	3277	1705	1506	2665	1687	4826	4826	1745
c, Capacity [veh/h]	1396	726	642	180	114	2448	1962	709
d1, Uniform Delay [s]	30.12	29.96	32.15	55.92	55.92	23.64	31.04	29.94
k, delay calibration	0.11	0.27	0.34	0.11	0.22	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	1.16	5.02	13.80	237.34	696.47	2.25	3.26	6.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.81	0.80	0.91	1.51	2.52	0.76	0.79	0.72
d, Delay for Lane Group [s/veh]	31.28	34.98	45.95	293.26	752.39	25.89	34.29	36.29
Lane Group LOS	C	C	D	F	F	C	C	D
Critical Lane Group	No	No	Yes	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	14.18	15.31	17.80	8.64	25.45	14.10	13.34	13.55
50th-Percentile Queue Length [ft/ln]	354.56	382.81	445.11	216.03	636.20	352.48	333.44	338.68
95th-Percentile Queue Length [veh/ln]	20.36	21.73	24.72	15.00	40.43	20.26	19.33	19.58
95th-Percentile Queue Length [ft/ln]	508.97	543.24	618.11	374.96	1010.85	506.43	483.18	489.59

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	32.20	34.98	45.43	0.00	0.00	293.26	752.39	25.89	0.00	0.00	34.76	36.29
Movement LOS	C	C	D			F	F	C			C	D
d_A, Approach Delay [s/veh]	35.94			293.26			123.28			34.79		
Approach LOS	D			F			F			C		
d_I, Intersection Delay [s/veh]	73.62											
Intersection LOS	E											
Intersection V/C	0.972											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.760	2.207	0.000	0.000
Crosswalk LOS	C	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	933	0	933	733
d_b, Bicycle Delay [s]	17.07	60.00	17.07	24.07
I_b,int, Bicycle LOS Score for Intersection	5.336	4.132	2.737	2.407
Bicycle LOS	F	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	38.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.831

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	56	37	89	64	46	56	425	63	40	414	57
Total Analysis Volume [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	39	0	21	44	0	21	44	0	16	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	17	17	15	20	20	17	60	60	12	55	55
g / C, Green / Cycle	0.10	0.14	0.14	0.13	0.17	0.17	0.14	0.50	0.50	0.10	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.09	0.11	0.11	0.11	0.14	0.12	0.13	0.39	0.39	0.09	0.29	0.29
s, saturation flow rate [veh/h]	3277	1772	1542	3277	1772	1506	1687	3373	1658	1687	4826	1635
c, Capacity [veh/h]	329	248	216	412	293	249	240	1688	829	170	2214	750
d1, Uniform Delay [s]	53.39	49.90	49.98	51.48	48.82	47.57	50.89	24.40	24.64	53.62	24.79	24.79
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	8.77	5.54	6.68	5.46	7.69	4.11	14.29	3.48	7.29	20.05	1.40	4.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.90	0.79	0.80	0.86	0.87	0.73	0.93	0.77	0.78	0.94	0.63	0.63
d, Delay for Lane Group [s/veh]	62.17	55.43	56.66	56.93	56.51	51.68	65.18	27.88	31.94	73.67	26.19	28.86
Lane Group LOS	E	E	E	E	E	D	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.81	6.07	5.42	5.54	8.02	5.45	7.53	15.39	16.37	5.70	10.28	11.01
50th-Percentile Queue Length [ft/ln]	120.32	151.71	135.59	138.57	200.60	136.24	188.20	384.66	409.25	142.62	257.04	275.13
95th-Percentile Queue Length [veh/ln]	8.41	10.11	9.24	9.40	12.67	9.28	12.03	21.82	23.01	9.62	15.54	16.45
95th-Percentile Queue Length [ft/ln]	210.27	252.71	231.07	235.10	316.74	231.95	300.70	545.49	575.13	240.54	388.50	411.14

Movement, Approach, & Intersection Results

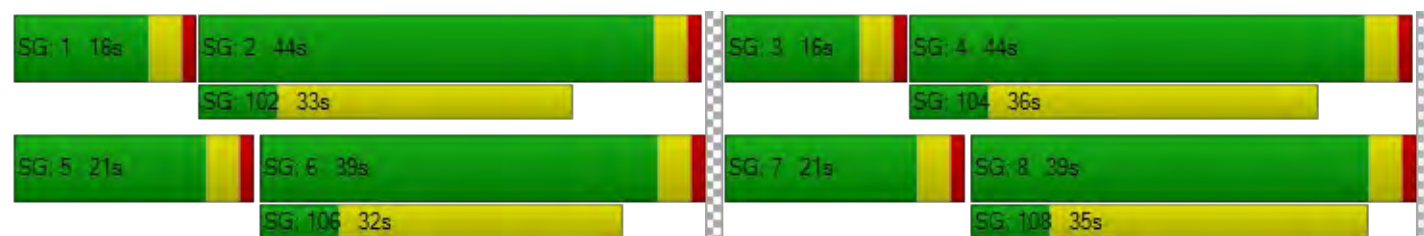
d_M, Delay for Movement [s/veh]	62.17	55.58	56.66	56.93	56.51	51.68	65.18	28.83	31.94	73.67	26.59	28.86
Movement LOS	E	E	E	E	E	D	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	58.75			55.59			32.90			30.51		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	38.24											
Intersection LOS	D											
Intersection V/C	0.831											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.573			2.704			3.264			3.256		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			667			667			583		
d_b, Bicycle Delay [s]	30.10			26.67			26.67			30.10		
I_b,int, Bicycle LOS Score for Intersection	2.108			2.865			2.755			2.401		
Bicycle LOS	B			C			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 24: Castlegate Lane/Placentia Avenue at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	26.4
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.837

Intersection Setup

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	0	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			Yes		

Volumes

Name	Placentia Avenue			Castlegate Lane			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	207	17	254	26	10	12	24	1914	295	206	1918	46
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	207	17	254	26	10	12	24	1914	295	206	1918	46
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	52	4	64	7	3	3	6	479	74	52	480	12
Total Analysis Volume [veh/h]	207	17	254	26	10	12	24	1914	295	206	1918	46
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Split	Split	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	6	0	0	6	0	6	6	0	6	6	0
Maximum Green [s]	0	30	0	0	30	0	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	35	0	0	10	0	10	34	0	21	45	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	15	0	0	0	0	0	21	0	0	14	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No		No	No		No	No	
Maximum Recall		No			No		No	No		No	No	
Pedestrian Recall		No			No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	L	C	R	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	19	19	4	4	3	46	46	14	57	57
g / C, Green / Cycle	0.19	0.19	0.19	0.04	0.04	0.03	0.46	0.46	0.14	0.57	0.57
(v / s)_i Volume / Saturation Flow Rate	0.07	0.07	0.17	0.02	0.01	0.01	0.40	0.20	0.12	0.38	0.38
s, saturation flow rate [veh/h]	1687	1699	1506	1687	1616	1687	4826	1506	1687	3373	1750
c, Capacity [veh/h]	329	331	294	76	73	51	2213	690	239	1921	997
d1, Uniform Delay [s]	34.75	34.75	39.03	46.35	46.26	47.75	24.33	18.26	42.05	15.04	15.07
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.61	0.60	7.55	2.60	2.26	6.49	4.83	1.93	9.01	1.90	3.65
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.34	0.34	0.87	0.34	0.30	0.47	0.86	0.43	0.86	0.67	0.67
d, Delay for Lane Group [s/veh]	35.35	35.35	46.58	48.95	48.53	54.24	29.16	20.19	51.06	16.94	18.71
Lane Group LOS	D	D	D	D	D	D	C	C	D	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.39	2.40	6.57	0.68	0.57	0.68	13.82	4.82	5.52	9.98	10.88
50th-Percentile Queue Length [ft/ln]	59.64	60.06	164.35	17.00	14.35	16.97	345.50	120.55	138.09	249.39	272.08
95th-Percentile Queue Length [veh/ln]	4.29	4.32	10.78	1.22	1.03	1.22	19.92	8.42	9.38	15.16	16.29
95th-Percentile Queue Length [ft/ln]	107.35	108.11	269.47	30.61	25.83	30.55	497.92	210.58	234.45	378.89	407.34

Movement, Approach, & Intersection Results

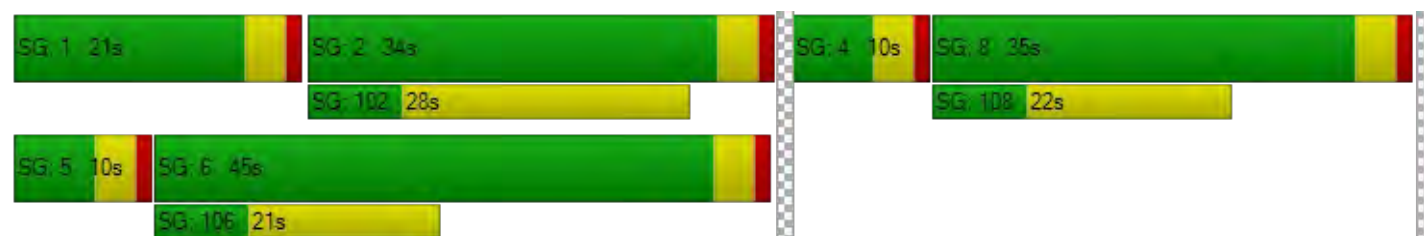
d_M, Delay for Movement [s/veh]	35.35	35.35	46.58	48.95	48.53	48.53	54.24	29.16	20.19	51.06	17.52	18.71
Movement LOS	D	D	D	D	D	D	D	C	C	D	B	B
d_A, Approach Delay [s/veh]	41.32			48.75			28.24			20.73		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	26.40											
Intersection LOS	C											
Intersection V/C	0.837											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			11.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			0.00			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.377			1.989			0.000			3.207		
Crosswalk LOS	B			A			F			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	620			120			600			820		
d_b, Bicycle Delay [s]	23.81			44.18			24.50			17.41		
I_b,int, Bicycle LOS Score for Intersection	2.348			1.639			2.788			2.753		
Bicycle LOS	B			A			C			C		

Sequence

Ring 1	1	2	4	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 25: Kraemer Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	33.1
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.765

Intersection Setup

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T			T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Kraemer Boulevard			Kraemer Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	311	378	83	281	673	134	183	1148	287	139	1345	136
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	311	378	83	281	673	134	183	1148	287	139	1345	136
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	95	21	70	168	34	46	287	72	35	336	34
Total Analysis Volume [veh/h]	311	378	83	281	673	134	183	1148	287	139	1345	136
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	30	0	20	35	0	11	39	0	11	39	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	19	0	0	19	0	0	26	0	0	28	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	R	L	C	C	L	C	C
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	23	23	11	23	23	7	44	44	6	43	43
g / C, Green / Cycle	0.11	0.23	0.23	0.11	0.23	0.23	0.07	0.44	0.44	0.06	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.09	0.13	0.13	0.09	0.20	0.09	0.06	0.29	0.29	0.04	0.29	0.29
s, saturation flow rate [veh/h]	3277	1772	1663	3277	3373	1506	3277	3373	1596	3277	3373	1690
c, Capacity [veh/h]	362	410	385	356	773	345	232	1480	700	202	1449	726
d1, Uniform Delay [s]	43.76	34.17	34.18	43.52	37.16	32.65	45.79	22.17	22.18	46.05	23.03	23.03
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.95	1.30	1.39	3.95	3.20	0.71	5.90	2.30	4.81	4.14	2.60	5.12
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.58	0.58	0.79	0.87	0.39	0.79	0.66	0.66	0.69	0.68	0.68
d, Delay for Lane Group [s/veh]	49.71	35.47	35.58	47.47	40.36	33.36	51.69	24.47	26.99	50.19	25.63	28.15
Lane Group LOS	D	D	D	D	D	C	D	C	C	D	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	4.05	5.22	4.92	3.56	8.14	2.80	2.41	9.16	9.17	1.80	9.55	10.08
50th-Percentile Queue Length [ft/ln]	101.32	130.46	123.05	89.05	203.51	69.91	60.37	228.98	229.25	45.02	238.80	252.08
95th-Percentile Queue Length [veh/ln]	7.30	8.96	8.56	6.41	12.82	5.03	4.35	14.12	14.14	3.24	14.62	15.29
95th-Percentile Queue Length [ft/ln]	182.38	224.12	214.00	160.29	320.48	125.84	108.67	353.06	353.40	81.04	365.52	382.28

Movement, Approach, & Intersection Results

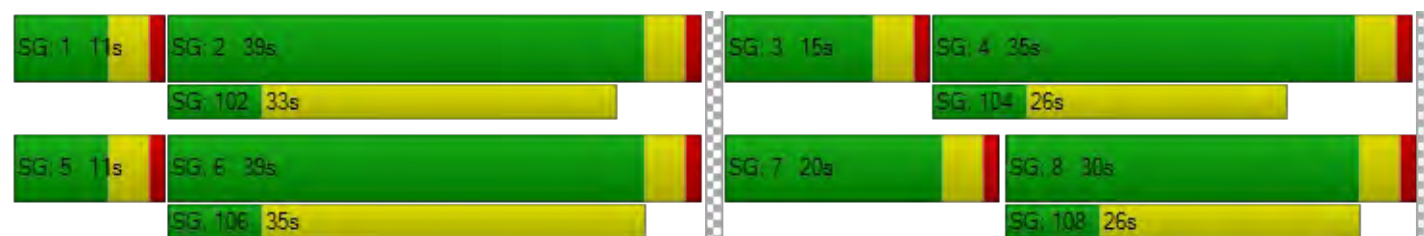
d_M, Delay for Movement [s/veh]	49.71	35.51	35.58	47.47	40.36	33.36	51.69	24.85	26.99	50.19	26.30	28.15
Movement LOS	D	D	D	D	D	C	D	C	C	D	C	C
d_A, Approach Delay [s/veh]	41.24			41.34			28.27			28.50		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	33.10											
Intersection LOS	C											
Intersection V/C	0.765											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			39.61		
I_p,int, Pedestrian LOS Score for Intersection	2.762			2.847			3.146			3.112		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	520			620			700			700		
d_b, Bicycle Delay [s]	27.38			23.81			21.13			21.13		
I_b,int, Bicycle LOS Score for Intersection	2.197			2.457			2.450			2.451		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 26: Brea Boulevard at Bastanchury Road

Control Type:	Signalized	Delay (sec / veh):	38.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.709

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	83	589	357	211	798	394	408	895	80	320	845	175
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	83	589	357	211	798	394	408	895	80	320	845	175
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	21	147	89	53	200	99	102	224	20	80	211	44
Total Analysis Volume [veh/h]	83	589	357	211	798	394	408	895	80	320	845	175
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	8	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups			1,8			4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	30	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	11	42	42	14	45	45	24	46	0	18	40	0
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	7	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	30	0	34	34	0	35	0	0	27	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No	No	No	No	No	No	No		No	No	
Maximum Recall	No	No	No	No	No	No	No	No		No	No	
Pedestrian Recall	No	No	No	No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	7	30	48	10	32	56	20	51	51	14	45	45
g / C, Green / Cycle	0.06	0.25	0.40	0.08	0.27	0.47	0.17	0.42	0.42	0.12	0.37	0.37
(v / s)_i Volume / Saturation Flow Rate	0.05	0.17	0.24	0.06	0.24	0.26	0.12	0.19	0.05	0.10	0.20	0.20
s, saturation flow rate [veh/h]	1687	3373	1506	3277	3373	1506	3277	4826	1506	3277	3373	1620
c, Capacity [veh/h]	101	830	598	266	902	705	548	2036	635	385	1256	604
d1, Uniform Delay [s]	55.84	41.37	28.64	54.19	42.22	23.03	47.59	24.64	21.19	51.83	29.73	29.73
k, delay calibration	0.11	0.11	0.41	0.11	0.11	0.29	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	15.08	1.14	3.63	5.28	3.12	1.89	2.04	0.69	0.41	4.66	1.73	3.56
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.71	0.60	0.79	0.88	0.56	0.74	0.44	0.13	0.83	0.55	0.55
d, Delay for Lane Group [s/veh]	70.93	42.51	32.27	59.46	45.33	24.92	49.63	25.33	21.60	56.49	31.45	33.29
Lane Group LOS	E	D	C	E	D	C	D	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	2.91	8.07	8.67	3.33	11.65	8.30	5.96	6.12	1.45	4.96	8.10	8.10
50th-Percentile Queue Length [ft/ln]	72.75	201.82	216.74	83.18	291.16	207.46	148.93	153.11	36.37	123.98	202.58	202.48
95th-Percentile Queue Length [veh/ln]	5.24	12.73	13.50	5.99	17.24	13.02	9.96	10.18	2.62	8.61	12.77	12.77
95th-Percentile Queue Length [ft/ln]	130.96	318.31	337.46	149.72	431.08	325.57	249.00	254.58	65.46	215.28	319.29	319.16

Movement, Approach, & Intersection Results

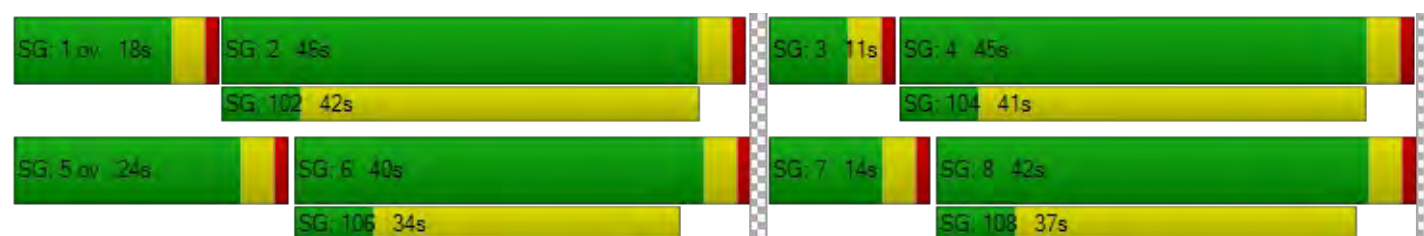
d_M, Delay for Movement [s/veh]	70.93	42.51	32.27	59.46	45.33	24.92	49.63	25.33	21.60	56.49	31.79	33.29
Movement LOS	E	D	C	E	D	C	D	C	C	E	C	C
d_A, Approach Delay [s/veh]	41.25			41.73			32.28			37.89		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	38.10											
Intersection LOS	D											
Intersection V/C	0.709											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.829			2.966			3.156			3.081		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			683			700			600		
d_b, Bicycle Delay [s]	28.02			26.00			25.35			29.40		
I_b,int, Bicycle LOS Score for Intersection	2.409			2.717			2.320			2.297		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 27: State College Boulevard at Bastanchury Road**

Control Type:	Signalized	Delay (sec / veh):	40.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.702

Intersection Setup

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Bastanchury Road			Bastanchury Road		
Base Volume Input [veh/h]	402	906	531	155	527	302	303	838	230	41	812	180
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	402	906	531	155	527	302	303	838	230	41	812	180
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	101	227	133	39	132	76	76	210	58	10	203	45
Total Analysis Volume [veh/h]	402	906	531	155	527	302	303	838	230	41	812	180
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Unsigna	Protecte	Permiss	Overlap	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	2	1	6	0
Auxiliary Signal Groups						4,5			2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	6	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	18	51	0	11	44	44	15	41	41	17	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	7	0	7	0
Pedestrian Clearance [s]	0	27	0	0	33	33	0	26	26	0	32	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No	No	No	No	
Maximum Recall	No	No		No	No	No	No	No	No	No	No	
Pedestrian Recall	No	No		No	No	No	No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	R	L	C	R	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	0.00	2.00	2.00	0.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	35	7	28	43	11	57	75	5	51	51
g / C, Green / Cycle	0.12	0.30	0.06	0.24	0.36	0.09	0.48	0.63	0.04	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.12	0.27	0.05	0.11	0.20	0.09	0.25	0.15	0.01	0.20	0.20
s, saturation flow rate [veh/h]	3277	3373	3277	4826	1506	3277	3373	1506	3277	3373	1613
c, Capacity [veh/h]	384	995	193	1144	546	302	1600	941	125	1418	678
d1, Uniform Delay [s]	53.00	40.78	55.79	39.23	30.51	54.49	22.06	9.97	56.24	25.17	25.22
k, delay calibration	0.11	0.11	0.11	0.11	0.17	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	35.02	3.63	7.47	0.29	1.35	24.68	1.23	0.62	1.51	1.13	2.39
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.05	0.91	0.80	0.46	0.55	1.00	0.52	0.24	0.33	0.47	0.48
d, Delay for Lane Group [s/veh]	88.02	44.41	63.26	39.52	31.86	79.18	23.29	10.59	57.76	26.30	27.60
Lane Group LOS	F	D	E	D	C	F	C	B	E	C	C
Critical Lane Group	No	Yes	Yes	No	No	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	7.64	13.27	2.52	4.48	7.15	5.60	8.42	2.77	0.63	7.08	7.07
50th-Percentile Queue Length [ft/ln]	190.98	331.75	62.98	111.97	178.70	139.90	210.55	69.24	15.81	177.05	176.80
95th-Percentile Queue Length [veh/ln]	12.40	19.24	4.53	7.95	11.53	9.48	13.18	4.99	1.14	11.45	11.43
95th-Percentile Queue Length [ft/ln]	310.06	481.11	113.37	198.74	288.31	237.11	329.54	124.64	28.46	286.16	285.83

Movement, Approach, & Intersection Results

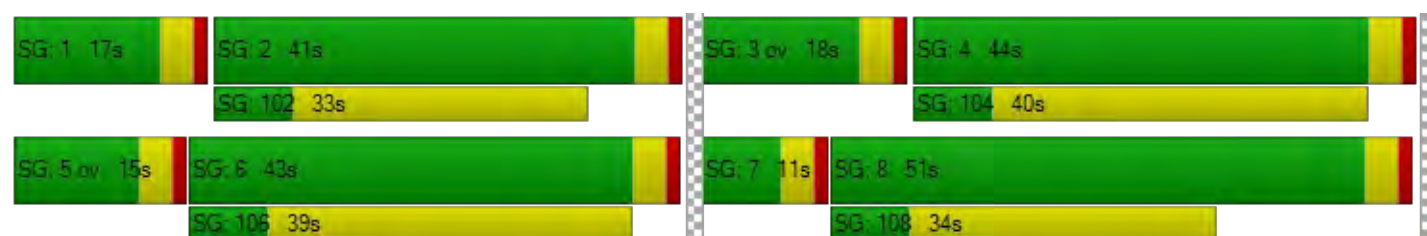
d_M, Delay for Movement [s/veh]	88.02	44.41	0.00	63.26	39.52	31.86	79.18	23.29	10.59	57.76	26.53	27.60
Movement LOS	F	D		E	D	C	F	C	B	E	C	C
d_A, Approach Delay [s/veh]	57.81			40.91			33.51			27.95		
Approach LOS	E			D			C			C		
d_I, Intersection Delay [s/veh]	40.61											
Intersection LOS	D											
Intersection V/C	0.702											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.996			3.028			3.091			2.890		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	783			667			617			650		
d_b, Bicycle Delay [s]	22.20			26.67			28.70			27.34		
I_b,int, Bicycle LOS Score for Intersection	2.639			2.101			2.691			2.128		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX D-IX

YEAR 2040 PLUS PROJECT WITH MITIGATION
TRAFFIC CONDITIONS

Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	78	180	71	62	349	79	77	413	93	78	311	44
Total Analysis Volume [veh/h]	312	721	282	249	1395	314	308	1650	372	312	1245	174
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	42	0	16	42	42	17	46	0	16	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	31	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	38	38	11	37	54	13	43	43	12	42	42
g / C, Green / Cycle	0.10	0.32	0.32	0.09	0.31	0.45	0.11	0.36	0.36	0.10	0.35	0.35
(v / s)_i Volume / Saturation Flow Rate	0.10	0.15	0.19	0.08	0.29	0.21	0.09	0.34	0.25	0.10	0.26	0.12
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	328	1534	479	302	1495	680	355	1721	537	328	1681	524
d1, Uniform Delay [s]	53.71	32.83	34.36	53.53	40.21	22.80	52.65	37.75	32.99	53.71	34.35	28.82
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.21	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.05	0.22	1.57	5.67	3.27	0.94	6.43	13.91	7.18	14.05	2.98	1.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.47	0.59	0.83	0.93	0.46	0.87	0.96	0.69	0.95	0.74	0.33
d, Delay for Lane Group [s/veh]	67.75	33.06	35.93	59.20	43.48	23.74	59.07	51.65	40.17	67.75	37.33	30.51
Lane Group LOS	E	C	D	E	D	C	E	D	D	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.32	5.64	7.09	3.93	13.61	6.28	4.88	17.74	10.25	5.32	11.01	3.96
50th-Percentile Queue Length [ft/ln]	132.88	140.96	177.33	98.18	340.16	157.01	121.98	443.47	256.20	132.88	275.19	98.89
95th-Percentile Queue Length [veh/ln]	9.10	9.53	11.46	7.07	19.66	10.39	8.50	24.65	15.50	9.10	16.45	7.12
95th-Percentile Queue Length [ft/ln]	227.41	238.31	286.53	176.72	491.39	259.76	212.54	616.15	387.45	227.41	411.22	178.00

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	67.75	33.06	35.93	59.20	43.48	23.74	59.07	51.65	40.17	67.75	37.33	30.51
Movement LOS	E	C	D	E	D	C	E	D	D	E	D	C
d_A, Approach Delay [s/veh]	41.90			42.31			50.80			42.13		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	44.89											
Intersection LOS	D											
Intersection V/C	0.948											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.231			3.205			3.318			3.287		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	633			633			700			683		
d_b, Bicycle Delay [s]	28.02			28.02			25.35			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.283			2.637			2.841			2.512		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.872

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	124	41	37	257	53	41	416	98	46	425	19
Total Analysis Volume [veh/h]	440	497	162	148	1029	210	165	1662	391	182	1701	77
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	22	42	0	19	39	0	11	42	0	12	43	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	39	39	7	29	29	7	45	45	8	46	46
g / C, Green / Cycle	0.15	0.34	0.34	0.06	0.25	0.25	0.06	0.39	0.39	0.07	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.13	0.10	0.11	0.05	0.21	0.14	0.05	0.34	0.26	0.06	0.35	0.05
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	496	1624	507	211	1204	376	204	1878	586	232	1920	599
d1, Uniform Delay [s]	47.90	28.26	28.41	52.79	41.22	37.69	53.31	32.76	29.01	52.62	32.24	22.00
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	5.55	0.11	0.36	4.20	1.85	1.30	7.37	6.54	5.92	5.70	6.47	0.44
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.89	0.31	0.32	0.70	0.85	0.56	0.81	0.88	0.67	0.78	0.89	0.13
d, Delay for Lane Group [s/veh]	53.45	28.37	28.77	56.99	43.07	38.99	60.68	39.30	34.93	58.32	38.71	22.45
Lane Group LOS	D	C	C	E	D	D	E	D	C	E	D	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.55	3.40	3.38	2.22	9.41	5.29	2.56	15.17	9.73	2.77	15.45	1.40
50th-Percentile Queue Length [ft/ln]	163.68	84.98	84.40	55.48	235.19	132.17	64.12	379.27	243.37	69.24	386.25	34.97
95th-Percentile Queue Length [veh/ln]	10.74	6.12	6.08	3.99	14.44	9.06	4.62	21.56	14.85	4.99	21.90	2.52
95th-Percentile Queue Length [ft/ln]	268.58	152.96	151.92	99.86	360.95	226.44	115.41	538.96	371.29	124.64	547.41	62.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.45	28.37	28.77	56.99	43.07	38.99	60.68	39.30	34.93	58.32	38.71	22.45
Movement LOS	D	C	C	E	D	D	E	D	C	E	D	C
d_A, Approach Delay [s/veh]	38.47			43.94			40.12			39.90		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	40.58											
Intersection LOS	D											
Intersection V/C	0.872											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	3.154			3.091			3.356			3.287		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	661			609			661			678		
d_b, Bicycle Delay [s]	25.78			27.83			25.78			25.11		
I_b,int, Bicycle LOS Score for Intersection	2.164			2.322			2.780			2.638		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	14.5
Analysis Method:	HCM 6th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.588

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	4	4	16	45	4	17	27	454	2	8	440	40
Total Analysis Volume [veh/h]	15	14	64	180	14	66	107	1817	9	33	1758	161
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	100
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	37	0	13	40	40	10	40	0	10	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	29	29	0	28	0	0	29	29
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	100	100	100	100	100	100	100	100	100	100	100
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	2	6	6	7	11	6	67	67	4	65	65
g / C, Green / Cycle	0.02	0.06	0.06	0.07	0.11	0.06	0.67	0.67	0.04	0.65	0.65
(v / s)_i Volume / Saturation Flow Rate	0.01	0.01	0.04	0.05	0.05	0.03	0.36	0.36	0.02	0.36	0.11
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1546	3277	3373	1767	1687	4826	1506
c, Capacity [veh/h]	37	102	86	246	171	190	2262	1185	63	3137	979
d1, Uniform Delay [s]	48.35	44.85	46.47	45.33	41.76	45.94	8.42	8.42	47.34	9.65	6.87
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	7.21	0.61	11.71	4.18	1.98	2.62	0.89	1.70	6.66	0.73	0.36
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.41	0.14	0.74	0.73	0.47	0.56	0.53	0.53	0.53	0.56	0.16
d, Delay for Lane Group [s/veh]	55.56	45.46	58.18	49.51	43.73	48.56	9.32	10.12	54.00	10.38	7.23
Lane Group LOS	E	D	E	D	D	D	A	B	D	B	A
Critical Lane Group	No	No	Yes	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	0.44	0.35	1.84	2.32	1.94	1.36	6.07	6.63	0.92	6.49	1.33
50th-Percentile Queue Length [ft/ln]	11.03	8.66	46.02	57.95	48.43	33.96	151.72	165.66	23.01	162.19	33.14
95th-Percentile Queue Length [veh/ln]	0.79	0.62	3.31	4.17	3.49	2.45	10.11	10.85	1.66	10.66	2.39
95th-Percentile Queue Length [ft/ln]	19.86	15.59	82.83	104.30	87.17	61.14	252.72	271.19	41.42	266.62	59.65

Movement, Approach, & Intersection Results

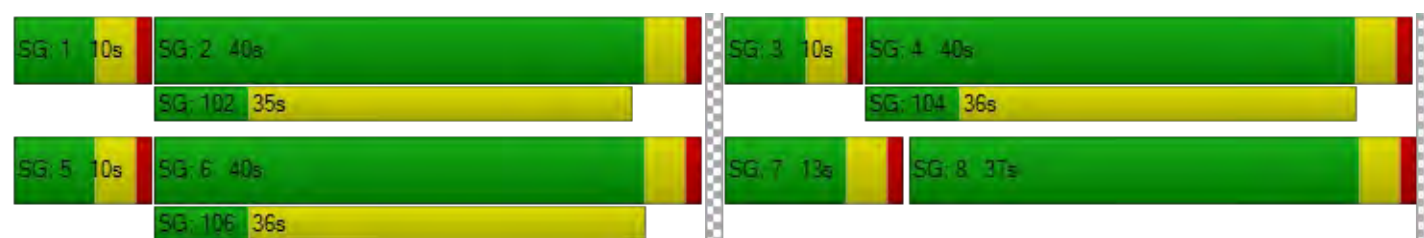
d_M, Delay for Movement [s/veh]	55.56	45.46	58.18	49.51	43.73	43.73	48.56	9.59	10.12	54.00	10.38	7.23
Movement LOS	E	D	E	D	D	D	D	A	B	D	B	A
d_A, Approach Delay [s/veh]	55.84			47.73			11.75			10.86		
Approach LOS	E			D			B			B		
d_I, Intersection Delay [s/veh]	14.51											
Intersection LOS	B											
Intersection V/C	0.588											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	39.61			39.61			39.61			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.172			2.410			3.190			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	660			720			720			720		
d_b, Bicycle Delay [s]	22.45			20.48			20.48			20.48		
I_b,int, Bicycle LOS Score for Intersection	1.636			1.989			2.623			2.633		
Bicycle LOS	A			A			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	39.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.914

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	35	44	100	53	103	8	8	445	66	111	453	60
Total Analysis Volume [veh/h]	139	174	398	213	413	33	33	1780	264	443	1812	238
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	17	44	44	12	39	0	10	34	0	20	44	44
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	30	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	7	31	31	8	33	33	4	39	39	16	51	63
g / C, Green / Cycle	0.06	0.29	0.29	0.07	0.30	0.30	0.04	0.35	0.35	0.15	0.46	0.57
(v / s)_i Volume / Saturation Flow Rate	0.04	0.05	0.26	0.07	0.12	0.02	0.01	0.32	0.32	0.14	0.38	0.16
s, saturation flow rate [veh/h]	3277	3373	1506	3277	3373	1506	3277	4826	1625	3277	4826	1506
c, Capacity [veh/h]	201	963	430	241	1004	448	117	1689	569	478	2220	858
d1, Uniform Delay [s]	50.66	29.64	38.21	50.55	30.95	27.76	51.71	34.05	34.06	46.45	25.69	12.10
k, delay calibration	0.11	0.11	0.26	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.24	0.09	17.83	10.38	0.27	0.07	1.30	8.50	20.50	8.28	3.45	0.80
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.69	0.18	0.93	0.89	0.41	0.07	0.28	0.91	0.91	0.93	0.82	0.28
d, Delay for Lane Group [s/veh]	54.90	29.73	56.04	60.92	31.22	27.83	53.02	42.55	54.56	54.72	29.15	12.90
Lane Group LOS	D	C	E	E	C	C	D	D	D	D	C	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.99	1.75	12.38	3.25	4.41	0.64	0.46	14.00	16.04	6.50	13.87	3.09
50th-Percentile Queue Length [ft/ln]	49.81	43.76	309.56	81.14	110.23	15.88	11.62	349.93	400.98	162.50	346.64	77.27
95th-Percentile Queue Length [veh/ln]	3.59	3.15	18.15	5.84	7.85	1.14	0.84	20.13	22.61	10.68	19.97	5.56
95th-Percentile Queue Length [ft/ln]	89.67	78.77	453.83	146.06	196.33	28.59	20.91	503.32	565.18	267.03	499.30	139.09

Movement, Approach, & Intersection Results

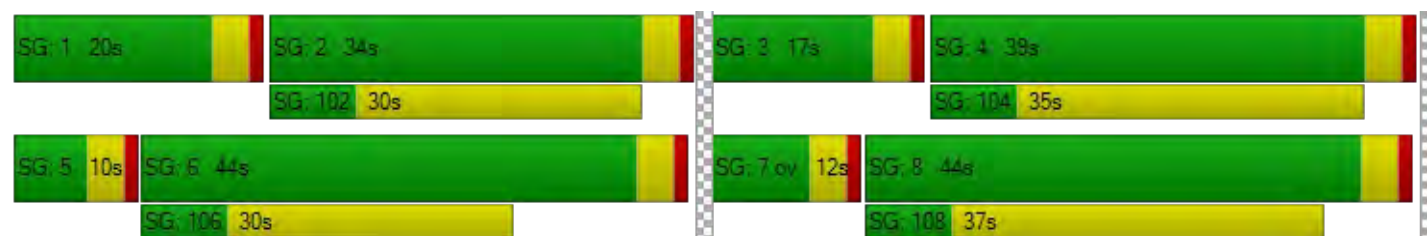
d_M, Delay for Movement [s/veh]	54.90	29.73	56.04	60.92	31.22	27.83	53.02	44.24	54.56	54.72	29.15	12.90
Movement LOS	D	C	E	E	C	C	D	D	D	D	C	B
d_A, Approach Delay [s/veh]	49.38			40.65			45.69			32.14		
Approach LOS	D			D			D			C		
d_I, Intersection Delay [s/veh]	39.89											
Intersection LOS	D											
Intersection V/C	0.914											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	11.0	11.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	44.55	44.55	44.55	44.55
I_p,int, Pedestrian LOS Score for Intersection	2.858	2.757	3.299	3.452
Crosswalk LOS	C	C	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	727	636	545	727
d_b, Bicycle Delay [s]	22.27	25.57	29.09	22.27
I_b,int, Bicycle LOS Score for Intersection	2.146	2.103	2.416	2.931
Bicycle LOS	B	B	B	C

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	24.9
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.774

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	270	50	212	0	0	36	47	455	135	0	362	5
Total Analysis Volume [veh/h]	1079	198	848	0	0	143	189	1820	540	0	1446	21
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	95
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	44	0	0	0	21	21	51	0	0	30	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	95	95	95	95	95	95	95	95
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	34	34	34	13	13	53	36	36
g / C, Green / Cycle	0.36	0.36	0.36	0.13	0.13	0.56	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.27	0.27	0.30	0.05	0.11	0.38	0.23	0.21
s, saturation flow rate [veh/h]	3277	1700	2665	2665	1687	4826	4826	1754
c, Capacity [veh/h]	1173	609	954	357	226	2691	1843	670
d1, Uniform Delay [s]	26.72	26.64	27.95	37.67	40.15	14.92	23.52	22.96
k, delay calibration	0.11	0.19	0.11	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.97	3.07	2.03	0.73	8.00	1.38	1.44	3.20
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.75	0.74	0.84	0.40	0.84	0.68	0.60	0.55
d, Delay for Lane Group [s/veh]	27.69	29.71	29.97	38.40	48.15	16.31	24.95	26.16
Lane Group LOS	C	C	C	D	D	B	C	C
Critical Lane Group	No	No	Yes	No	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	8.56	9.15	8.28	1.55	4.75	8.90	6.62	6.82
50th-Percentile Queue Length [ft/ln]	213.99	228.71	206.96	38.65	118.87	222.60	165.55	170.52
95th-Percentile Queue Length [veh/ln]	13.36	14.11	13.00	2.78	8.33	13.80	10.84	11.10
95th-Percentile Queue Length [ft/ln]	333.95	352.72	324.93	69.57	208.28	344.95	271.06	277.59

Movement, Approach, & Intersection Results

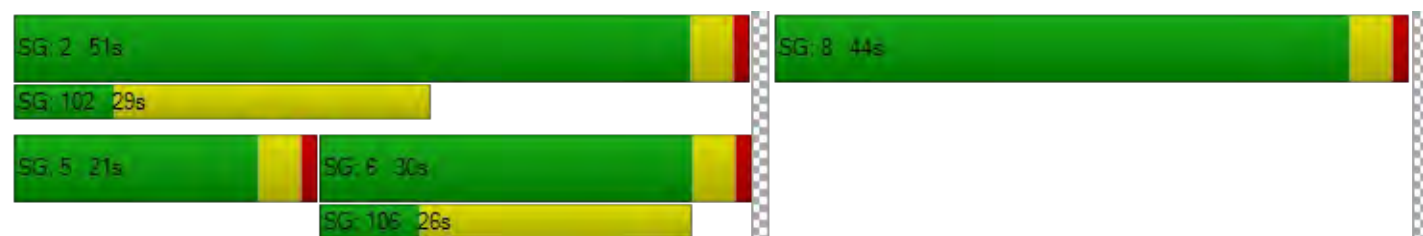
d_M, Delay for Movement [s/veh]	28.12	29.71	29.97	0.00	0.00	38.40	48.15	16.31	0.00	0.00	25.24	26.16
Movement LOS	C	C	C			D	D	B			C	C
d_A, Approach Delay [s/veh]	28.98			38.40			19.30			25.26		
Approach LOS	C			D			B			C		
d_I, Intersection Delay [s/veh]	24.88											
Intersection LOS	C											
Intersection V/C	0.774											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			0.0			0.0		
M_corner, Corner Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	37.14			37.14			0.00			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.800			2.122			0.000			0.000		
Crosswalk LOS	C			B			F			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	842			0			989			547		
d_b, Bicycle Delay [s]	15.92			47.50			12.13			25.06		
I_b,int, Bicycle LOS Score for Intersection	5.066			4.132			2.665			2.165		
Bicycle LOS	F			D			B			B		

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	41.0
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.930

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	38	55	17	42	124	40	43	576	42	31	416	21
Total Analysis Volume [veh/h]	152	221	68	166	497	161	173	2303	167	123	1664	84
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	10	39	0	11	40	0	18	56	0	14	52	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	25	25	7	26	26	14	62	62	10	58	58
g / C, Green / Cycle	0.05	0.21	0.21	0.06	0.22	0.22	0.12	0.52	0.52	0.08	0.48	0.48
(v / s)_i Volume / Saturation Flow Rate	0.05	0.08	0.09	0.05	0.19	0.19	0.10	0.48	0.49	0.07	0.27	0.27
s, saturation flow rate [veh/h]	3277	1772	1632	3277	1772	1625	1687	3373	1712	1687	4826	1716
c, Capacity [veh/h]	166	369	340	193	384	352	198	1739	882	142	2328	828
d1, Uniform Delay [s]	56.72	41.08	41.18	55.99	45.70	45.72	52.14	27.20	27.79	54.34	21.95	21.95
k, delay calibration	0.11	0.11	0.11	0.11	0.20	0.20	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	17.21	0.71	0.80	10.44	12.42	13.55	11.48	10.87	21.38	14.56	0.96	2.67
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.91	0.40	0.41	0.86	0.89	0.90	0.88	0.94	0.96	0.87	0.55	0.55
d, Delay for Lane Group [s/veh]	73.93	41.80	41.98	66.42	58.12	59.27	63.62	38.07	49.17	68.89	22.91	24.62
Lane Group LOS	E	D	D	E	E	E	E	D	D	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	2.69	3.89	3.69	2.77	11.20	10.41	5.75	23.42	27.30	4.24	8.63	9.60
50th-Percentile Queue Length [ft/ln]	67.27	97.25	92.13	69.31	280.08	260.22	143.75	585.55	682.40	106.09	215.68	239.94
95th-Percentile Queue Length [veh/ln]	4.84	7.00	6.63	4.99	16.69	15.70	9.68	31.36	35.86	7.62	13.44	14.68
95th-Percentile Queue Length [ft/ln]	121.09	175.05	165.83	124.75	417.31	392.50	242.07	783.98	896.60	190.55	336.10	366.95

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	73.93	41.86	41.98	66.42	58.47	59.27	63.62	41.33	49.17	68.89	23.29	24.62
Movement LOS	E	D	D	E	E	E	E	D	D	E	C	C
d_A, Approach Delay [s/veh]	52.93			60.23			43.29			26.35		
Approach LOS	D			E			D			C		
d_I, Intersection Delay [s/veh]	40.96											
Intersection LOS	D											
Intersection V/C	0.930											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.666			2.678			3.302			3.276		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	583			600			867			800		
d_b, Bicycle Delay [s]	30.10			29.40			19.27			21.60		
I_b,int, Bicycle LOS Score for Intersection	1.923			2.239			3.013			2.331		
Bicycle LOS	A			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	53.9
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.955

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	295	58	69	242	105	78	326	74	118	424	78
Total Analysis Volume [veh/h]	439	1181	231	276	969	421	311	1305	295	471	1697	313
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	18	47	0	13	42	42	16	42	0	18	44	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	31	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	14	34	34	9	29	45	12	47	47	14	49	49
g / C, Green / Cycle	0.12	0.29	0.29	0.08	0.24	0.38	0.10	0.39	0.39	0.12	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.13	0.24	0.15	0.08	0.20	0.28	0.09	0.27	0.20	0.14	0.35	0.21
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	385	1377	430	250	1178	570	331	1871	584	385	1950	609
d1, Uniform Delay [s]	53.00	40.62	36.24	55.48	42.95	32.22	53.63	30.87	28.01	53.00	32.89	26.92
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.38	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	70.13	1.66	1.05	59.81	1.51	6.42	12.46	2.19	3.11	105.40	5.64	3.09
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.14	0.86	0.54	1.10	0.82	0.74	0.94	0.70	0.51	1.22	0.87	0.51
d, Delay for Lane Group [s/veh]	123.13	42.28	37.29	115.29	44.46	38.63	66.08	33.06	31.12	158.40	38.53	30.01
Lane Group LOS	F	D	D	F	D	D	E	C	C	F	D	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	9.55	11.13	5.84	5.86	9.19	11.45	5.23	10.82	6.93	11.44	15.81	7.22
50th-Percentile Queue Length [ft/ln]	238.78	278.21	146.00	146.43	229.70	286.37	130.78	270.48	173.21	285.95	395.34	180.57
95th-Percentile Queue Length [veh/ln]	15.39	16.60	9.80	10.14	14.16	17.01	8.98	16.21	11.24	18.35	22.34	11.63
95th-Percentile Queue Length [ft/ln]	384.83	414.99	245.08	253.59	353.98	425.14	224.56	405.34	281.12	458.81	558.39	290.75

Movement, Approach, & Intersection Results

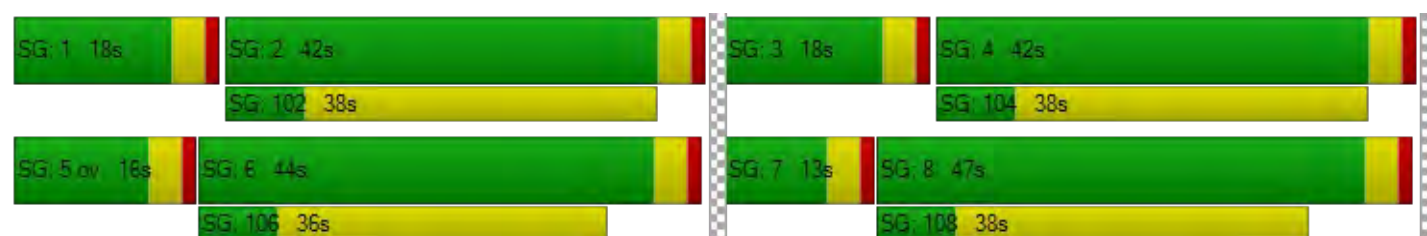
d_M, Delay for Movement [s/veh]	123.13	42.28	37.29	115.29	44.46	38.63	66.08	33.06	31.12	158.40	38.53	30.01
Movement LOS	F	D	D	F	D	D	E	C	C	F	D	C
d_A, Approach Delay [s/veh]	60.83			54.72			38.13			60.21		
Approach LOS	E			D			D			E		
d_I, Intersection Delay [s/veh]	53.87											
Intersection LOS	D											
Intersection V/C	0.955											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.251			3.239			3.347			3.328		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	717			633			633			667		
d_b, Bicycle Delay [s]	24.70			28.02			28.02			26.67		
I_b,int, Bicycle LOS Score for Intersection	2.578			2.476			2.611			2.924		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.889

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	140	215	69	58	171	53	62	456	105	62	461	38
Total Analysis Volume [veh/h]	561	861	277	232	685	213	247	1823	420	249	1844	152
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	23	48	0	14	39	0	13	45	0	13	45	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	19	30	30	10	21	21	9	55	55	9	55	55
g / C, Green / Cycle	0.16	0.25	0.25	0.08	0.17	0.17	0.08	0.46	0.46	0.08	0.46	0.46
(v / s)_i Volume / Saturation Flow Rate	0.17	0.18	0.18	0.07	0.14	0.14	0.08	0.38	0.28	0.08	0.38	0.10
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	520	1202	375	275	842	263	248	2210	690	248	2210	690
d1, Uniform Delay [s]	50.51	41.20	41.48	54.21	47.68	47.66	55.47	28.34	24.45	55.49	28.53	19.61
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	44.03	0.81	2.86	6.94	1.97	5.94	25.77	3.66	3.97	27.70	3.89	0.74
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	1.08	0.72	0.74	0.84	0.81	0.81	1.00	0.82	0.61	1.00	0.83	0.22
d, Delay for Lane Group [s/veh]	94.54	42.01	44.34	61.15	49.66	53.60	81.24	32.00	28.42	83.19	32.43	20.35
Lane Group LOS	F	D	D	E	D	D	F	C	C	F	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.95	7.83	7.82	3.72	6.71	6.55	4.62	15.56	9.60	4.70	15.88	2.71
50th-Percentile Queue Length [ft/ln]	273.81	195.71	195.42	92.98	167.81	163.70	115.49	389.02	239.88	117.50	397.12	67.63
95th-Percentile Queue Length [veh/ln]	16.97	12.42	12.40	6.69	10.96	10.74	8.14	22.03	14.68	8.27	22.42	4.87
95th-Percentile Queue Length [ft/ln]	424.30	310.43	310.06	167.37	274.03	268.61	203.62	550.76	366.88	206.70	560.52	121.73

Movement, Approach, & Intersection Results

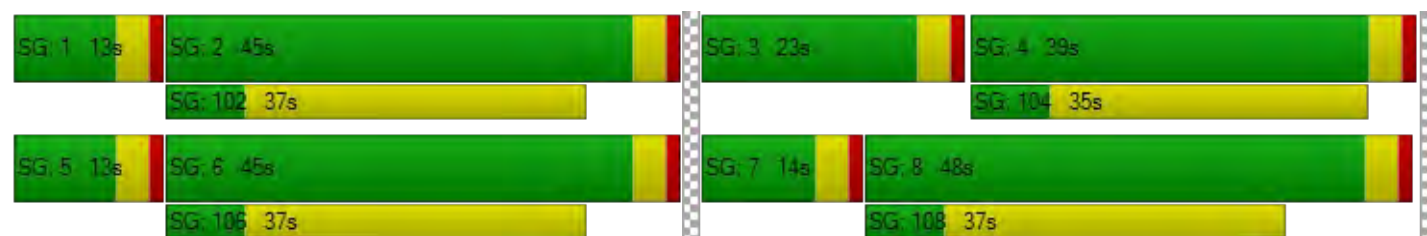
d_M, Delay for Movement [s/veh]	94.54	42.01	44.34	61.15	49.66	53.60	81.24	32.00	28.42	83.19	32.43	20.35
Movement LOS	F	D	D	E	D	D	F	C	C	F	C	C
d_A, Approach Delay [s/veh]	59.74			52.76			36.28			37.24		
Approach LOS	E			D			D			D		
d_I, Intersection Delay [s/veh]	44.30											
Intersection LOS	D											
Intersection V/C	0.889											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.194			3.122			3.416			3.359		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	733			583			683			683		
d_b, Bicycle Delay [s]	24.07			30.10			26.00			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.494			2.181			2.929			2.794		
Bicycle LOS	B			B			C			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	29.5
Analysis Method:	HCM 6th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.851

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	11	9	15	85	6	64	83	436	7	14	503	89
Total Analysis Volume [veh/h]	44	34	61	339	25	254	332	1745	28	57	2011	355
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	10	0	43	43	43	17	47	0	10	40	40
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	29	29	0	28	0	0	29	29
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	4	13	13	14	22	13	62	62	5	54	54
g / C, Green / Cycle	0.04	0.12	0.12	0.13	0.20	0.12	0.57	0.57	0.05	0.49	0.49
(v / s)_i Volume / Saturation Flow Rate	0.03	0.02	0.04	0.10	0.18	0.10	0.35	0.35	0.03	0.42	0.24
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1526	3277	3373	1757	1687	4826	1506
c, Capacity [veh/h]	70	206	175	420	310	388	1903	991	78	2373	740
d1, Uniform Delay [s]	51.95	43.82	44.79	46.66	42.75	47.62	15.98	16.00	51.86	24.39	18.61
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	9.05	0.37	1.18	3.71	9.25	5.50	1.48	2.83	12.61	3.99	2.22
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.63	0.16	0.35	0.81	0.90	0.86	0.61	0.61	0.74	0.85	0.48
d, Delay for Lane Group [s/veh]	61.00	44.19	45.97	50.37	52.00	53.12	17.46	18.83	64.47	28.38	20.83
Lane Group LOS	E	D	D	D	D	D	B	B	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	1.37	0.86	1.59	4.71	8.13	4.74	9.65	10.45	1.82	15.39	6.32
50th-Percentile Queue Length [ft/ln]	34.24	21.45	39.80	117.78	203.24	118.60	241.34	261.36	45.57	384.67	158.03
95th-Percentile Queue Length [veh/ln]	2.47	1.54	2.87	8.27	12.81	8.32	14.75	15.76	3.28	21.82	10.44
95th-Percentile Queue Length [ft/ln]	61.64	38.61	71.64	206.77	320.14	207.90	368.73	393.92	82.02	545.49	261.11

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	61.00	44.19	45.97	50.37	52.00	52.00	53.12	17.92	18.83	64.47	28.38	20.83
Movement LOS	E	D	D	D	D	D	D	B	B	E	C	C
d_A, Approach Delay [s/veh]	50.29			51.11			23.48			28.12		
Approach LOS	D			D			C			C		
d_I, Intersection Delay [s/veh]	29.54											
Intersection LOS	C											
Intersection V/C	0.851											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.201			2.571			3.273			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	109			709			782			655		
d_b, Bicycle Delay [s]	49.16			22.91			20.40			24.89		
I_b,int, Bicycle LOS Score for Intersection	1.674			2.579			2.717			2.892		
Bicycle LOS	A			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	57.0
Analysis Method:	HCM 6th Edition	Level Of Service:	E
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.980

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	91	155	89	136	81	24	27	480	27	108	481	170
Total Analysis Volume [veh/h]	364	621	355	544	323	97	107	1920	106	431	1923	681
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	24	41	41	22	39	0	10	34	0	18	42	42
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	30	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	15	30	30	18	33	33	6	37	37	14	45	67
g / C, Green / Cycle	0.13	0.26	0.26	0.16	0.29	0.29	0.05	0.32	0.32	0.12	0.39	0.58
(v / s)_i Volume / Saturation Flow Rate	0.11	0.18	0.24	0.17	0.10	0.06	0.03	0.31	0.31	0.13	0.40	0.45
s, saturation flow rate [veh/h]	3277	3373	1506	3277	3373	1506	3277	4826	1711	3277	4826	1506
c, Capacity [veh/h]	430	885	395	514	971	434	168	1542	547	400	1884	876
d1, Uniform Delay [s]	48.85	38.36	40.95	48.52	32.26	31.18	53.54	38.62	38.62	50.51	35.08	18.36
k, delay calibration	0.11	0.11	0.26	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.65	1.02	15.71	36.35	0.20	0.26	3.96	16.83	31.84	44.90	26.14	6.71
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.85	0.70	0.90	1.06	0.33	0.22	0.64	0.97	0.97	1.08	1.02	0.78
d, Delay for Lane Group [s/veh]	53.50	39.38	56.66	84.87	32.46	31.44	57.50	55.44	70.46	95.41	61.22	25.07
Lane Group LOS	D	D	E	F	C	C	E	E	E	F	F	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	5.37	8.00	11.33	9.93	3.58	2.09	1.61	16.02	19.33	8.24	21.64	14.64
50th-Percentile Queue Length [ft/ln]	134.32	199.96	283.35	248.17	89.39	52.28	40.26	400.45	483.15	205.94	540.88	365.95
95th-Percentile Queue Length [veh/ln]	9.17	12.64	16.86	15.50	6.44	3.76	2.90	22.58	26.54	13.34	29.70	20.91
95th-Percentile Queue Length [ft/ln]	229.35	315.92	421.39	387.42	160.90	94.10	72.47	564.55	663.40	333.48	742.50	522.81

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	53.50	39.38	56.66	84.87	32.46	31.44	57.50	58.76	70.46	95.41	61.22	25.07
Movement LOS	D	D	E	F	C	C	E	E	E	F	F	C
d_A, Approach Delay [s/veh]	47.79			61.93			59.28			57.96		
Approach LOS	D			E			E			E		
d_I, Intersection Delay [s/veh]	57.03											
Intersection LOS	E											
Intersection V/C	0.980											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.912			2.936			3.350			3.549		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	643			609			522			661		
d_b, Bicycle Delay [s]	26.45			27.83			31.41			25.78		
I_b,int, Bicycle LOS Score for Intersection	2.665			2.355			2.439			3.229		
Bicycle LOS	B			B			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	36.1
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.931

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	281	20	113	0	0	74	54	463	109	0	634	15
Total Analysis Volume [veh/h]	1122	81	453	0	0	296	217	1852	434	0	2536	60
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	44	0	0	0	21	21	76	0	0	55	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	39	39	39	17	17	73	52	52
g / C, Green / Cycle	0.33	0.33	0.33	0.14	0.14	0.61	0.43	0.43
(v / s)_i Volume / Saturation Flow Rate	0.21	0.31	0.17	0.11	0.13	0.38	0.40	0.37
s, saturation flow rate [veh/h]	3277	1700	2665	2665	1687	4826	4826	1743
c, Capacity [veh/h]	1066	553	867	378	239	2934	2089	754
d1, Uniform Delay [s]	34.49	39.35	32.89	49.67	50.67	14.95	32.34	30.73
k, delay calibration	0.11	0.40	0.11	0.11	0.11	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.65	22.63	0.49	3.57	12.19	1.04	9.12	12.29
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.64	0.94	0.52	0.78	0.91	0.63	0.93	0.86
d, Delay for Lane Group [s/veh]	35.13	61.98	33.38	53.24	62.87	15.99	41.46	43.02
Lane Group LOS	D	E	C	D	E	B	D	D
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	8.54	18.18	5.41	4.47	7.21	10.48	19.19	19.14
50th-Percentile Queue Length [ft/ln]	213.56	454.41	135.16	111.72	180.37	262.08	479.76	478.41
95th-Percentile Queue Length [veh/ln]	13.34	25.17	9.22	7.94	11.62	15.79	26.37	26.31
95th-Percentile Queue Length [ft/ln]	333.39	629.21	230.49	198.39	290.49	394.83	659.36	657.76

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	45.29	61.98	33.38	0.00	0.00	53.24	62.87	15.99	0.00	0.00	41.82	43.02
Movement LOS	D	E	C			D	E	B			D	D
d_A, Approach Delay [s/veh]	43.09			53.24			20.91			41.85		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	36.12											
Intersection LOS	D											
Intersection V/C	0.931											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.736	2.167	0.000	0.000
Crosswalk LOS	B	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	667	0	1200	850
d_b, Bicycle Delay [s]	26.67	60.00	9.60	19.84
I_b,int, Bicycle LOS Score for Intersection	4.292	4.132	2.698	2.630
Bicycle LOS	E	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	42.6
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.867

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	78	28	80	90	57	64	443	36	46	471	46
Total Analysis Volume [veh/h]	266	310	112	320	361	226	256	1771	144	184	1885	183
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	15	39	0	17	41	0	23	41	0	18	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	11	21	21	13	23	23	19	51	51	14	46	46
g / C, Green / Cycle	0.10	0.18	0.18	0.11	0.20	0.20	0.17	0.44	0.44	0.12	0.40	0.40
(v / s)_i Volume / Saturation Flow Rate	0.08	0.12	0.13	0.10	0.18	0.18	0.15	0.38	0.38	0.11	0.32	0.32
s, saturation flow rate [veh/h]	3277	1772	1614	3277	1772	1546	1687	3373	1705	1687	4826	1670
c, Capacity [veh/h]	315	326	297	372	357	311	279	1488	752	206	1921	665
d1, Uniform Delay [s]	51.15	43.75	43.80	50.11	44.60	44.60	47.24	28.79	28.95	49.76	30.59	30.61
k, delay calibration	0.11	0.11	0.11	0.11	0.13	0.13	0.14	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.12	2.44	2.74	5.88	8.08	9.16	14.70	6.36	12.29	12.45	3.60	9.81
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.84	0.68	0.68	0.86	0.88	0.88	0.92	0.85	0.86	0.89	0.80	0.80
d, Delay for Lane Group [s/veh]	57.27	46.19	46.53	55.99	52.67	53.76	61.94	35.15	41.23	62.22	34.19	40.42
Lane Group LOS	E	D	D	E	D	D	E	D	D	E	C	D
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.03	6.05	5.58	4.82	9.42	8.32	8.32	16.51	18.15	5.91	12.91	14.57
50th-Percentile Queue Length [ft/ln]	100.81	151.23	139.54	120.42	235.52	208.02	207.97	412.70	453.69	147.80	322.65	364.36
95th-Percentile Queue Length [veh/ln]	7.26	10.08	9.46	8.42	14.45	13.05	13.05	23.17	25.13	9.90	18.80	20.84
95th-Percentile Queue Length [ft/ln]	181.46	252.08	236.40	210.41	361.36	326.29	326.22	579.28	628.35	247.50	469.94	520.88

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	57.27	46.29	46.53	55.99	52.82	53.76	61.94	36.88	41.23	62.22	35.34	40.42
Movement LOS	E	D	D	E	D	D	E	D	D	E	D	D
d_A, Approach Delay [s/veh]	50.58			54.17			40.12			37.95		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.62											
Intersection LOS	D											
Intersection V/C	0.867											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.688			2.734			3.291			3.280		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	609			643			643			557		
d_b, Bicycle Delay [s]	27.83			26.45			26.45			29.95		
I_b,int, Bicycle LOS Score for Intersection	2.127			2.308			2.754			2.489		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 16: Harbor Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	40.8
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.800

Intersection Setup

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Harbor Boulevard			Harbor Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	89	204	54	67	210	82	93	304	70	97	347	64
Total Analysis Volume [veh/h]	354	814	217	268	840	328	370	1214	280	387	1386	256
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	17	43	0	16	42	42	20	42	0	19	41	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	7	0	7	0	0	7	0
Pedestrian Clearance [s]	0	31	0	0	31	31	0	31	0	0	29	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No	No	No	No		No	No	
Maximum Recall	No	No		No	No	No	No	No		No	No	
Pedestrian Recall	No	No		No	No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	13	27	27	12	25	45	16	51	51	15	50	50
g / C, Green / Cycle	0.11	0.22	0.22	0.10	0.21	0.38	0.13	0.42	0.42	0.13	0.41	0.41
(v / s)_i Volume / Saturation Flow Rate	0.11	0.17	0.14	0.08	0.17	0.22	0.11	0.25	0.19	0.12	0.29	0.17
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	358	1075	336	322	1022	571	439	2026	632	412	1986	620
d1, Uniform Delay [s]	53.42	43.64	42.39	53.18	45.17	29.59	50.77	27.02	24.84	52.04	29.18	25.06
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.23	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	19.49	1.12	2.09	5.55	1.72	1.96	4.44	1.32	2.24	10.45	2.06	2.03
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.99	0.76	0.65	0.83	0.82	0.57	0.84	0.60	0.44	0.94	0.70	0.41
d, Delay for Lane Group [s/veh]	72.91	44.76	44.48	58.73	46.89	31.55	55.21	28.33	27.08	62.50	31.24	27.09
Lane Group LOS	E	D	D	E	D	C	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	6.29	7.63	6.04	4.22	8.10	7.79	5.69	9.13	6.05	6.37	11.21	5.50
50th-Percentile Queue Length [ft/ln]	157.37	190.76	150.90	105.47	202.42	194.72	142.37	228.34	151.17	159.14	280.27	137.59
95th-Percentile Queue Length [veh/ln]	10.41	12.16	10.07	7.59	12.76	12.37	9.61	14.09	10.08	10.50	16.70	9.35
95th-Percentile Queue Length [ft/ln]	260.24	304.01	251.63	189.68	319.09	309.14	240.21	352.25	251.99	262.59	417.55	233.78

Movement, Approach, & Intersection Results

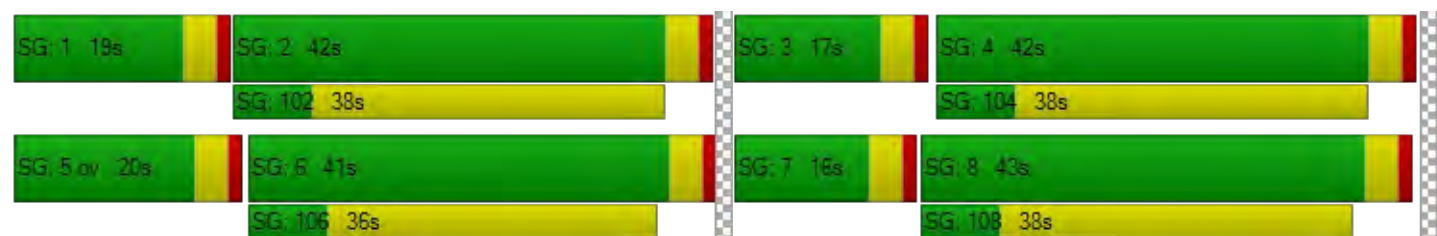
d_M, Delay for Movement [s/veh]	72.91	44.76	44.48	58.73	46.89	31.55	55.21	28.33	27.08	62.50	31.24	27.09
Movement LOS	E	D	D	E	D	C	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	51.91			45.60			33.48			36.68		
Approach LOS	D			D			C			D		
d_I, Intersection Delay [s/veh]	40.84											
Intersection LOS	D											
Intersection V/C	0.800											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.176			3.175			3.289			3.267		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	650			633			633			617		
d_b, Bicycle Delay [s]	27.34			28.02			28.02			28.70		
I_b,int, Bicycle LOS Score for Intersection	2.321			2.349			2.585			2.676		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 18: Brea Boulevard at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	42.2
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.861

Intersection Setup

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	1	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Brea Boulevard			Brea Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	136	71	74	227	57	61	373	67	95	365	41
Total Analysis Volume [veh/h]	441	544	285	296	906	227	243	1491	266	378	1461	164
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	21	41	0	19	39	0	14	41	0	19	46	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	30	0	0	28	0	0	30	0	0	30	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	R	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	17	31	31	13	27	27	10	45	45	15	50	50
g / C, Green / Cycle	0.14	0.26	0.26	0.11	0.22	0.22	0.08	0.38	0.38	0.13	0.42	0.42
(v / s)_i Volume / Saturation Flow Rate	0.13	0.11	0.19	0.09	0.19	0.15	0.07	0.31	0.18	0.12	0.30	0.11
s, saturation flow rate [veh/h]	3277	4826	1506	3277	4826	1506	3277	4826	1506	3277	4826	1506
c, Capacity [veh/h]	466	1236	386	354	1071	334	277	1818	567	412	2017	630
d1, Uniform Delay [s]	51.05	37.46	40.99	52.53	44.78	42.82	54.37	33.76	28.34	51.88	29.17	22.83
k, delay calibration	0.11	0.11	0.15	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	10.20	0.25	3.89	5.22	1.95	2.43	8.67	4.29	2.77	8.47	2.30	1.00
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.95	0.44	0.74	0.84	0.85	0.68	0.88	0.82	0.47	0.92	0.72	0.26
d, Delay for Lane Group [s/veh]	61.25	37.70	44.88	57.75	46.72	45.25	63.04	38.05	31.11	60.35	31.47	23.83
Lane Group LOS	E	D	D	E	D	D	E	D	C	E	C	C
Critical Lane Group	Yes	No	No	No	Yes	No	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	7.22	4.51	8.12	4.63	8.77	6.39	3.96	13.58	6.21	6.10	11.95	3.21
50th-Percentile Queue Length [ft/ln]	180.42	112.71	203.06	115.75	219.25	159.79	99.11	339.48	155.30	152.51	298.75	80.28
95th-Percentile Queue Length [veh/ln]	11.62	7.99	12.80	8.16	13.63	10.54	7.14	19.62	10.30	10.15	17.62	5.78
95th-Percentile Queue Length [ft/ln]	290.56	199.76	319.91	203.97	340.66	263.44	178.39	490.56	257.49	253.78	440.48	144.50

Movement, Approach, & Intersection Results

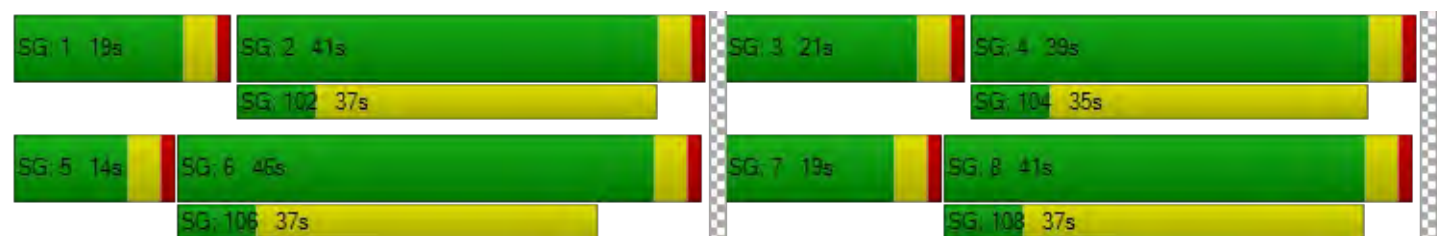
d_M, Delay for Movement [s/veh]	61.25	37.70	44.88	57.75	46.72	45.25	63.04	38.05	31.11	60.35	31.47	23.83
Movement LOS	E	D	D	E	D	D	E	D	C	E	C	C
d_A, Approach Delay [s/veh]	47.49			48.77			40.16			36.30		
Approach LOS	D			D			D			D		
d_I, Intersection Delay [s/veh]	42.23											
Intersection LOS	D											
Intersection V/C	0.861											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	3.168			3.121			3.310			3.304		
Crosswalk LOS	C			C			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			617			700		
d_b, Bicycle Delay [s]	28.70			30.10			28.70			25.35		
I_b,int, Bicycle LOS Score for Intersection	2.258			2.346			2.660			2.661		
Bicycle LOS	B			B			B			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 19: Randolph Avenue at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	44.4
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.939

Intersection Setup

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration	T T T			T T T			T T T T			T T T T		
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			No		

Volumes

Name	Randolph Avenue			Randolph Avenue			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	17	10	43	108	20	92	91	386	8	29	436	121
Total Analysis Volume [veh/h]	69	39	171	431	78	369	364	1542	33	115	1744	482
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	110
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	4	5	2	0	1	6	6
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	6	6	6	0	6	6	6
Maximum Green [s]	30	30	0	30	30	30	30	30	0	30	30	30
Amber [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	10	16	0	34	40	40	17	48	0	12	43	43
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	0	0	0	7	7	0	7	0	0	7	7
Pedestrian Clearance [s]	0	0	0	0	29	29	0	28	0	0	29	29
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	L	C	C	L	C	R
C, Cycle Length [s]	110	110	110	110	110	110	110	110	110	110	110
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	6	22	22	17	34	13	47	47	8	42	42
g / C, Green / Cycle	0.05	0.20	0.20	0.16	0.30	0.12	0.43	0.43	0.07	0.38	0.38
(v / s)_i Volume / Saturation Flow Rate	0.04	0.02	0.11	0.13	0.29	0.11	0.31	0.31	0.07	0.36	0.32
s, saturation flow rate [veh/h]	1687	1772	1506	3277	1546	3277	3373	1753	1687	4826	1506
c, Capacity [veh/h]	88	354	301	512	471	388	1434	745	123	1833	572
d1, Uniform Delay [s]	51.56	36.01	39.73	45.10	37.45	48.11	26.24	26.25	50.73	33.14	31.13
k, delay calibration	0.11	0.11	0.11	0.11	0.37	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	14.26	0.14	1.68	3.82	25.20	10.91	3.18	6.02	24.25	12.31	14.06
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.79	0.11	0.57	0.84	0.95	0.94	0.72	0.72	0.93	0.95	0.84
d, Delay for Lane Group [s/veh]	65.82	36.15	41.41	48.92	62.65	59.02	29.43	32.28	74.99	45.45	45.19
Lane Group LOS	E	D	D	D	E	E	C	C	E	D	D
Critical Lane Group	Yes	No	No	No	Yes	Yes	No	No	No	Yes	No
50th-Percentile Queue Length [veh/ln]	2.22	0.87	4.30	5.96	14.84	5.51	11.62	12.68	3.97	16.72	13.63
50th-Percentile Queue Length [ft/ln]	55.62	21.82	107.46	148.89	370.96	137.87	290.40	316.93	99.29	418.06	340.76
95th-Percentile Queue Length [veh/ln]	4.00	1.57	7.70	9.96	21.16	9.37	17.21	18.52	7.15	23.43	19.69
95th-Percentile Queue Length [ft/ln]	100.12	39.28	192.47	248.94	528.89	234.15	430.14	462.92	178.72	585.72	492.13

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	65.82	36.15	41.41	48.92	62.65	62.65	59.02	30.36	32.28	74.99	45.45	45.19
Movement LOS	E	D	D	D	E	E	E	C	C	E	D	D
d_A, Approach Delay [s/veh]	46.71			55.91			35.77			46.84		
Approach LOS	D			E			D			D		
d_I, Intersection Delay [s/veh]	44.35											
Intersection LOS	D											
Intersection V/C	0.939											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			0.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	44.55			44.55			44.55			0.00		
I_p,int, Pedestrian LOS Score for Intersection	2.264			2.653			3.237			0.000		
Crosswalk LOS	B			B			C			F		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	218			655			800			709		
d_b, Bicycle Delay [s]	43.65			24.89			19.80			22.91		
I_b,int, Bicycle LOS Score for Intersection	1.790			3.008			2.626			2.847		
Bicycle LOS	A			C			B			C		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report**Intersection 20: State College Boulevard at Imperial Highway**

Control Type:	Signalized	Delay (sec / veh):	133.9
Analysis Method:	HCM 6th Edition	Level Of Service:	F
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.407

Intersection Setup

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	1	0	1	1	0	0	1	0	1
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	State College Boulevard			State College Boulevard			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	72	142	145	195	114	45	34	405	49	158	476	278
Total Analysis Volume [veh/h]	289	569	579	779	455	180	137	1620	196	630	1902	1111
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Overlap
Signal Group	3	8	8	7	4	0	5	2	0	1	6	6
Auxiliary Signal Groups												6,7
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	6	6	6	0	6	6	0	6	6	6
Maximum Green [s]	30	30	30	30	30	0	30	30	0	30	30	30
Amber [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
All red [s]	1.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0
Split [s]	26	41	41	24	39	0	10	34	0	21	45	45
Vehicle Extension [s]	3.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0
Walk [s]	0	7	7	0	7	0	0	7	0	0	7	7
Pedestrian Clearance [s]	0	30	30	0	28	0	0	23	0	0	23	23
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
I2, Clearance Lost Time [s]	2.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0
Minimum Recall	No	No		No	No		No	No		No	No	No
Maximum Recall	No	No		No	No		No	No		No	No	No
Pedestrian Recall	No	No		No	No		No	No		No	No	No
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	L	C	R	L	C	C	L	C	R
C, Cycle Length [s]	120	120	120	120	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	0.00
g_i, Effective Green Time [s]	13	37	37	20	44	44	6	30	30	17	41	65
g / C, Green / Cycle	0.11	0.31	0.31	0.17	0.37	0.37	0.05	0.25	0.25	0.14	0.34	0.54
(v / s)_i Volume / Saturation Flow Rate	0.09	0.17	0.38	0.24	0.13	0.12	0.04	0.28	0.28	0.19	0.39	0.74
s, saturation flow rate [veh/h]	3277	3373	1506	3277	3373	1506	3277	4826	1648	3277	4826	1506
c, Capacity [veh/h]	354	1036	462	546	1234	551	164	1212	414	464	1654	817
d1, Uniform Delay [s]	52.38	34.66	41.58	50.00	27.89	27.40	56.50	44.94	44.94	51.50	39.44	27.44
k, delay calibration	0.11	0.11	0.50	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	4.66	0.46	130.26	194.05	0.18	0.34	10.37	64.31	80.02	163.51	75.09	169.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.82	0.55	1.25	1.43	0.37	0.33	0.83	1.12	1.12	1.36	1.15	1.36
d, Delay for Lane Group [s/veh]	57.04	35.11	171.84	244.05	28.07	27.74	66.87	109.24	124.96	215.01	114.54	197.13
Lane Group LOS	E	D	F	F	C	C	E	F	F	F	F	F
Critical Lane Group	No	No	Yes	No	No	No	No	No	Yes	Yes	No	Yes
50th-Percentile Queue Length [veh/ln]	4.49	6.98	30.21	22.88	4.83	3.78	2.29	19.13	21.41	17.51	27.47	60.64
50th-Percentile Queue Length [ft/ln]	112.13	174.42	755.27	572.09	120.66	94.50	57.36	478.34	535.29	437.73	686.67	1515.98
95th-Percentile Queue Length [veh/ln]	7.96	11.31	44.70	35.64	8.43	6.80	4.13	28.02	30.91	27.54	39.44	90.57
95th-Percentile Queue Length [ft/ln]	198.96	282.72	1117.57	890.93	210.73	170.09	103.25	700.42	772.84	688.40	986.05	2264.35

Movement, Approach, & Intersection Results

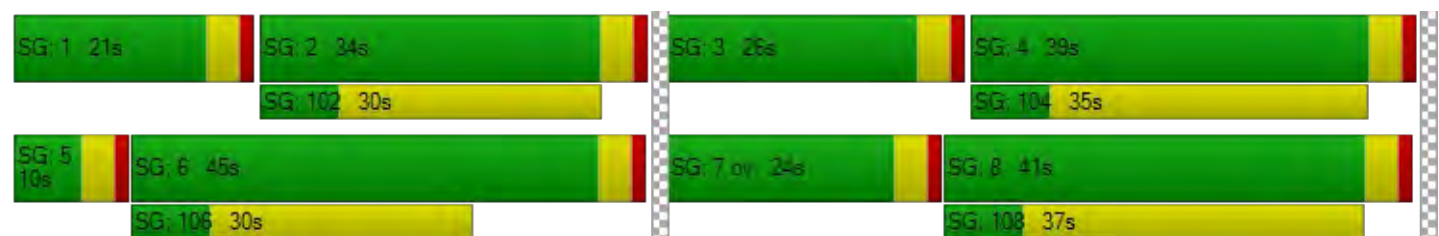
d_M, Delay for Movement [s/veh]	57.04	35.11	171.84	244.05	28.07	27.74	66.87	111.83	124.96	215.01	114.54	197.13
Movement LOS	E	D	F	F	C	C	E	F	F	F	F	F
d_A, Approach Delay [s/veh]	94.61			147.02			109.99			157.10		
Approach LOS	F			F			F			F		
d_I, Intersection Delay [s/veh]	133.89											
Intersection LOS	F											
Intersection V/C	1.407											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	49.50			49.50			49.50			49.50		
I_p,int, Pedestrian LOS Score for Intersection	2.986			3.058			3.331			3.626		
Crosswalk LOS	C			C			C			D		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	617			583			500			683		
d_b, Bicycle Delay [s]	28.70			30.10			33.75			26.00		
I_b,int, Bicycle LOS Score for Intersection	2.745			2.726			2.365			3.563		
Bicycle LOS	B			B			B			D		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 22: SR-57 NB Ramps at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	49.5
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	1.029

Intersection Setup

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	1	0	0	1	1	0	1	0	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			No			No		

Volumes

Name	SR-57 NB Ramps			Shopping Center			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	378	44	150	0	0	68	72	464	167	0	503	11
Total Analysis Volume [veh/h]	1512	176	601	0	0	272	287	1854	669	0	2010	45
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	120
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	12.00

Phasing & Timing

Control Type	Split	Split	Split	Split	Permiss	Overlap	Protecte	Permiss	Unsigna	Permiss	Permiss	Permiss
Signal Group	0	8	0	0	0	5	5	2	0	0	6	0
Auxiliary Signal Groups						5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	-	-	-
Minimum Green [s]	0	6	0	0	0	6	6	6	0	0	6	0
Maximum Green [s]	0	30	0	0	0	30	30	30	0	0	30	0
Amber [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	0.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
Split [s]	0	55	0	0	0	24	24	65	0	0	41	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	0.0	3.0	3.0	3.0	0.0	0.0	3.0	0.0
Walk [s]	0	0	0	0	0	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	0	0	0	0	0	0	22	0	0	19	0
Rest In Walk		No				No		No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	0.0	2.0	2.0	2.0	0.0	0.0	2.0	0.0
Minimum Recall		No				No	No	No			No	
Maximum Recall		No				No	No	No			No	
Pedestrian Recall		No				No	No	No			No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	R	R	L	C	C	C
C, Cycle Length [s]	120	120	120	120	120	120	120	120
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	51	51	51	20	20	61	37	37
g / C, Green / Cycle	0.42	0.42	0.42	0.17	0.17	0.51	0.31	0.31
(v / s)_i Volume / Saturation Flow Rate	0.29	0.44	0.23	0.10	0.17	0.38	0.32	0.29
s, saturation flow rate [veh/h]	3277	1706	2665	2665	1687	4826	4826	1745
c, Capacity [veh/h]	1389	723	1130	445	282	2458	1491	539
d1, Uniform Delay [s]	27.95	34.54	25.69	46.33	49.95	23.44	41.44	40.59
k, delay calibration	0.11	0.49	0.11	0.11	0.22	0.50	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.59	40.85	0.39	1.36	39.86	2.20	32.50	28.76
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.68	1.03	0.53	0.61	1.02	0.75	1.03	0.95
d, Delay for Lane Group [s/veh]	28.54	75.39	26.08	47.69	89.80	25.64	73.94	69.35
Lane Group LOS	C	F	C	D	F	C	F	E
Critical Lane Group	No	Yes	No	No	Yes	No	Yes	No
50th-Percentile Queue Length [veh/ln]	10.91	28.67	6.38	3.85	11.54	14.03	18.98	18.98
50th-Percentile Queue Length [ft/ln]	272.69	716.77	159.58	96.30	288.51	350.81	474.49	474.55
95th-Percentile Queue Length [veh/ln]	16.32	38.28	10.53	6.93	17.27	20.18	26.69	26.13
95th-Percentile Queue Length [ft/ln]	408.10	957.09	263.17	173.35	431.64	504.39	667.33	653.18

Movement, Approach, & Intersection Results

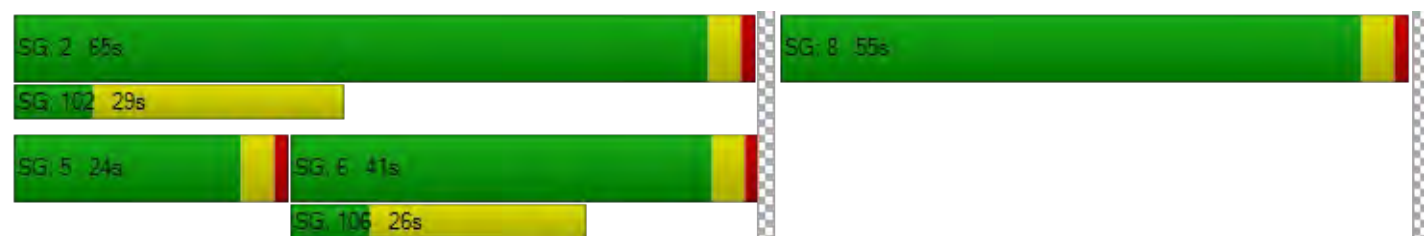
d_M, Delay for Movement [s/veh]	45.01	75.39	26.08	0.00	0.00	47.69	89.80	25.64	0.00	0.00	72.87	69.35
Movement LOS	D	E	C			D	F	C			E	E
d_A, Approach Delay [s/veh]	43.13			47.69			34.25			72.79		
Approach LOS	D			D			C			E		
d_I, Intersection Delay [s/veh]	49.52											
Intersection LOS	D											
Intersection V/C	1.029											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0	11.0	0.0	0.0
M_corner, Corner Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	49.50	49.50	0.00	0.00
I_p,int, Pedestrian LOS Score for Intersection	2.839	2.207	0.000	0.000
Crosswalk LOS	C	B	F	F
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	850	0	1017	617
d_b, Bicycle Delay [s]	19.84	60.00	14.50	28.70
I_b,int, Bicycle LOS Score for Intersection	5.336	4.132	2.737	2.407
Bicycle LOS	F	D	B	B

Sequence

Ring 1	-	2	-	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report

Intersection 23: Associated Road at Imperial Highway

Control Type:	Signalized	Delay (sec / veh):	37.3
Analysis Method:	HCM 6th Edition	Level Of Service:	D
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.823

Intersection Setup

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Pocket	1	0	0	1	0	1	1	0	0	1	0	0
Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Speed [mph]	30.00			30.00			30.00			30.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	Associated Road			Associated Road			Imperial Highway			Imperial Highway		
Base Volume Input [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right-Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	74	56	37	89	64	46	56	425	63	40	414	57
Total Analysis Volume [veh/h]	296	223	146	355	254	182	222	1698	253	159	1654	226
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	115
Coordination Type	Time of Day Pattern Coordinated
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	LeadGreen
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	0	1	6	0
Auxiliary Signal Groups												
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	6	6	0	6	6	0	6	6	0	6	6	0
Maximum Green [s]	30	30	0	30	30	0	30	30	0	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	16	39	0	18	41	0	22	41	0	17	36	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	7	0	0	7	0	0	7	0	0	7	0
Pedestrian Clearance [s]	0	28	0	0	29	0	0	26	0	0	25	0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No		No	No	
Maximum Recall	No	No		No	No		No	No		No	No	
Pedestrian Recall	No	No		No	No		No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	C	L	C	C	L	C	C	L	C	C
C, Cycle Length [s]	115	115	115	115	115	115	115	115	115	115	115	115
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	12	16	16	14	18	18	17	56	56	13	52	52
g / C, Green / Cycle	0.10	0.14	0.14	0.12	0.16	0.16	0.15	0.49	0.49	0.11	0.45	0.45
(v / s)_i Volume / Saturation Flow Rate	0.09	0.11	0.11	0.11	0.13	0.13	0.13	0.39	0.39	0.09	0.29	0.29
s, saturation flow rate [veh/h]	3277	1772	1542	3277	1772	1529	1687	3373	1658	1687	4826	1635
c, Capacity [veh/h]	344	245	213	400	276	238	249	1654	813	186	2185	740
d1, Uniform Delay [s]	50.68	48.04	48.12	49.73	47.25	47.28	48.15	24.33	24.57	50.31	24.29	24.30
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.50	0.50	0.11	0.50	0.50
l, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	6.38	5.96	7.20	6.71	7.07	8.30	10.57	3.86	8.08	10.71	1.47	4.26
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.86	0.80	0.81	0.89	0.85	0.85	0.89	0.79	0.80	0.86	0.64	0.64
d, Delay for Lane Group [s/veh]	57.06	54.00	55.32	56.44	54.32	55.58	58.71	28.19	32.66	61.02	25.76	28.56
Lane Group LOS	E	D	E	E	D	E	E	C	C	E	C	C
Critical Lane Group	Yes	No	No	No	No	Yes	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	4.49	5.84	5.23	5.38	7.02	6.17	6.96	15.06	16.11	5.04	9.92	10.66
50th-Percentile Queue Length [ft/ln]	112.26	146.07	130.72	134.62	175.61	154.37	173.98	376.53	402.86	126.00	248.04	266.46
95th-Percentile Queue Length [veh/ln]	7.97	9.81	8.98	9.19	11.37	10.25	11.29	21.43	22.70	8.72	15.09	16.01
95th-Percentile Queue Length [ft/ln]	199.14	245.18	224.47	229.76	284.27	256.26	282.14	535.64	567.45	218.04	377.18	400.31

Movement, Approach, & Intersection Results

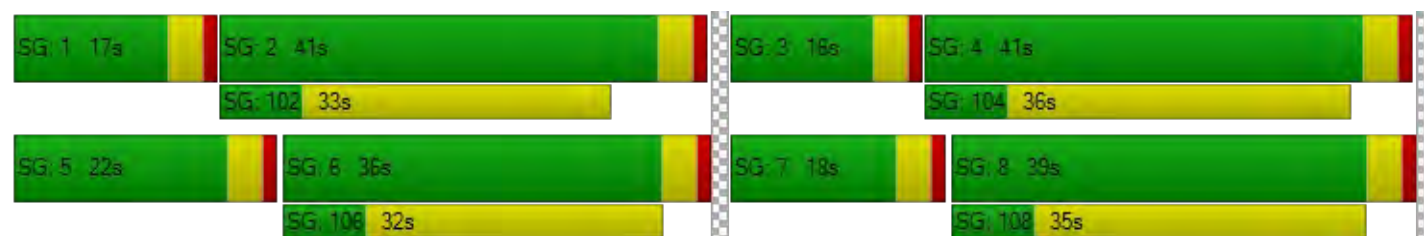
d_M, Delay for Movement [s/veh]	57.06	54.16	55.32	56.44	54.42	55.58	58.71	29.24	32.66	61.02	26.18	28.56
Movement LOS	E	D	E	E	D	E	E	C	C	E	C	C
d_A, Approach Delay [s/veh]	55.70			55.60			32.65			29.16		
Approach LOS	E			E			C			C		
d_I, Intersection Delay [s/veh]	37.30											
Intersection LOS	D											
Intersection V/C	0.823											

Other Modes

g_Walk,mi, Effective Walk Time [s]	11.0			11.0			11.0			11.0		
M_corner, Corner Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
M_CW, Crosswalk Circulation Area [ft ² /ped]	0.00			0.00			0.00			0.00		
d_p, Pedestrian Delay [s]	47.03			47.03			47.03			47.03		
I_p,int, Pedestrian LOS Score for Intersection	2.681			2.702			3.262			3.254		
Crosswalk LOS	B			B			C			C		
s_b, Saturation Flow Rate of the bicycle lane	2000			2000			2000			2000		
c_b, Capacity of the bicycle lane [bicycles/h]	609			643			643			557		
d_b, Bicycle Delay [s]	27.83			26.45			26.45			29.95		
I_b,int, Bicycle LOS Score for Intersection	2.108			2.212			2.755			2.401		
Bicycle LOS	B			B			C			B		

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



APPENDIX E

YEAR 2040 MODELING WORKSHEETS

1. Puente Street at Lambert Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	50	NORTHBOUND	
BOUND	THRU	144	IN ...	375
	RIGHT	95	OUT ...	747
SOUTH	LEFT	145	SOUTHBOUND	
BOUND	THRU	314	IN ...	736
	RIGHT	73	OUT ...	339
EAST	LEFT	81	EASTBOUND	
BOUND	THRU	1159	IN ...	1532
	RIGHT	123	OUT ...	1018
WEST	LEFT	111	WESTBOUND	
BOUND	THRU	1101	IN ...	1136
	RIGHT	55	OUT ...	1676

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	50	55
BOUND	THRU	144	190
	RIGHT	95	141
SOUTH	LEFT	145	214
BOUND	THRU	314	458
	RIGHT	73	79
EAST	LEFT	81	87
BOUND	THRU	1,159	1,322
	RIGHT	123	139
WEST	LEFT	111	150
BOUND	THRU	1,101	1,387
	RIGHT	55	67

2. Brea Boulevard at Lambert Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	196	NORTHBOUND	
BOUND	THRU	317	IN ...	619
	RIGHT	137	OUT ...	1622
SOUTH	LEFT	107	SOUTHBOUND	
BOUND	THRU	841	IN ...	1334
	RIGHT	246	OUT ...	535
EAST	LEFT	84	EASTBOUND	
BOUND	THRU	1118	IN ...	1959
	RIGHT	278	OUT ...	1602
WEST	LEFT	188	WESTBOUND	
BOUND	THRU	1148	IN ...	1472
	RIGHT	133	OUT ...	1625

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	196	235
BOUND	THRU	317	356
	RIGHT	137	158
SOUTH	LEFT	107	128
BOUND	THRU	841	976
	RIGHT	246	259
EAST	LEFT	84	112
BOUND	THRU	1,118	1,405
	RIGHT	278	440
WEST	LEFT	188	219
BOUND	THRU	1,148	1,429
	RIGHT	133	144

3. State College Boulevard at Lambert Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	144	NORTHBOUND	
BOUND	THRU	183	IN ...	434
	RIGHT	127	OUT ...	1,465
SOUTH	LEFT	824	SOUTHBOUND	
BOUND	THRU	554	IN ...	1,575
	RIGHT	8	OUT ...	671
EAST	LEFT	13	EASTBOUND	
BOUND	THRU	1162	IN ...	1,627
	RIGHT	187	OUT ...	1,595
WEST	LEFT	410	WESTBOUND	
BOUND	THRU	1447	IN ...	2,422
	RIGHT	509	OUT ...	2,325

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	144	188
BOUND	THRU	183	197
	RIGHT	127	219
SOUTH	LEFT	824	858
BOUND	THRU	554	709
	RIGHT	8	9
EAST	LEFT	13	15
BOUND	THRU	1,162	1,346
	RIGHT	187	266
WEST	LEFT	410	490
BOUND	THRU	1,447	1,736
	RIGHT	509	550

4. SR-57 SB Ramps at Lambert Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	0	NORTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	660
SOUTH	LEFT	977	SOUTHBOUND	
BOUND	THRU	0	IN ...	1,552
	RIGHT	489	OUT ...	0
EAST	LEFT	0	EASTBOUND	
BOUND	THRU	1580	IN ...	2,330
	RIGHT	538	OUT ...	2,475
WEST	LEFT	207	WESTBOUND	
BOUND	THRU	1930	IN ...	2,193
	RIGHT	0	OUT ...	2,940

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
SOUTH	LEFT	977	1,082
BOUND	THRU	0	0
	RIGHT	489	690
EAST	LEFT	0	0
BOUND	THRU	1,580	1,858
	RIGHT	538	606
WEST	LEFT	207	224
BOUND	THRU	1,930	2,133
	RIGHT	0	0

5. SR-57 NB Ramps at Lambert Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	970	NORTHBOUND	
BOUND	THRU	0	IN ...	1,518
	RIGHT	459	OUT ...	0
SOUTH	LEFT	0	SOUTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	728
EAST	LEFT	262	EASTBOUND	
BOUND	THRU	2285	IN ...	2,930
	RIGHT	0	OUT ...	2,204
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	1178	IN ...	1,524
	RIGHT	452	OUT ...	3,042

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	970	1,080
BOUND	THRU	0	0
	RIGHT	459	497
SOUTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
EAST	LEFT	262	398
BOUND	THRU	2,285	2,602
	RIGHT	0	0
WEST	LEFT	0	0
BOUND	THRU	1,178	1,319
	RIGHT	452	489

6. Santa Fe Road/Kraemer Boulevard at Lambert Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	272	NORTHBOUND	
BOUND	THRU	105	IN ...	161
	RIGHT	29	OUT ...	1,786
SOUTH	LEFT	18	SOUTHBOUND	
BOUND	THRU	200	IN ...	520
	RIGHT	302	OUT ...	207
EAST	LEFT	90	EASTBOUND	
BOUND	THRU	602	IN ...	2,081
	RIGHT	988	OUT ...	996
WEST	LEFT	249	WESTBOUND	
BOUND	THRU	677	IN ...	953
	RIGHT	12	OUT ...	724

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	272	294
BOUND	THRU	105	113
	RIGHT	29	36
SOUTH	LEFT	18	19
BOUND	THRU	200	231
	RIGHT	302	327
EAST	LEFT	90	135
BOUND	THRU	602	693
	RIGHT	988	1,253
WEST	LEFT	249	302
BOUND	THRU	677	777
	RIGHT	12	17

7. Brea Boulevard at Birch Street

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	26	NORTHBOUND	
BOUND	THRU	404	IN ...	652
	RIGHT	181	OUT ...	1,353
SOUTH	LEFT	320	SOUTHBOUND	
BOUND	THRU	950	IN ...	1,623
	RIGHT	57	OUT ...	603
EAST	LEFT	46	EASTBOUND	
BOUND	THRU	65	IN ...	122
	RIGHT	11	OUT ...	149
WEST	LEFT	247	WESTBOUND	
BOUND	THRU	66	IN ...	515
	RIGHT	216	OUT ...	806

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	26	30
BOUND	THRU	404	480
	RIGHT	181	253
SOUTH	LEFT	320	477
BOUND	THRU	950	1,086
	RIGHT	57	60
EAST	LEFT	46	49
BOUND	THRU	65	76
	RIGHT	11	12
WEST	LEFT	247	333
BOUND	THRU	66	71
	RIGHT	216	236

8. Randolph Avenue at Birch Street

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	22	NORTHBOUND	
BOUND	THRU	38	IN ...	121
	RIGHT	81	OUT ...	364
SOUTH	LEFT	35	SOUTHBOUND	
BOUND	THRU	33	IN ...	100
	RIGHT	24	OUT ...	86
EAST	LEFT	37	EASTBOUND	
BOUND	THRU	528	IN ...	890
	RIGHT	85	OUT ...	478
WEST	LEFT	67	WESTBOUND	
BOUND	THRU	446	IN ...	559
	RIGHT	41	OUT ...	743

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	22	24
BOUND	THRU	38	41
	RIGHT	81	87
SOUTH	LEFT	35	38
BOUND	THRU	33	51
	RIGHT	24	26
EAST	LEFT	37	40
BOUND	THRU	528	645
	RIGHT	85	208
WEST	LEFT	67	105
BOUND	THRU	446	551
	RIGHT	41	44

9. State College Boulevard at Birch Street

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	72	NORTHBOUND	
BOUND	THRU	114	IN ...	224
	RIGHT	91	OUT ...	933
SOUTH	LEFT	598	SOUTHBOUND	
BOUND	THRU	742	IN ...	1750
	RIGHT	138	OUT ...	423
EAST	LEFT	71	EASTBOUND	
BOUND	THRU	478	IN ...	693
	RIGHT	45	OUT ...	744
WEST	LEFT	74	WESTBOUND	
BOUND	THRU	529	IN ...	887
	RIGHT	260	OUT ...	1454

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	72	78
BOUND	THRU	114	177
	RIGHT	91	99
SOUTH	LEFT	598	792
BOUND	THRU	742	932
	RIGHT	138	214
EAST	LEFT	71	104
BOUND	THRU	478	578
	RIGHT	45	48
WEST	LEFT	74	77
BOUND	THRU	529	576
	RIGHT	260	289

10. S Associated Road at Birch Street

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	223	NORTHBOUND	
BOUND	THRU	6	IN ...	525
	RIGHT	292	OUT ...	860
SOUTH	LEFT	52	SOUTHBOUND	
BOUND	THRU	27	IN ...	87
	RIGHT	8	OUT ...	18
EAST	LEFT	2	EASTBOUND	
BOUND	THRU	866	IN ...	1432
	RIGHT	288	OUT ...	973
WEST	LEFT	325	WESTBOUND	
BOUND	THRU	711	IN ...	1202
	RIGHT	10	OUT ...	1396

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	223	242
BOUND	THRU	6	6
	RIGHT	292	324
SOUTH	LEFT	52	57
BOUND	THRU	27	30
	RIGHT	8	8
EAST	LEFT	2	2
BOUND	THRU	866	1,038
	RIGHT	288	393
WEST	LEFT	325	437
BOUND	THRU	711	755
	RIGHT	10	10

11. N Associated Road at Birch Street

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	3	NORTHBOUND	
BOUND	THRU	3	IN ...	11
	RIGHT	5	OUT ...	26
SOUTH	LEFT	149	SOUTHBOUND	
BOUND	THRU	2	IN ...	754
	RIGHT	428	OUT ...	393
EAST	LEFT	303	EASTBOUND	
BOUND	THRU	794	IN ...	1,299
	RIGHT	16	OUT ...	1,271
WEST	LEFT	8	WESTBOUND	
BOUND	THRU	684	IN ...	895
	RIGHT	77	OUT ...	1,268

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	3	3
BOUND	THRU	3	3
	RIGHT	5	6
SOUTH	LEFT	149	261
BOUND	THRU	2	2
	RIGHT	428	489
EAST	LEFT	303	328
BOUND	THRU	794	1,001
	RIGHT	16	17
WEST	LEFT	8	10
BOUND	THRU	684	779
	RIGHT	77	101

12. Kraemer Boulevard at Birch Street

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	127	NORTHBOUND	
BOUND	THRU	205	IN ...	250
	RIGHT	87	OUT ...	1,874
SOUTH	LEFT	419	SOUTHBOUND	
BOUND	THRU	939	IN ...	1,981
	RIGHT	169	OUT ...	156
EAST	LEFT	35	EASTBOUND	
BOUND	THRU	523	IN ...	1,224
	RIGHT	328	OUT ...	820
WEST	LEFT	59	WESTBOUND	
BOUND	THRU	403	IN ...	579
	RIGHT	205	OUT ...	1,184

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	127	138
BOUND	THRU	205	222
	RIGHT	87	95
SOUTH	LEFT	419	451
BOUND	THRU	939	1,280
	RIGHT	169	250
EAST	LEFT	35	42
BOUND	THRU	523	671
	RIGHT	328	533
WEST	LEFT	59	64
BOUND	THRU	403	446
	RIGHT	205	222

13. Randolph Avenue at Madison Way

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	24	NORTHBOUND	
BOUND	THRU	124	IN ...	136
	RIGHT	8	OUT ...	346
SOUTH	LEFT	6	SOUTHBOUND	
BOUND	THRU	113	IN ...	311
	RIGHT	13	OUT ...	134
EAST	LEFT	30	EASTBOUND	
BOUND	THRU	2	IN ...	86
	RIGHT	54	OUT ...	37
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	16

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	24	26
BOUND	THRU	124	134
	RIGHT	8	8
SOUTH	LEFT	6	9
BOUND	THRU	113	285
	RIGHT	13	19
EAST	LEFT	30	33
BOUND	THRU	2	2
	RIGHT	54	61
WEST	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0

14. Randolph Avenue at Brea Mall

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	12	NORTHBOUND	
BOUND	THRU	155	IN ...	35
	RIGHT	63	OUT ...	158
SOUTH	LEFT	14	SOUTHBOUND	
BOUND	THRU	134	IN ...	152
	RIGHT	6	OUT ...	-34
EAST	LEFT	1	EASTBOUND	
BOUND	THRU	0	IN ...	2
	RIGHT	1	OUT ...	18
WEST	LEFT	25	WESTBOUND	
BOUND	THRU	0	IN ...	30
	RIGHT	5	OUT ...	77

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	12	13
BOUND	THRU	155	168
	RIGHT	63	68
SOUTH	LEFT	14	21
BOUND	THRU	134	145
	RIGHT	6	8
EAST	LEFT	1	1
BOUND	THRU	0	0
	RIGHT	1	3
WEST	LEFT	25	32
BOUND	THRU	0	0
	RIGHT	5	5

15. Brea Mall South at State College Boulevard

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	30	NORTHBOUND	
BOUND	THRU	5	IN ...	49
	RIGHT	14	OUT ...	42
SOUTH	LEFT	3	SOUTHBOUND	
BOUND	THRU	2	IN ...	31
	RIGHT	26	OUT ...	89
EAST	LEFT	73	EASTBOUND	
BOUND	THRU	227	IN ...	261
	RIGHT	14	OUT ...	434
WEST	LEFT	26	WESTBOUND	
BOUND	THRU	304	IN ...	415
	RIGHT	11	OUT ...	191

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	30	32
BOUND	THRU	5	5
	RIGHT	14	15
SOUTH	LEFT	3	3
BOUND	THRU	2	2
	RIGHT	26	27
EAST	LEFT	73	79
BOUND	THRU	227	300
	RIGHT	14	15
WEST	LEFT	26	28
BOUND	THRU	304	459
	RIGHT	11	13

16. Harbor Boulevard at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	288	NORTHBOUND	
BOUND	THRU	572	IN ...	1,069
	RIGHT	247	OUT ...	2,007
SOUTH	LEFT	136	SOUTHBOUND	
BOUND	THRU	1182	IN ...	1,921
	RIGHT	266	OUT ...	956
EAST	LEFT	174	EASTBOUND	
BOUND	THRU	1234	IN ...	2,138
	RIGHT	344	OUT ...	1,596
WEST	LEFT	269	WESTBOUND	
BOUND	THRU	1089	IN ...	1,592
	RIGHT	94	OUT ...	2,161

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	288	312
BOUND	THRU	572	721
	RIGHT	247	282
SOUTH	LEFT	136	244
BOUND	THRU	1,182	1,395
	RIGHT	266	314
EAST	LEFT	174	308
BOUND	THRU	1,234	1,634
	RIGHT	344	373
WEST	LEFT	269	312
BOUND	THRU	1,089	1,230
	RIGHT	94	170

17. Puente Street at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	56	NORTHBOUND	
BOUND	THRU	108	IN ...	362
	RIGHT	145	OUT ...	211
SOUTH	LEFT	114	SOUTHBOUND	
BOUND	THRU	80	IN ...	464
	RIGHT	127	OUT ...	589
EAST	LEFT	208	EASTBOUND	
BOUND	THRU	1251	IN ...	1949
	RIGHT	74	OUT ...	1527
WEST	LEFT	46	WESTBOUND	
BOUND	THRU	1138	IN ...	1473
	RIGHT	149	OUT ...	1922

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	56	66
BOUND	THRU	108	132
	RIGHT	145	164
SOUTH	LEFT	114	170
BOUND	THRU	80	96
	RIGHT	127	198
EAST	LEFT	208	285
BOUND	THRU	1,251	1,588
	RIGHT	74	80
WEST	LEFT	46	56
BOUND	THRU	1,138	1,489
	RIGHT	149	172

18. Brea Boulevard at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	406	NORTHBOUND	
BOUND	THRU	430	IN ...	942
	RIGHT	135	OUT ...	1589
SOUTH	LEFT	120	SOUTHBOUND	
BOUND	THRU	899	IN ...	1319
	RIGHT	155	OUT ...	655
EAST	LEFT	124	EASTBOUND	
BOUND	THRU	1408	IN ...	2167
	RIGHT	329	OUT ...	1927
WEST	LEFT	143	WESTBOUND	
BOUND	THRU	1342	IN ...	1643
	RIGHT	60	OUT ...	1901

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	406	440
BOUND	THRU	430	497
	RIGHT	135	146
SOUTH	LEFT	120	148
BOUND	THRU	899	1,029
	RIGHT	155	210
EAST	LEFT	124	165
BOUND	THRU	1,408	1,632
	RIGHT	329	391
WEST	LEFT	143	169
BOUND	THRU	1,342	1,675
	RIGHT	60	77

19. Randolph Avenue at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	14	NORTHBOUND	
BOUND	THRU	13	IN ...	71
	RIGHT	50	OUT ...	50
SOUTH	LEFT	119	SOUTHBOUND	
BOUND	THRU	13	IN ...	158
	RIGHT	28	OUT ...	9
EAST	LEFT	55	EASTBOUND	
BOUND	THRU	1444	IN ...	1,746
	RIGHT	9	OUT ...	1,536
WEST	LEFT	23	WESTBOUND	
BOUND	THRU	1396	IN ...	1,638
	RIGHT	136	OUT ...	2,018

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	14	15
BOUND	THRU	13	14
	RIGHT	50	64
SOUTH	LEFT	119	138
BOUND	THRU	13	14
	RIGHT	28	30
EAST	LEFT	55	60
BOUND	THRU	1,444	1,816
	RIGHT	9	9
WEST	LEFT	23	33
BOUND	THRU	1,396	1,755
	RIGHT	136	147

20. State College Boulevard at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	92	NORTHBOUND	
BOUND	THRU	130	IN ...	656
	RIGHT	378	OUT ...	1,042
SOUTH	LEFT	80	SOUTHBOUND	
BOUND	THRU	325	IN ...	504
	RIGHT	25	OUT ...	236
EAST	LEFT	31	EASTBOUND	
BOUND	THRU	1446	IN ...	2,045
	RIGHT	163	OUT ...	1,645
WEST	LEFT	410	WESTBOUND	
BOUND	THRU	1445	IN ...	1,937
	RIGHT	128	OUT ...	2,218

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	92	136
BOUND	THRU	130	154
	RIGHT	378	398
SOUTH	LEFT	80	184
BOUND	THRU	325	397
	RIGHT	25	33
EAST	LEFT	31	33
BOUND	THRU	1,446	1,745
	RIGHT	163	256
WEST	LEFT	410	443
BOUND	THRU	1,445	1,798
	RIGHT	128	180

21. SR-57 SB Ramps at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	0	NORTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	609
SOUTH	LEFT	547	SOUTHBOUND	
BOUND	THRU	0	IN ...	1,157
	RIGHT	438	OUT ...	161
EAST	LEFT	0	EASTBOUND	
BOUND	THRU	1343	IN ...	2,266
	RIGHT	609	OUT ...	1,959
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	1567	IN ...	1,786
	RIGHT	171	OUT ...	2,480

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
SOUTH	LEFT	547	792
BOUND	THRU	0	0
	RIGHT	438	508
EAST	LEFT	0	0
BOUND	THRU	1,343	1,688
	RIGHT	609	783
WEST	LEFT	0	0
BOUND	THRU	1,567	1,936
	RIGHT	171	205

22. SR-57 NB Ramps at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	791	NORTHBOUND	
BOUND	THRU	167	IN ...	1,742
	RIGHT	746	OUT ...	532
SOUTH	LEFT	0	SOUTHBOUND	
BOUND	THRU	0	IN ...	90
	RIGHT	90	OUT ...	325
EAST	LEFT	152	EASTBOUND	
BOUND	THRU	1220	IN ...	2,491
	RIGHT	506	OUT ...	2,248
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	1333	IN ...	1,419
	RIGHT	6	OUT ...	2,638

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	791	1,053
BOUND	THRU	167	198
	RIGHT	746	848
SOUTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	90	142
EAST	LEFT	152	187
BOUND	THRU	1,220	1,790
	RIGHT	506	532
WEST	LEFT	0	0
BOUND	THRU	1,333	1,411
	RIGHT	6	21

23. Associated Road at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	137	NORTHBOUND	
BOUND	THRU	192	IN ...	395
	RIGHT	66	OUT ...	777
SOUTH	LEFT	138	SOUTHBOUND	
BOUND	THRU	305	IN ...	815
	RIGHT	136	OUT ...	439
EAST	LEFT	138	EASTBOUND	
BOUND	THRU	1709	IN ...	2,611
	RIGHT	92	OUT ...	1,818
WEST	LEFT	85	WESTBOUND	
BOUND	THRU	1465	IN ...	1,726
	RIGHT	78	OUT ...	2,512

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	137	148
BOUND	THRU	192	218
	RIGHT	66	69
SOUTH	LEFT	138	166
BOUND	THRU	305	491
	RIGHT	136	158
EAST	LEFT	138	172
BOUND	THRU	1,709	2,277
	RIGHT	92	164
WEST	LEFT	85	123
BOUND	THRU	1,465	1,635
	RIGHT	78	84

24. Castlegate Lane/Placentia Avenue at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	160	NORTHBOUND	
BOUND	THRU	11	IN ...	263
	RIGHT	134	OUT ...	698
SOUTH	LEFT	23	SOUTHBOUND	
BOUND	THRU	26	IN ...	62
	RIGHT	13	OUT ...	53
EAST	LEFT	12	EASTBOUND	
BOUND	THRU	1672	IN ...	2,613
	RIGHT	330	OUT ...	1,610
WEST	LEFT	162	WESTBOUND	
BOUND	THRU	1339	IN ...	1,710
	RIGHT	30	OUT ...	2,288

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	160	176
BOUND	THRU	11	12
	RIGHT	134	145
SOUTH	LEFT	23	25
BOUND	THRU	26	28
	RIGHT	13	14
EAST	LEFT	12	13
BOUND	THRU	1,672	2,144
	RIGHT	330	461
WEST	LEFT	162	209
BOUND	THRU	1,339	1,465
	RIGHT	30	31

25. Kraemer Boulevard at Imperial Highway

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	160	NORTHBOUND	
BOUND	THRU	226	IN ...	395
	RIGHT	79	OUT ...	1237
SOUTH	LEFT	302	SOUTHBOUND	
BOUND	THRU	596	IN ...	1494
	RIGHT	103	OUT ...	427
EAST	LEFT	125	EASTBOUND	
BOUND	THRU	1165	IN ...	2004
	RIGHT	223	OUT ...	1424
WEST	LEFT	66	WESTBOUND	
BOUND	THRU	965	IN ...	1229
	RIGHT	82	OUT ...	2035

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	160	176
BOUND	THRU	226	245
	RIGHT	79	85
SOUTH	LEFT	302	437
BOUND	THRU	596	876
	RIGHT	103	179
EAST	LEFT	125	167
BOUND	THRU	1,165	1,535
	RIGHT	223	298
WEST	LEFT	66	71
BOUND	THRU	965	1,093
	RIGHT	82	88

26. Brea Boulevard at Bastanchury Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	138	NORTHBOUND	
BOUND	THRU	527	IN ...	874
	RIGHT	238	OUT ...	1511
SOUTH	LEFT	225	SOUTHBOUND	
BOUND	THRU	897	IN ...	1564
	RIGHT	380	OUT ...	892
EAST	LEFT	237	EASTBOUND	
BOUND	THRU	1064	IN ...	1600
	RIGHT	144	OUT ...	1328
WEST	LEFT	287	WESTBOUND	
BOUND	THRU	1076	IN ...	1393
	RIGHT	134	OUT ...	1700

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	138	149
BOUND	THRU	527	603
	RIGHT	238	255
SOUTH	LEFT	225	248
BOUND	THRU	897	1,008
	RIGHT	380	411
EAST	LEFT	237	256
BOUND	THRU	1,064	1,196
	RIGHT	144	165
WEST	LEFT	287	339
BOUND	THRU	1,076	1,168
	RIGHT	134	140

27. State College Boulevard at Bastanchury Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	257	NORTHBOUND	
BOUND	THRU	240	IN ...	492
	RIGHT	14	OUT ...	1,965
SOUTH	LEFT	144	SOUTHBOUND	
BOUND	THRU	862	IN ...	1,397
	RIGHT	209	OUT ...	567
EAST	LEFT	244	EASTBOUND	
BOUND	THRU	824	IN ...	1,748
	RIGHT	507	OUT ...	1,322
WEST	LEFT	23	WESTBOUND	
BOUND	THRU	955	IN ...	1,082
	RIGHT	104	OUT ...	866

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	257	278
BOUND	THRU	240	282
	RIGHT	14	15
SOUTH	LEFT	144	155
BOUND	THRU	862	1,137
	RIGHT	209	226
EAST	LEFT	244	264
BOUND	THRU	824	895
	RIGHT	507	788
WEST	LEFT	23	40
BOUND	THRU	955	1,037
	RIGHT	104	107

28. Placentia Avenue at Bastanchury Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	96	NORTHBOUND	
BOUND	THRU	211	IN ...	419
	RIGHT	136	OUT ...	988
SOUTH	LEFT	116	SOUTHBOUND	
BOUND	THRU	374	IN ...	635
	RIGHT	21	OUT ...	323
EAST	LEFT	64	EASTBOUND	
BOUND	THRU	678	IN ...	1,002
	RIGHT	153	OUT ...	963
WEST	LEFT	296	WESTBOUND	
BOUND	THRU	721	IN ...	1,238
	RIGHT	88	OUT ...	1,019

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	96	106
BOUND	THRU	211	231
	RIGHT	136	147
SOUTH	LEFT	116	134
BOUND	THRU	374	473
	RIGHT	21	27
EAST	LEFT	64	69
BOUND	THRU	678	753
	RIGHT	153	186
WEST	LEFT	296	329
BOUND	THRU	721	830
	RIGHT	88	96

29. Kraemer Boulevard at Bastanchury Road

AM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	146	NORTHBOUND	
BOUND	THRU	504	IN ...	701
	RIGHT	135	OUT ...	1,376
SOUTH	LEFT	60	SOUTHBOUND	
BOUND	THRU	751	IN ...	1,311
	RIGHT	187	OUT ...	729
EAST	LEFT	203	EASTBOUND	
BOUND	THRU	631	IN ...	1,066
	RIGHT	145	OUT ...	1,238
WEST	LEFT	143	WESTBOUND	
BOUND	THRU	772	IN ...	1,130
	RIGHT	69	OUT ...	866

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	146	158
BOUND	THRU	504	548
	RIGHT	135	146
SOUTH	LEFT	60	70
BOUND	THRU	751	1,016
	RIGHT	187	226
EAST	LEFT	203	212
BOUND	THRU	631	674
	RIGHT	145	179
WEST	LEFT	143	181
BOUND	THRU	772	876
	RIGHT	69	74

1. Puente Street at Lambert Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	110	NORTHBOUND	
BOUND	THRU	361	IN ...	640
	RIGHT	129	OUT ...	332
SOUTH	LEFT	85	SOUTHBOUND	
BOUND	THRU	149	IN ...	448
	RIGHT	123	OUT ...	736
EAST	LEFT	80	EASTBOUND	
BOUND	THRU	1057	IN ...	1078
	RIGHT	66	OUT ...	1786
WEST	LEFT	76	WESTBOUND	
BOUND	THRU	1400	IN ...	1819
	RIGHT	128	OUT ...	1131

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	110	119
BOUND	THRU	361	437
	RIGHT	129	140
SOUTH	LEFT	85	104
BOUND	THRU	149	189
	RIGHT	123	155
EAST	LEFT	80	100
BOUND	THRU	1,057	1,446
	RIGHT	66	71
WEST	LEFT	76	84
BOUND	THRU	1,400	1,537
	RIGHT	128	198

2. Brea Boulevard at Lambert Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	399	NORTHBOUND	
BOUND	THRU	648	IN ...	1394
	RIGHT	171	OUT ...	862
SOUTH	LEFT	66	SOUTHBOUND	
BOUND	THRU	295	IN ...	511
	RIGHT	91	OUT ...	1018
EAST	LEFT	150	EASTBOUND	
BOUND	THRU	1117	IN ...	1578
	RIGHT	355	OUT ...	1999
WEST	LEFT	204	WESTBOUND	
BOUND	THRU	1173	IN ...	1735
	RIGHT	74	OUT ...	1339

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	399	456
BOUND	THRU	648	761
	RIGHT	171	195
SOUTH	LEFT	66	84
BOUND	THRU	295	321
	RIGHT	91	115
EAST	LEFT	150	164
BOUND	THRU	1,117	1,528
	RIGHT	355	386
WEST	LEFT	204	236
BOUND	THRU	1,173	1,429
	RIGHT	74	93

3. State College Boulevard at Lambert Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	288	NORTHBOUND	
BOUND	THRU	549	IN ...	1,205
	RIGHT	241	OUT ...	922
SOUTH	LEFT	519	SOUTHBOUND	
BOUND	THRU	354	IN ...	887
	RIGHT	14	OUT ...	1,365
EAST	LEFT	36	EASTBOUND	
BOUND	THRU	1086	IN ...	1,338
	RIGHT	233	OUT ...	1,568
WEST	LEFT	301	WESTBOUND	
BOUND	THRU	960	IN ...	2,267
	RIGHT	653	OUT ...	1,844

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	288	350
BOUND	THRU	549	597
	RIGHT	241	316
SOUTH	LEFT	519	562
BOUND	THRU	354	383
	RIGHT	14	16
EAST	LEFT	36	39
BOUND	THRU	1,086	1,450
	RIGHT	233	287
WEST	LEFT	301	411
BOUND	THRU	960	1,202
	RIGHT	653	732

4. SR-57 SB Ramps at Lambert Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	0	NORTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	936
SOUTH	LEFT	422	SOUTHBOUND	
BOUND	THRU	0	IN ...	1,136
	RIGHT	664	OUT ...	0
EAST	LEFT	0	EASTBOUND	
BOUND	THRU	1062	IN ...	1,770
	RIGHT	710	OUT ...	2,550
WEST	LEFT	215	WESTBOUND	
BOUND	THRU	1533	IN ...	2,088
	RIGHT	0	OUT ...	1,507

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
SOUTH	LEFT	422	457
BOUND	THRU	0	0
	RIGHT	664	841
EAST	LEFT	0	0
BOUND	THRU	1,062	1,399
	RIGHT	710	848
WEST	LEFT	215	242
BOUND	THRU	1,533	1,846
	RIGHT	0	0

5. SR-57 NB Ramps at Lambert Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	606	NORTHBOUND	
BOUND	THRU	0	IN ...	1,008
	RIGHT	248	OUT ...	0
SOUTH	LEFT	0	SOUTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	824
EAST	LEFT	339	EASTBOUND	
BOUND	THRU	1340	IN ...	1,702
	RIGHT	0	OUT ...	1,921
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	975	IN ...	1,738
	RIGHT	487	OUT ...	1,703

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	606	709
BOUND	THRU	0	0
	RIGHT	248	299
SOUTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
EAST	LEFT	339	567
BOUND	THRU	1,340	1,499
	RIGHT	0	0
WEST	LEFT	0	0
BOUND	THRU	975	1,212
	RIGHT	487	525

6. Santa Fe Road/Kraemer Boulevard at Lambert Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	465	NORTHBOUND	
BOUND	THRU	274	IN ...	1,279
	RIGHT	205	OUT ...	631
SOUTH	LEFT	4	SOUTHBOUND	
BOUND	THRU	92	IN ...	202
	RIGHT	106	OUT ...	468
EAST	LEFT	169	EASTBOUND	
BOUND	THRU	772	IN ...	1,390
	RIGHT	438	OUT ...	1,220
WEST	LEFT	75	WESTBOUND	
BOUND	THRU	306	IN ...	463
	RIGHT	25	OUT ...	1,016

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	465	736
BOUND	THRU	274	297
	RIGHT	205	247
SOUTH	LEFT	4	4
BOUND	THRU	92	100
	RIGHT	106	116
EAST	LEFT	169	183
BOUND	THRU	772	885
	RIGHT	438	473
WEST	LEFT	75	84
BOUND	THRU	306	368
	RIGHT	25	27

7. Brea Boulevard at Birch Street

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	61	NORTHBOUND	
BOUND	THRU	743	IN ...	1,222
	RIGHT	281	OUT ...	1,010
SOUTH	LEFT	367	SOUTHBOUND	
BOUND	THRU	611	IN ...	1,020
	RIGHT	53	OUT ...	1,493
EAST	LEFT	63	EASTBOUND	
BOUND	THRU	85	IN ...	178
	RIGHT	30	OUT ...	254
WEST	LEFT	325	WESTBOUND	
BOUND	THRU	140	IN ...	1,082
	RIGHT	535	OUT ...	743

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	61	77
BOUND	THRU	743	848
	RIGHT	281	373
SOUTH	LEFT	367	410
BOUND	THRU	611	693
	RIGHT	53	58
EAST	LEFT	63	68
BOUND	THRU	85	92
	RIGHT	30	31
WEST	LEFT	325	399
BOUND	THRU	140	151
	RIGHT	535	581

8. Randolph Avenue at Birch Street

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	123	NORTHBOUND	
BOUND	THRU	53	IN ...	356
	RIGHT	154	OUT ...	330
SOUTH	LEFT	48	SOUTHBOUND	
BOUND	THRU	46	IN ...	196
	RIGHT	101	OUT ...	170
EAST	LEFT	73	EASTBOUND	
BOUND	THRU	579	IN ...	751
	RIGHT	89	OUT ...	1,291
WEST	LEFT	174	WESTBOUND	
BOUND	THRU	985	IN ...	1,298
	RIGHT	36	OUT ...	810

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	123	129
BOUND	THRU	53	57
	RIGHT	154	170
SOUTH	LEFT	48	50
BOUND	THRU	46	47
	RIGHT	101	109
EAST	LEFT	73	79
BOUND	THRU	579	698
	RIGHT	89	97
WEST	LEFT	174	194
BOUND	THRU	985	1,063
	RIGHT	36	40

9. State College Boulevard at Birch Street

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	132	NORTHBOUND	
BOUND	THRU	336	IN ...	652
	RIGHT	149	OUT ...	599
SOUTH	LEFT	295	SOUTHBOUND	
BOUND	THRU	309	IN ...	876
	RIGHT	245	OUT ...	1212
EAST	LEFT	185	EASTBOUND	
BOUND	THRU	706	IN ...	1067
	RIGHT	147	OUT ...	1384
WEST	LEFT	134	WESTBOUND	
BOUND	THRU	904	IN ...	1789
	RIGHT	573	OUT ...	1188

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	132	136
BOUND	THRU	336	500
	RIGHT	149	155
SOUTH	LEFT	295	331
BOUND	THRU	309	423
	RIGHT	245	310
EAST	LEFT	185	269
BOUND	THRU	706	768
	RIGHT	147	159
WEST	LEFT	134	142
BOUND	THRU	904	992
	RIGHT	573	654

10. S Associated Road at Birch Street

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	438	NORTHBOUND	
BOUND	THRU	30	IN ...	973
	RIGHT	326	OUT ...	610
SOUTH	LEFT	10	SOUTHBOUND	
BOUND	THRU	18	IN ...	34
	RIGHT	6	OUT ...	58
EAST	LEFT	12	EASTBOUND	
BOUND	THRU	814	IN ...	1146
	RIGHT	273	OUT ...	1776
WEST	LEFT	270	WESTBOUND	
BOUND	THRU	1155	IN ...	1574
	RIGHT	16	OUT ...	1284

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	438	522
BOUND	THRU	30	32
	RIGHT	326	419
SOUTH	LEFT	10	10
BOUND	THRU	18	20
	RIGHT	6	6
EAST	LEFT	12	13
BOUND	THRU	814	854
	RIGHT	273	282
WEST	LEFT	270	310
BOUND	THRU	1,155	1,248
	RIGHT	16	16

11. N Associated Road at Birch Street

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	12	NORTHBOUND	
BOUND	THRU	2	IN ...	24
	RIGHT	10	OUT ...	19
SOUTH	LEFT	94	SOUTHBOUND	
BOUND	THRU	3	IN ...	378
	RIGHT	270	OUT ...	425
EAST	LEFT	260	EASTBOUND	
BOUND	THRU	849	IN ...	1,254
	RIGHT	11	OUT ...	1,607
WEST	LEFT	5	WESTBOUND	
BOUND	THRU	1192	IN ...	1,461
	RIGHT	124	OUT ...	1,066

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	12	12
BOUND	THRU	2	2
	RIGHT	10	10
SOUTH	LEFT	94	98
BOUND	THRU	3	3
	RIGHT	270	292
EAST	LEFT	260	286
BOUND	THRU	849	957
	RIGHT	11	11
WEST	LEFT	5	5
BOUND	THRU	1,192	1,318
	RIGHT	124	137

12. Kraemer Boulevard at Birch Street

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	552	NORTHBOUND	
BOUND	THRU	683	IN ...	1,650
	RIGHT	115	OUT ...	668
SOUTH	LEFT	200	SOUTHBOUND	
BOUND	THRU	346	IN ...	649
	RIGHT	97	OUT ...	1,495
EAST	LEFT	202	EASTBOUND	
BOUND	THRU	665	IN ...	1,247
	RIGHT	273	OUT ...	1,426
WEST	LEFT	72	WESTBOUND	
BOUND	THRU	634	IN ...	1,031
	RIGHT	197	OUT ...	987

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	552	612
BOUND	THRU	683	930
	RIGHT	115	124
SOUTH	LEFT	200	216
BOUND	THRU	346	374
	RIGHT	97	114
EAST	LEFT	202	298
BOUND	THRU	665	738
	RIGHT	273	295
WEST	LEFT	72	78
BOUND	THRU	634	700
	RIGHT	197	267

13. Randolph Avenue at Madison Way

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	44	NORTHBOUND	
BOUND	THRU	293	IN ...	402
	RIGHT	39	OUT ...	371
SOUTH	LEFT	26	SOUTHBOUND	
BOUND	THRU	233	IN ...	306
	RIGHT	26	OUT ...	411
EAST	LEFT	57	EASTBOUND	
BOUND	THRU	4	IN ...	109
	RIGHT	48	OUT ...	74
WEST	LEFT	69	WESTBOUND	
BOUND	THRU	4	IN ...	108
	RIGHT	35	OUT ...	69

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	44	47
BOUND	THRU	293	319
	RIGHT	39	42
SOUTH	LEFT	26	28
BOUND	THRU	233	254
	RIGHT	26	28
EAST	LEFT	57	62
BOUND	THRU	4	4
	RIGHT	48	51
WEST	LEFT	69	75
BOUND	THRU	4	4
	RIGHT	35	38

14. Randolph Avenue at Brea Mall

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	15	NORTHBOUND	
BOUND	THRU	299	IN ...	517
	RIGHT	295	OUT ...	501
SOUTH	LEFT	34	SOUTHBOUND	
BOUND	THRU	329	IN ...	292
	RIGHT	18	OUT ...	266
EAST	LEFT	16	EASTBOUND	
BOUND	THRU	3	IN ...	30
	RIGHT	11	OUT ...	36
WEST	LEFT	250	WESTBOUND	
BOUND	THRU	3	IN ...	296
	RIGHT	43	OUT ...	332

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	15	15
BOUND	THRU	299	323
	RIGHT	295	319
SOUTH	LEFT	34	37
BOUND	THRU	329	356
	RIGHT	18	20
EAST	LEFT	16	17
BOUND	THRU	3	4
	RIGHT	11	11
WEST	LEFT	250	271
BOUND	THRU	3	4
	RIGHT	43	46

15. Brea Mall South at State College Boulevard

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	131	NORTHBOUND	
BOUND	THRU	18	IN ...	210
	RIGHT	61	OUT ...	123
SOUTH	LEFT	41	SOUTHBOUND	
BOUND	THRU	12	IN ...	403
	RIGHT	350	OUT ...	495
EAST	LEFT	452	EASTBOUND	
BOUND	THRU	470	IN ...	981
	RIGHT	21	OUT ...	889
WEST	LEFT	90	WESTBOUND	
BOUND	THRU	394	IN ...	523
	RIGHT	25	OUT ...	610

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	131	142
BOUND	THRU	18	20
	RIGHT	61	66
SOUTH	LEFT	41	42
BOUND	THRU	12	12
	RIGHT	350	379
EAST	LEFT	452	489
BOUND	THRU	470	645
	RIGHT	21	23
WEST	LEFT	90	98
BOUND	THRU	394	516
	RIGHT	25	27

16. Harbor Boulevard at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	406	NORTHBOUND	
BOUND	THRU	1039	IN ...	1,779
	RIGHT	201	OUT ...	1,527
SOUTH	LEFT	187	SOUTHBOUND	
BOUND	THRU	811	IN ...	1,394
	RIGHT	291	OUT ...	1,748
EAST	LEFT	255	EASTBOUND	
BOUND	THRU	1132	IN ...	1,634
	RIGHT	273	OUT ...	2,357
WEST	LEFT	405	WESTBOUND	
BOUND	THRU	1427	IN ...	2,466
	RIGHT	209	OUT ...	1,641

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	406	439
BOUND	THRU	1,039	1,181
	RIGHT	201	231
SOUTH	LEFT	187	268
BOUND	THRU	811	969
	RIGHT	291	421
EAST	LEFT	255	311
BOUND	THRU	1,132	1,278
	RIGHT	273	295
WEST	LEFT	405	471
BOUND	THRU	1,427	1,684
	RIGHT	209	309

17. Puente Street at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	33	NORTHBOUND	
BOUND	THRU	45	IN ...	147
	RIGHT	77	OUT ...	302
SOUTH	LEFT	155	SOUTHBOUND	
BOUND	THRU	99	IN ...	519
	RIGHT	194	OUT ...	428
EAST	LEFT	119	EASTBOUND	
BOUND	THRU	1353	IN ...	1660
	RIGHT	35	OUT ...	2115
WEST	LEFT	98	WESTBOUND	
BOUND	THRU	1565	IN ...	2260
	RIGHT	241	OUT ...	1741

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	33	36
BOUND	THRU	45	48
	RIGHT	77	89
SOUTH	LEFT	155	174
BOUND	THRU	99	126
	RIGHT	194	219
EAST	LEFT	119	129
BOUND	THRU	1,353	1,582
	RIGHT	35	44
WEST	LEFT	98	132
BOUND	THRU	1,565	1,864
	RIGHT	241	265

18. Brea Boulevard at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	480	NORTHBOUND	
BOUND	THRU	764	IN ...	1651
	RIGHT	231	OUT ...	1212
SOUTH	LEFT	195	SOUTHBOUND	
BOUND	THRU	599	IN ...	1005
	RIGHT	167	OUT ...	1210
EAST	LEFT	178	EASTBOUND	
BOUND	THRU	1571	IN ...	2209
	RIGHT	386	OUT ...	2578
WEST	LEFT	213	WESTBOUND	
BOUND	THRU	1607	IN ...	2166
	RIGHT	131	OUT ...	2032

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	480	561
BOUND	THRU	764	861
	RIGHT	231	250
SOUTH	LEFT	195	232
BOUND	THRU	599	685
	RIGHT	167	213
EAST	LEFT	178	247
BOUND	THRU	1,571	1,772
	RIGHT	386	420
WEST	LEFT	213	236
BOUND	THRU	1,607	1,819
	RIGHT	131	152

19. Randolph Avenue at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	41	NORTHBOUND	
BOUND	THRU	31	IN ...	126
	RIGHT	56	OUT ...	97
SOUTH	LEFT	299	SOUTHBOUND	
BOUND	THRU	23	IN ...	431
	RIGHT	198	OUT ...	479
EAST	LEFT	233	EASTBOUND	
BOUND	THRU	1517	IN ...	1,811
	RIGHT	26	OUT ...	2,207
WEST	LEFT	53	WESTBOUND	
BOUND	THRU	1753	IN ...	2,348
	RIGHT	307	OUT ...	1,934

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	41	44
BOUND	THRU	31	34
	RIGHT	56	61
SOUTH	LEFT	299	323
BOUND	THRU	23	25
	RIGHT	198	214
EAST	LEFT	233	252
BOUND	THRU	1,517	1,742
	RIGHT	26	28
WEST	LEFT	53	57
BOUND	THRU	1,753	2,010
	RIGHT	307	332

20. State College Boulevard at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	334	NORTHBOUND	
BOUND	THRU	510	IN ...	1,205
	RIGHT	328	OUT ...	784
SOUTH	LEFT	397	SOUTHBOUND	
BOUND	THRU	262	IN ...	762
	RIGHT	89	OUT ...	1,093
EAST	LEFT	102	EASTBOUND	
BOUND	THRU	1675	IN ...	1,926
	RIGHT	87	OUT ...	2,360
WEST	LEFT	418	WESTBOUND	
BOUND	THRU	1702	IN ...	2,800
	RIGHT	443	OUT ...	2,459

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	334	359
BOUND	THRU	510	586
	RIGHT	328	355
SOUTH	LEFT	397	497
BOUND	THRU	262	306
	RIGHT	89	97
EAST	LEFT	102	107
BOUND	THRU	1,675	1,904
	RIGHT	87	103
WEST	LEFT	418	431
BOUND	THRU	1,702	1,904
	RIGHT	443	582

21. SR-57 SB Ramps at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	0	NORTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	864
SOUTH	LEFT	620	SOUTHBOUND	
BOUND	THRU	0	IN ...	1,158
	RIGHT	497	OUT ...	446
EAST	LEFT	0	EASTBOUND	
BOUND	THRU	1559	IN ...	2,474
	RIGHT	859	OUT ...	2,801
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	2067	IN ...	2,701
	RIGHT	368	OUT ...	2,221

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
SOUTH	LEFT	620	685
BOUND	THRU	0	0
	RIGHT	497	537
EAST	LEFT	0	0
BOUND	THRU	1,559	1,725
	RIGHT	859	1,050
WEST	LEFT	0	0
BOUND	THRU	2,067	2,420
	RIGHT	368	446

22. SR-57 NB Ramps at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	844	NORTHBOUND	
BOUND	THRU	59	IN ...	1,319
	RIGHT	389	OUT ...	425
SOUTH	LEFT	0	SOUTHBOUND	
BOUND	THRU	0	IN ...	244
	RIGHT	244	OUT ...	284
EAST	LEFT	182	EASTBOUND	
BOUND	THRU	1655	IN ...	2,218
	RIGHT	343	OUT ...	3,526
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	2159	IN ...	2,550
	RIGHT	43	OUT ...	2,097

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	844	1,078
BOUND	THRU	59	81
	RIGHT	389	452
SOUTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	244	295
EAST	LEFT	182	216
BOUND	THRU	1,655	1,823
	RIGHT	343	425
WEST	LEFT	0	0
BOUND	THRU	2,159	2,480
	RIGHT	43	60

23. Associated Road at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	201	NORTHBOUND	
BOUND	THRU	240	IN ...	677
	RIGHT	78	OUT ...	633
SOUTH	LEFT	270	SOUTHBOUND	
BOUND	THRU	323	IN ...	872
	RIGHT	208	OUT ...	705
EAST	LEFT	235	EASTBOUND	
BOUND	THRU	1662	IN ...	2,080
	RIGHT	130	OUT ...	2,320
WEST	LEFT	162	WESTBOUND	
BOUND	THRU	1563	IN ...	2,209
	RIGHT	158	OUT ...	2,179

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	201	260
BOUND	THRU	240	305
	RIGHT	78	112
SOUTH	LEFT	270	320
BOUND	THRU	323	358
	RIGHT	208	221
EAST	LEFT	235	254
BOUND	THRU	1,662	1,747
	RIGHT	130	141
WEST	LEFT	162	184
BOUND	THRU	1,563	1,839
	RIGHT	158	183

24. Castlegate Lane/Placentia Avenue at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	224	NORTHBOUND	
BOUND	THRU	44	IN ...	625
	RIGHT	246	OUT ...	511
SOUTH	LEFT	23	SOUTHBOUND	
BOUND	THRU	21	IN ...	57
	RIGHT	13	OUT ...	113
EAST	LEFT	17	EASTBOUND	
BOUND	THRU	1671	IN ...	2,118
	RIGHT	261	OUT ...	2,283
WEST	LEFT	213	WESTBOUND	
BOUND	THRU	1720	IN ...	2,230
	RIGHT	52	OUT ...	2,124

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	224	293
BOUND	THRU	44	47
	RIGHT	246	285
SOUTH	LEFT	23	25
BOUND	THRU	21	23
	RIGHT	13	14
EAST	LEFT	17	19
BOUND	THRU	1,671	1,817
	RIGHT	261	279
WEST	LEFT	213	230
BOUND	THRU	1,720	1,975
	RIGHT	52	57

25. Kraemer Boulevard at Imperial Highway

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	331	NORTHBOUND	
BOUND	THRU	569	IN ...	1192
	RIGHT	95	OUT ...	824
SOUTH	LEFT	246	SOUTHBOUND	
BOUND	THRU	436	IN ...	775
	RIGHT	105	OUT ...	1342
EAST	LEFT	198	EASTBOUND	
BOUND	THRU	1255	IN ...	1763
	RIGHT	194	OUT ...	2108
WEST	LEFT	171	WESTBOUND	
BOUND	THRU	1385	IN ...	2242
	RIGHT	297	OUT ...	1699

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	331	367
BOUND	THRU	569	715
	RIGHT	95	111
SOUTH	LEFT	246	266
BOUND	THRU	436	471
	RIGHT	105	113
EAST	LEFT	198	228
BOUND	THRU	1,255	1,338
	RIGHT	194	213
WEST	LEFT	171	203
BOUND	THRU	1,385	1,640
	RIGHT	297	399

26. Brea Boulevard at Bastanchury Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	75	NORTHBOUND	
BOUND	THRU	793	IN ...	1294
	RIGHT	309	OUT ...	961
SOUTH	LEFT	161	SOUTHBOUND	
BOUND	THRU	562	IN ...	1060
	RIGHT	324	OUT ...	1629
EAST	LEFT	535	EASTBOUND	
BOUND	THRU	1226	IN ...	1726
	RIGHT	66	OUT ...	1578
WEST	LEFT	305	WESTBOUND	
BOUND	THRU	1093	IN ...	1772
	RIGHT	248	OUT ...	1684

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	75	81
BOUND	THRU	793	914
	RIGHT	309	347
SOUTH	LEFT	161	167
BOUND	THRU	562	649
	RIGHT	324	351
EAST	LEFT	535	579
BOUND	THRU	1,226	1,329
	RIGHT	66	71
WEST	LEFT	305	331
BOUND	THRU	1,093	1,173
	RIGHT	248	268

27. State College Boulevard at Bastanchury Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	392	NORTHBOUND	
BOUND	THRU	888	IN ...	1,665
	RIGHT	24	OUT ...	665
SOUTH	LEFT	127	SOUTHBOUND	
BOUND	THRU	347	IN ...	741
	RIGHT	241	OUT ...	1,658
EAST	LEFT	329	EASTBOUND	
BOUND	THRU	1043	IN ...	1,654
	RIGHT	287	OUT ...	1,742
WEST	LEFT	19	WESTBOUND	
BOUND	THRU	981	IN ...	1,221
	RIGHT	286	OUT ...	1,216

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	392	536
BOUND	THRU	888	1,097
	RIGHT	24	32
SOUTH	LEFT	127	138
BOUND	THRU	347	405
	RIGHT	241	254
EAST	LEFT	329	356
BOUND	THRU	1,043	1,131
	RIGHT	287	311
WEST	LEFT	19	21
BOUND	THRU	981	1,064
	RIGHT	286	310

28. Placentia Avenue at Bastanchury Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	189	NORTHBOUND	
BOUND	THRU	317	IN ...	911
	RIGHT	295	OUT ...	869
SOUTH	LEFT	160	SOUTHBOUND	
BOUND	THRU	382	IN ...	597
	RIGHT	49	OUT ...	497
EAST	LEFT	72	EASTBOUND	
BOUND	THRU	859	IN ...	1,222
	RIGHT	177	OUT ...	1,218
WEST	LEFT	259	WESTBOUND	
BOUND	THRU	825	IN ...	1,315
	RIGHT	90	OUT ...	1,460

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	189	229
BOUND	THRU	317	336
	RIGHT	295	346
SOUTH	LEFT	160	173
BOUND	THRU	382	416
	RIGHT	49	51
EAST	LEFT	72	78
BOUND	THRU	859	953
	RIGHT	177	197
WEST	LEFT	259	287
BOUND	THRU	825	938
	RIGHT	90	98

29. Kraemer Boulevard at Bastanchury Road

PM PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	188	NORTHBOUND	
BOUND	THRU	678	IN ...	1,182
	RIGHT	109	OUT ...	1,017
SOUTH	LEFT	70	SOUTHBOUND	
BOUND	THRU	670	IN ...	1,066
	RIGHT	309	OUT ...	1,086
EAST	LEFT	171	EASTBOUND	
BOUND	THRU	869	IN ...	1,397
	RIGHT	208	OUT ...	1,344
WEST	LEFT	95	WESTBOUND	
BOUND	THRU	706	IN ...	942
	RIGHT	64	OUT ...	1,141

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	188	240
BOUND	THRU	678	819
	RIGHT	109	123
SOUTH	LEFT	70	76
BOUND	THRU	670	728
	RIGHT	309	327
EAST	LEFT	171	200
BOUND	THRU	869	952
	RIGHT	208	244
WEST	LEFT	95	99
BOUND	THRU	706	777
	RIGHT	64	67

1. Puente Street at Lambert Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	64	NORTHBOUND	
BOUND	THRU	108	IN ...	237
	RIGHT	50	OUT ...	231
SOUTH	LEFT	85	SOUTHBOUND	
BOUND	THRU	113	IN ...	336
	RIGHT	70	OUT ...	300
EAST	LEFT	63	EASTBOUND	
BOUND	THRU	989	IN ...	985
	RIGHT	47	OUT ...	1304
WEST	LEFT	42	WESTBOUND	
BOUND	THRU	1058	IN ...	1316
	RIGHT	61	OUT ...	1000

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	64	69
BOUND	THRU	108	133
	RIGHT	50	55
SOUTH	LEFT	85	103
BOUND	THRU	113	142
	RIGHT	70	86
EAST	LEFT	63	76
BOUND	THRU	989	1,240
	RIGHT	47	50
WEST	LEFT	42	47
BOUND	THRU	1,058	1,252
	RIGHT	61	92

2. Brea Boulevard at Lambert Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	250	NORTHBOUND	
BOUND	THRU	338	IN ...	843
	RIGHT	148	OUT ...	1134
SOUTH	LEFT	134	SOUTHBOUND	
BOUND	THRU	671	IN ...	1063
	RIGHT	136	OUT ...	516
EAST	LEFT	61	EASTBOUND	
BOUND	THRU	914	IN ...	1191
	RIGHT	248	OUT ...	1498
WEST	LEFT	204	WESTBOUND	
BOUND	THRU	861	IN ...	1325
	RIGHT	43	OUT ...	1182

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	250	306
BOUND	THRU	338	394
	RIGHT	148	173
SOUTH	LEFT	134	163
BOUND	THRU	671	711
	RIGHT	136	175
EAST	LEFT	61	68
BOUND	THRU	914	1,181
	RIGHT	248	271
WEST	LEFT	204	242
BOUND	THRU	861	1,041
	RIGHT	43	54

3. State College Boulevard at Lambert Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	122	NORTHBOUND	
BOUND	THRU	235	IN ...	738
	RIGHT	303	OUT ...	1,246
SOUTH	LEFT	472	SOUTHBOUND	
BOUND	THRU	334	IN ...	811
	RIGHT	5	OUT ...	1,001
EAST	LEFT	17	EASTBOUND	
BOUND	THRU	924	IN ...	1,174
	RIGHT	247	OUT ...	1,736
WEST	LEFT	619	WESTBOUND	
BOUND	THRU	1270	IN ...	3,015
	RIGHT	656	OUT ...	1,697

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	122	167
BOUND	THRU	235	256
	RIGHT	303	415
SOUTH	LEFT	472	510
BOUND	THRU	334	361
	RIGHT	5	6
EAST	LEFT	17	19
BOUND	THRU	924	1,145
	RIGHT	247	301
WEST	LEFT	619	757
BOUND	THRU	1,270	1,582
	RIGHT	656	728

4. SR-57 SB Ramps at Lambert Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	0	NORTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	660
SOUTH	LEFT	756	SOUTHBOUND	
BOUND	THRU	0	IN ...	1,806
	RIGHT	971	OUT ...	0
EAST	LEFT	0	EASTBOUND	
BOUND	THRU	1190	IN ...	1,683
	RIGHT	495	OUT ...	2,955
WEST	LEFT	157	WESTBOUND	
BOUND	THRU	1575	IN ...	2,068
	RIGHT	0	OUT ...	1,975

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
SOUTH	LEFT	756	818
BOUND	THRU	0	0
	RIGHT	971	1,185
EAST	LEFT	0	0
BOUND	THRU	1,190	1,475
	RIGHT	495	580
WEST	LEFT	157	174
BOUND	THRU	1,575	1,907
	RIGHT	0	0

5. SR-57 NB Ramps at Lambert Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	982	NORTHBOUND	
BOUND	THRU	0	IN ...	1,631
	RIGHT	401	OUT ...	0
SOUTH	LEFT	0	SOUTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	891
EAST	LEFT	513	EASTBOUND	
BOUND	THRU	1438	IN ...	1,977
	RIGHT	0	OUT ...	2,104
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	750	IN ...	1,343
	RIGHT	380	OUT ...	1,972

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	982	1,169
BOUND	THRU	0	0
	RIGHT	401	467
SOUTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
EAST	LEFT	513	705
BOUND	THRU	1,438	1,592
	RIGHT	0	0
WEST	LEFT	0	0
BOUND	THRU	750	935
	RIGHT	380	413

6. Santa Fe Road/Kraemer Boulevard at Lambert Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	208	NORTHBOUND	
BOUND	THRU	140	IN ...	573
	RIGHT	75	OUT ...	843
SOUTH	LEFT	1	SOUTHBOUND	
BOUND	THRU	137	IN ...	309
	RIGHT	171	OUT ...	292
EAST	LEFT	145	EASTBOUND	
BOUND	THRU	705	IN ...	1,449
	RIGHT	588	OUT ...	1,270
WEST	LEFT	83	WESTBOUND	
BOUND	THRU	534	IN ...	712
	RIGHT	7	OUT ...	809

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	208	377
BOUND	THRU	140	147
	RIGHT	75	84
SOUTH	LEFT	1	1
BOUND	THRU	137	148
	RIGHT	171	213
EAST	LEFT	145	156
BOUND	THRU	705	799
	RIGHT	588	658
WEST	LEFT	83	92
BOUND	THRU	534	680
	RIGHT	7	7

7. Brea Boulevard at Birch Street

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	77	NORTHBOUND	
BOUND	THRU	383	IN ...	763
	RIGHT	218	OUT ...	1,154
SOUTH	LEFT	319	SOUTHBOUND	
BOUND	THRU	813	IN ...	1,212
	RIGHT	93	OUT ...	849
EAST	LEFT	81	EASTBOUND	
BOUND	THRU	111	IN ...	229
	RIGHT	37	OUT ...	293
WEST	LEFT	254	WESTBOUND	
BOUND	THRU	123	IN ...	732
	RIGHT	299	OUT ...	657

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	77	99
BOUND	THRU	383	474
	RIGHT	218	307
SOUTH	LEFT	319	363
BOUND	THRU	813	924
	RIGHT	93	101
EAST	LEFT	81	87
BOUND	THRU	111	120
	RIGHT	37	39
WEST	LEFT	254	345
BOUND	THRU	123	133
	RIGHT	299	325

8. Randolph Avenue at Birch Street

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	91	NORTHBOUND	
BOUND	THRU	70	IN ...	347
	RIGHT	160	OUT ...	309
SOUTH	LEFT	51	SOUTHBOUND	
BOUND	THRU	35	IN ...	160
	RIGHT	73	OUT ...	184
EAST	LEFT	82	EASTBOUND	
BOUND	THRU	537	IN ...	744
	RIGHT	115	OUT ...	897
WEST	LEFT	139	WESTBOUND	
BOUND	THRU	676	IN ...	912
	RIGHT	24	OUT ...	776

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	91	96
BOUND	THRU	70	76
	RIGHT	160	176
SOUTH	LEFT	51	53
BOUND	THRU	35	36
	RIGHT	73	79
EAST	LEFT	82	88
BOUND	THRU	537	655
	RIGHT	115	124
WEST	LEFT	139	157
BOUND	THRU	676	805
	RIGHT	24	27

9. State College Boulevard at Birch Street

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	117	NORTHBOUND	
BOUND	THRU	250	IN ...	565
	RIGHT	168	OUT ...	846
SOUTH	LEFT	240	SOUTHBOUND	
BOUND	THRU	523	IN ...	1210
	RIGHT	409	OUT ...	742
EAST	LEFT	214	EASTBOUND	
BOUND	THRU	658	IN ...	1054
	RIGHT	154	OUT ...	1243
WEST	LEFT	156	WESTBOUND	
BOUND	THRU	625	IN ...	1096
	RIGHT	206	OUT ...	1101

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	117	121
BOUND	THRU	250	411
	RIGHT	168	174
SOUTH	LEFT	240	277
BOUND	THRU	523	706
	RIGHT	409	511
EAST	LEFT	214	300
BOUND	THRU	658	717
	RIGHT	154	167
WEST	LEFT	156	166
BOUND	THRU	625	692
	RIGHT	206	240

10. S Associated Road at Birch Street

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	303	NORTHBOUND	
BOUND	THRU	18	IN ...	589
	RIGHT	159	OUT ...	525
SOUTH	LEFT	11	SOUTHBOUND	
BOUND	THRU	20	IN ...	43
	RIGHT	12	OUT ...	38
EAST	LEFT	8	EASTBOUND	
BOUND	THRU	671	IN ...	1040
	RIGHT	318	OUT ...	1079
WEST	LEFT	145	WESTBOUND	
BOUND	THRU	656	IN ...	888
	RIGHT	12	OUT ...	939

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	303	359
BOUND	THRU	18	19
	RIGHT	159	215
SOUTH	LEFT	11	12
BOUND	THRU	20	21
	RIGHT	12	13
EAST	LEFT	8	8
BOUND	THRU	671	713
	RIGHT	318	330
WEST	LEFT	145	174
BOUND	THRU	656	708
	RIGHT	12	12

11. N Associated Road at Birch Street

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	10	NORTHBOUND	
BOUND	THRU	2	IN ...	20
	RIGHT	8	OUT ...	20
SOUTH	LEFT	90	SOUTHBOUND	
BOUND	THRU	4	IN ...	293
	RIGHT	191	OUT ...	251
EAST	LEFT	156	EASTBOUND	
BOUND	THRU	718	IN ...	983
	RIGHT	5	OUT ...	846
WEST	LEFT	11	WESTBOUND	
BOUND	THRU	575	IN ...	726
	RIGHT	70	OUT ...	913

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	10	10
BOUND	THRU	2	2
	RIGHT	8	8
SOUTH	LEFT	90	94
BOUND	THRU	4	4
	RIGHT	191	207
EAST	LEFT	156	172
BOUND	THRU	718	811
	RIGHT	5	5
WEST	LEFT	11	11
BOUND	THRU	575	640
	RIGHT	70	77

12. Kraemer Boulevard at Birch Street

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	220	NORTHBOUND	
BOUND	THRU	297	IN ...	703
	RIGHT	58	OUT ...	895
SOUTH	LEFT	153	SOUTHBOUND	
BOUND	THRU	588	IN ...	848
	RIGHT	99	OUT ...	674
EAST	LEFT	106	EASTBOUND	
BOUND	THRU	407	IN ...	872
	RIGHT	285	OUT ...	739
WEST	LEFT	53	WESTBOUND	
BOUND	THRU	346	IN ...	552
	RIGHT	85	OUT ...	623

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	220	240
BOUND	THRU	297	400
	RIGHT	58	63
SOUTH	LEFT	153	166
BOUND	THRU	588	636
	RIGHT	99	117
EAST	LEFT	106	159
BOUND	THRU	407	465
	RIGHT	285	309
WEST	LEFT	53	58
BOUND	THRU	346	382
	RIGHT	85	115

13. Randolph Avenue at Madison Way

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	20	NORTHBOUND	
BOUND	THRU	260	IN ...	413
	RIGHT	106	OUT ...	401
SOUTH	LEFT	66	SOUTHBOUND	
BOUND	THRU	247	IN ...	357
	RIGHT	19	OUT ...	369
EAST	LEFT	32	EASTBOUND	
BOUND	THRU	10	IN ...	97
	RIGHT	55	OUT ...	43
WEST	LEFT	76	WESTBOUND	
BOUND	THRU	4	IN ...	134
	RIGHT	54	OUT ...	182

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	20	22
BOUND	THRU	260	284
	RIGHT	106	114
SOUTH	LEFT	66	71
BOUND	THRU	247	270
	RIGHT	19	21
EAST	LEFT	32	35
BOUND	THRU	10	11
	RIGHT	55	60
WEST	LEFT	76	82
BOUND	THRU	4	4
	RIGHT	54	59

14. Randolph Avenue at Brea Mall

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	21	NORTHBOUND	
BOUND	THRU	309	IN ...	614
	RIGHT	394	OUT ...	565
SOUTH	LEFT	39	SOUTHBOUND	
BOUND	THRU	278	IN ...	259
	RIGHT	20	OUT ...	299
EAST	LEFT	23	EASTBOUND	
BOUND	THRU	13	IN ...	61
	RIGHT	25	OUT ...	47
WEST	LEFT	362	WESTBOUND	
BOUND	THRU	6	IN ...	439
	RIGHT	71	OUT ...	446

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	21	23
BOUND	THRU	309	334
	RIGHT	394	426
SOUTH	LEFT	39	43
BOUND	THRU	278	300
	RIGHT	20	22
EAST	LEFT	23	25
BOUND	THRU	13	18
	RIGHT	25	27
WEST	LEFT	362	392
BOUND	THRU	6	8
	RIGHT	71	73

15. Brea Mall South at State College Boulevard

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	160	NORTHBOUND	
BOUND	THRU	23	IN ...	269
	RIGHT	86	OUT ...	128
SOUTH	LEFT	57	SOUTHBOUND	
BOUND	THRU	18	IN ...	560
	RIGHT	485	OUT ...	676
EAST	LEFT	620	EASTBOUND	
BOUND	THRU	333	IN ...	1,020
	RIGHT	28	OUT ...	1,219
WEST	LEFT	82	WESTBOUND	
BOUND	THRU	555	IN ...	688
	RIGHT	33	OUT ...	507

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	160	173
BOUND	THRU	23	25
	RIGHT	86	93
SOUTH	LEFT	57	62
BOUND	THRU	18	20
	RIGHT	485	525
EAST	LEFT	620	671
BOUND	THRU	333	500
	RIGHT	28	29
WEST	LEFT	82	88
BOUND	THRU	555	740
	RIGHT	33	36

16. Harbor Boulevard at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	327	NORTHBOUND	
BOUND	THRU	710	IN ...	1,325
	RIGHT	189	OUT ...	1,361
SOUTH	LEFT	200	SOUTHBOUND	
BOUND	THRU	738	IN ...	1,292
	RIGHT	257	OUT ...	1,369
EAST	LEFT	300	EASTBOUND	
BOUND	THRU	1052	IN ...	1,586
	RIGHT	259	OUT ...	1,924
WEST	LEFT	329	WESTBOUND	
BOUND	THRU	1149	IN ...	1,988
	RIGHT	167	OUT ...	1,556

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	327	354
BOUND	THRU	710	814
	RIGHT	189	217
SOUTH	LEFT	200	263
BOUND	THRU	738	840
	RIGHT	257	328
EAST	LEFT	300	370
BOUND	THRU	1,052	1,194
	RIGHT	259	280
WEST	LEFT	329	387
BOUND	THRU	1,149	1,358
	RIGHT	167	248

17. Puente Street at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	25	NORTHBOUND	
BOUND	THRU	29	IN ...	136
	RIGHT	89	OUT ...	191
SOUTH	LEFT	115	SOUTHBOUND	
BOUND	THRU	40	IN ...	305
	RIGHT	109	OUT ...	250
EAST	LEFT	66	EASTBOUND	
BOUND	THRU	1209	IN ...	1442
	RIGHT	34	OUT ...	1629
WEST	LEFT	73	WESTBOUND	
BOUND	THRU	1246	IN ...	1733
	RIGHT	141	OUT ...	1552

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	25	27
BOUND	THRU	29	32
	RIGHT	89	106
SOUTH	LEFT	115	131
BOUND	THRU	40	51
	RIGHT	109	123
EAST	LEFT	66	68
BOUND	THRU	1,209	1,335
	RIGHT	34	42
WEST	LEFT	73	98
BOUND	THRU	1,246	1,481
	RIGHT	141	156

18. Brea Boulevard at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	380	NORTHBOUND	
BOUND	THRU	449	IN ...	1205
	RIGHT	248	OUT ...	1362
SOUTH	LEFT	247	SOUTHBOUND	
BOUND	THRU	787	IN ...	1254
	RIGHT	165	OUT ...	851
EAST	LEFT	168	EASTBOUND	
BOUND	THRU	1313	IN ...	1783
	RIGHT	243	OUT ...	2045
WEST	LEFT	317	WESTBOUND	
BOUND	THRU	1243	IN ...	1885
	RIGHT	138	OUT ...	1840

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	380	441
BOUND	THRU	449	544
	RIGHT	248	268
SOUTH	LEFT	247	296
BOUND	THRU	787	906
	RIGHT	165	227
EAST	LEFT	168	243
BOUND	THRU	1,313	1,457
	RIGHT	243	266
WEST	LEFT	317	352
BOUND	THRU	1,243	1,411
	RIGHT	138	164

19. Randolph Avenue at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	64	NORTHBOUND	
BOUND	THRU	36	IN ...	260
	RIGHT	164	OUT ...	197
SOUTH	LEFT	379	SOUTHBOUND	
BOUND	THRU	72	IN ...	599
	RIGHT	271	OUT ...	635
EAST	LEFT	292	EASTBOUND	
BOUND	THRU	1354	IN ...	1,710
	RIGHT	30	OUT ...	2,019
WEST	LEFT	104	WESTBOUND	
BOUND	THRU	1487	IN ...	2,244
	RIGHT	429	OUT ...	1,959

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	64	69
BOUND	THRU	36	39
	RIGHT	164	171
SOUTH	LEFT	379	410
BOUND	THRU	72	78
	RIGHT	271	293
EAST	LEFT	292	316
BOUND	THRU	1,354	1,537
	RIGHT	30	33
WEST	LEFT	104	115
BOUND	THRU	1,487	1,740
	RIGHT	429	464

20. State College Boulevard at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	252	NORTHBOUND	
BOUND	THRU	475	IN ...	1,297
	RIGHT	535	OUT ...	1,154
SOUTH	LEFT	534	SOUTHBOUND	
BOUND	THRU	358	IN ...	1,080
	RIGHT	169	OUT ...	1,532
EAST	LEFT	126	EASTBOUND	
BOUND	THRU	1420	IN ...	1,770
	RIGHT	168	OUT ...	2,332
WEST	LEFT	603	WESTBOUND	
BOUND	THRU	1679	IN ...	3,453
	RIGHT	878	OUT ...	2,549

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	252	285
BOUND	THRU	475	548
	RIGHT	535	579
SOUTH	LEFT	534	683
BOUND	THRU	358	422
	RIGHT	169	180
EAST	LEFT	126	137
BOUND	THRU	1,420	1,598
	RIGHT	168	192
WEST	LEFT	603	630
BOUND	THRU	1,679	1,883
	RIGHT	878	1,054

21. SR-57 SB Ramps at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	----	-----	-----
NORTH	LEFT	0	NORTHBOUND	
BOUND	THRU	0	IN ...	0
	RIGHT	0	OUT ...	969
SOUTH	LEFT	510	SOUTHBOUND	
BOUND	THRU	0	IN ...	1,245
	RIGHT	691	OUT ...	407
EAST	LEFT	0	EASTBOUND	
BOUND	THRU	1805	IN ...	2,833
	RIGHT	963	OUT ...	3,309
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	2338	IN ...	2,967
	RIGHT	336	OUT ...	2,359

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	----	-----
NORTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	0	0
SOUTH	LEFT	510	564
BOUND	THRU	0	0
	RIGHT	691	739
EAST	LEFT	0	0
BOUND	THRU	1,805	1,975
	RIGHT	963	1,185
WEST	LEFT	0	0
BOUND	THRU	2,338	2,735
	RIGHT	336	407

22. SR-57 NB Ramps at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	1201	NORTHBOUND	
BOUND	THRU	149	IN ...	1,915
	RIGHT	526	OUT ...	653
SOUTH	LEFT	0	SOUTHBOUND	
BOUND	THRU	0	IN ...	225
	RIGHT	225	OUT ...	426
EAST	LEFT	247	EASTBOUND	
BOUND	THRU	1645	IN ...	2,463
	RIGHT	528	OUT ...	3,380
WEST	LEFT	0	WESTBOUND	
BOUND	THRU	1687	IN ...	1,989
	RIGHT	30	OUT ...	2,227

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	1,201	1,485
BOUND	THRU	149	176
	RIGHT	526	599
SOUTH	LEFT	0	0
BOUND	THRU	0	0
	RIGHT	225	271
EAST	LEFT	247	286
BOUND	THRU	1,645	1,796
	RIGHT	528	653
WEST	LEFT	0	0
BOUND	THRU	1,687	1,971
	RIGHT	30	45

23. Associated Road at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	227	NORTHBOUND	
BOUND	THRU	172	IN ...	656
	RIGHT	104	OUT ...	604
SOUTH	LEFT	309	SOUTHBOUND	
BOUND	THRU	222	IN ...	764
	RIGHT	171	OUT ...	633
EAST	LEFT	201	EASTBOUND	
BOUND	THRU	1573	IN ...	2,055
	RIGHT	228	OUT ...	2,092
WEST	LEFT	137	WESTBOUND	
BOUND	THRU	1380	IN ...	2,008
	RIGHT	195	OUT ...	2,153

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	227	292
BOUND	THRU	172	218
	RIGHT	104	146
SOUTH	LEFT	309	355
BOUND	THRU	222	248
	RIGHT	171	179
EAST	LEFT	201	217
BOUND	THRU	1,573	1,651
	RIGHT	228	247
WEST	LEFT	137	159
BOUND	THRU	1,380	1,621
	RIGHT	195	226

24. Castlegate Lane/Placentia Avenue at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	147	NORTHBOUND	
BOUND	THRU	16	IN ...	466
	RIGHT	220	OUT ...	473
SOUTH	LEFT	24	SOUTHBOUND	
BOUND	THRU	10	IN ...	45
	RIGHT	11	OUT ...	82
EAST	LEFT	23	EASTBOUND	
BOUND	THRU	1730	IN ...	2,186
	RIGHT	259	OUT ...	2,103
WEST	LEFT	190	WESTBOUND	
BOUND	THRU	1645	IN ...	2,109
	RIGHT	43	OUT ...	2,162

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	147	195
BOUND	THRU	16	17
	RIGHT	220	254
SOUTH	LEFT	24	26
BOUND	THRU	10	10
	RIGHT	11	12
EAST	LEFT	23	24
BOUND	THRU	1,730	1,884
	RIGHT	259	277
WEST	LEFT	190	206
BOUND	THRU	1,645	1,896
	RIGHT	43	46

25. Kraemer Boulevard at Imperial Highway

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	279	NORTHBOUND	
BOUND	THRU	277	IN ...	749
	RIGHT	69	OUT ...	1019
SOUTH	LEFT	260	SOUTHBOUND	
BOUND	THRU	603	IN ...	970
	RIGHT	122	OUT ...	674
EAST	LEFT	158	EASTBOUND	
BOUND	THRU	1046	IN ...	1584
	RIGHT	276	OUT ...	1749
WEST	LEFT	112	WESTBOUND	
BOUND	THRU	1110	IN ...	1599
	RIGHT	99	OUT ...	1464

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	279	311
BOUND	THRU	277	356
	RIGHT	69	83
SOUTH	LEFT	260	281
BOUND	THRU	603	652
	RIGHT	122	132
EAST	LEFT	158	181
BOUND	THRU	1,046	1,118
	RIGHT	276	287
WEST	LEFT	112	139
BOUND	THRU	1,110	1,323
	RIGHT	99	136

26. Brea Boulevard at Bastanchury Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	75	NORTHBOUND	
BOUND	THRU	479	IN ...	966
	RIGHT	324	OUT ...	1068
SOUTH	LEFT	195	SOUTHBOUND	
BOUND	THRU	667	IN ...	1232
	RIGHT	355	OUT ...	1049
EAST	LEFT	372	EASTBOUND	
BOUND	THRU	816	IN ...	1192
	RIGHT	74	OUT ...	1277
WEST	LEFT	296	WESTBOUND	
BOUND	THRU	777	IN ...	1332
	RIGHT	164	OUT ...	1325

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	75	83
BOUND	THRU	479	580
	RIGHT	324	357
SOUTH	LEFT	195	211
BOUND	THRU	667	782
	RIGHT	355	384
EAST	LEFT	372	402
BOUND	THRU	816	885
	RIGHT	74	80
WEST	LEFT	296	320
BOUND	THRU	777	836
	RIGHT	164	175

27. State College Boulevard at Bastanchury Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	283	NORTHBOUND	
BOUND	THRU	735	IN ...	1,873
	RIGHT	449	OUT ...	695
SOUTH	LEFT	137	SOUTHBOUND	
BOUND	THRU	428	IN ...	877
	RIGHT	282	OUT ...	1,300
EAST	LEFT	281	EASTBOUND	
BOUND	THRU	763	IN ...	1,256
	RIGHT	216	OUT ...	1,410
WEST	LEFT	38	WESTBOUND	
BOUND	THRU	741	IN ...	894
	RIGHT	162	OUT ...	1,374

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	283	402
BOUND	THRU	735	894
	RIGHT	449	531
SOUTH	LEFT	137	148
BOUND	THRU	428	508
	RIGHT	282	302
EAST	LEFT	281	303
BOUND	THRU	763	828
	RIGHT	216	230
WEST	LEFT	38	41
BOUND	THRU	741	803
	RIGHT	162	175

28. Placentia Avenue at Bastanchury Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	154	NORTHBOUND	
BOUND	THRU	268	IN ...	697
	RIGHT	191	OUT ...	775
SOUTH	LEFT	110	SOUTHBOUND	
BOUND	THRU	325	IN ...	489
	RIGHT	49	OUT ...	414
EAST	LEFT	67	EASTBOUND	
BOUND	THRU	586	IN ...	983
	RIGHT	238	OUT ...	713
WEST	LEFT	167	WESTBOUND	
BOUND	THRU	419	IN ...	728
	RIGHT	64	OUT ...	986

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	154	186
BOUND	THRU	268	284
	RIGHT	191	225
SOUTH	LEFT	110	119
BOUND	THRU	325	354
	RIGHT	49	50
EAST	LEFT	67	72
BOUND	THRU	586	650
	RIGHT	238	263
WEST	LEFT	167	185
BOUND	THRU	419	477
	RIGHT	64	69

29. Kraemer Boulevard at Bastanchury Road

SAT MD PEAK HOUR

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** INPUT DATA *** Modified by: COMSIS Corp. (M. Roskin) 4/9/86

Modified by: FHWA 12/21/87

APPROACH	TURN MOVEMENT	BY COUNT	APPROACH	FY TOTAL
-----	-----	-----	-----	-----
NORTH	LEFT	95	NORTHBOUND	
BOUND	THRU	476	IN ...	761
	RIGHT	56	OUT ...	1,079
SOUTH	LEFT	58	SOUTHBOUND	
BOUND	THRU	787	IN ...	1,019
	RIGHT	157	OUT ...	810
EAST	LEFT	151	EASTBOUND	
BOUND	THRU	582	IN ...	998
	RIGHT	159	OUT ...	734
WEST	LEFT	86	WESTBOUND	
BOUND	THRU	405	IN ...	594
	RIGHT	54	OUT ...	758

FUTURE DIRECTIONAL TURN VOLUMES FROM FUTURE DIRECTIONAL LINK VOLUMES

NCHRP 255, PAGE 105 Written by: FHWA (C. Fleet)

*** RESULTS *** Modified by: COMSIS Corp. (M. Roskin) 2/13/86

APPROACH	TURN MOVEMENT	BY COUNT	FY FORECAST
-----	-----	-----	-----
NORTH	LEFT	95	121
BOUND	THRU	476	578
	RIGHT	56	64
SOUTH	LEFT	58	63
BOUND	THRU	787	854
	RIGHT	157	166
EAST	LEFT	151	175
BOUND	THRU	582	639
	RIGHT	159	186
WEST	LEFT	86	92
BOUND	THRU	405	447
	RIGHT	54	57

APPENDIX F

PROJECT DRIVEWAY QUEUING WORKSHEETS

APPENDIX F-1

EXISTING TRAFFIC CONDITIONS

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	25	0	5	12	155	63	14	134	6
Future Volume (vph)	1	0	1	25	0	5	12	155	63	14	134	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.950			0.957			0.993	
Flt Protected		0.950		0.950	0.968		0.950			0.950		
Satd. Flow (prot)	0	1676	1500	1593	1542	0	1676	3209	0	1676	3329	0
Flt Permitted		0.548		0.950	0.968		0.654			0.589		
Satd. Flow (perm)	0	967	1500	1593	1542	0	1154	3209	0	1039	3329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		109			51			4	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.25	0.25	0.25	0.60	0.60	0.60	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	4	0	4	42	0	8	14	187	76	15	147	7
Shared Lane Traffic (%)				39%								
Lane Group Flow (vph)	0	4	4	26	24	0	14	263	0	15	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	34.0	34.0	34.0	35.0	35.0		13.0	38.0		13.0	38.0	
Total Split (%)	28.3%	28.3%	28.3%	29.2%	29.2%		10.8%	31.7%		10.8%	31.7%	
Maximum Green (s)	29.0	29.0	29.0	30.0	30.0		8.0	33.0		8.0	33.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effect Green (s)		11.1	11.1	10.8	10.8		92.3	91.7		92.4	91.7	
Actuated g/C Ratio		0.09	0.09	0.09	0.09		0.77	0.76		0.77	0.76	
v/c Ratio		0.04	0.02	0.18	0.10		0.02	0.11		0.02	0.06	
Control Delay		44.0	0.0	49.5	0.9		6.3	4.8		9.4	9.5	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		44.0	0.0	49.5	0.9		6.3	4.8		9.4	9.5	
LOS		D	A	D	A		A	A		A	A	
Approach Delay		22.0			26.2			4.9			9.5	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		3	0	21	0		1	7		1	3	
Queue Length 95th (ft)		4	0	28	0		m8	60		m17	77	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		233	445	398	467		928	2465		847	2546	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.02	0.01	0.07	0.05		0.02	0.11		0.02	0.06	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 82 (68%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.18

Intersection Signal Delay: 8.8

Intersection LOS: A

Intersection Capacity Utilization 28.2%

ICU Level of Service A

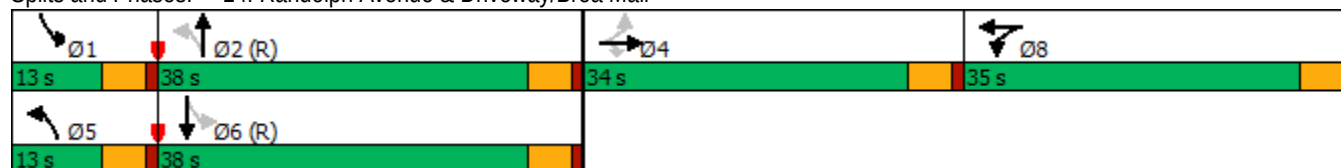
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 14: Randolph Avenue & Driveway/Brea Mall

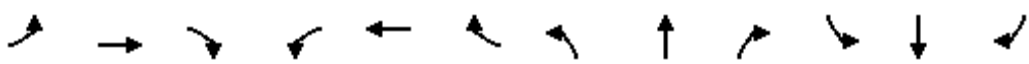
Existing
 AM Peak Hour

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall



Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	227	14	26	304	11	30	5	14	3	2	26
Future Volume (vph)	73	227	14	26	304	11	30	5	14	3	2	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.991			0.995				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.966			0.973	
Satd. Flow (prot)	3252	3323	0	1676	3336	0	1593	1619	1500	0	3262	1500
Flt Permitted	0.950			0.950			0.950	0.966			0.867	
Satd. Flow (perm)	3252	3323	0	1676	3336	0	1593	1619	1500	0	2907	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			3				145			100
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.82	0.82	0.82	0.94	0.94	0.94	0.58	0.58	0.58	0.55	0.55	0.55
Adj. Flow (vph)	89	277	17	28	323	12	52	9	24	5	4	47
Shared Lane Traffic (%)							42%					
Lane Group Flow (vph)	89	294	0	28	335	0	30	31	24	0	9	47
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	20.0	51.0		12.0	43.0		38.0	38.0	38.0	19.0	19.0	
Total Split (%)	16.7%	42.5%		10.0%	35.8%		31.7%	31.7%	31.7%	15.8%	15.8%	
Maximum Green (s)	16.0	46.0		8.0	38.0		33.0	33.0	33.0	14.0	14.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	16.0	50.9		7.2	38.0		33.0	33.0	33.0		14.0	29.0
Actuated g/C Ratio	0.13	0.42		0.06	0.32		0.28	0.28	0.28		0.12	0.24
v/c Ratio	0.21	0.21		0.28	0.32		0.07	0.07	0.05		0.03	0.11
Control Delay	42.7	19.4		45.7	20.9		32.8	32.8	0.1		47.4	0.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	42.7	19.4		45.7	20.9		32.8	32.8	0.1		47.4	0.5
LOS	D	B		D	C		C	C	A		D	A
Approach Delay		24.8			22.8			23.6			8.0	
Approach LOS		C			C			C			A	
Queue Length 50th (ft)	33	57		20	101		17	18	0		3	0
Queue Length 95th (ft)	54	74		m33	151		28	28	0		7	0
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	433	1413		111	1058		438	445	517		339	438
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.21	0.21		0.25	0.32		0.07	0.07	0.05		0.03	0.11

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 114 (95%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 22.8

Intersection LOS: C

Intersection Capacity Utilization 33.6%

ICU Level of Service A

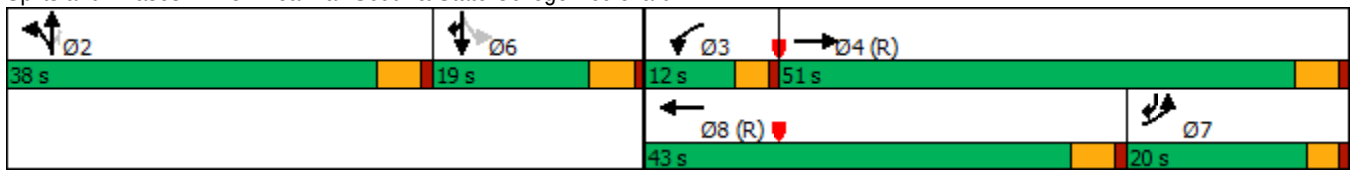
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 15: Brea Mall South & State College Boulevard

Existing
 AM Peak Hour

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	TR	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	45	71	81	97	68	159	182	62	33	30	33	65
Average Queue (ft)	10	35	26	37	20	79	92	19	6	9	6	19
95th Queue (ft)	32	65	62	78	54	134	151	51	24	31	25	49
Link Distance (ft)			591	591		979	979	172	172	172	262	262
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1446	163	410	1445	128	92	130	378	80	325	25
Future Volume (vph)	31	1446	163	410	1445	128	92	130	378	80	325	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.985				0.850			0.850		0.989	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5980	0	3252	4818	1500	3252	3353	1500	2349	3316	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5980	0	3252	4818	1500	3252	3353	1500	2349	3316	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				142			298		7	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	34	1589	179	456	1606	142	101	143	415	85	346	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1768	0	456	1606	142	101	143	415	85	373	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	44.0		24.0	58.0	10.0	11.0	42.0	42.0	10.0	41.0	
Total Split (%)	8.3%	36.7%		20.0%	48.3%	8.3%	9.2%	35.0%	35.0%	8.3%	34.2%	
Maximum Green (s)	6.0	39.0		20.0	53.0	6.0	7.0	37.0	37.0	6.0	36.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	39.6		19.4	57.0	65.6	7.0	37.0	37.0	6.0	36.0	
Actuated g/C Ratio	0.05	0.33		0.16	0.48	0.55	0.06	0.31	0.31	0.05	0.30	
v/c Ratio	0.21	0.89		0.87	0.70	0.16	0.53	0.14	0.62	0.73	0.37	
Control Delay	77.8	22.0		53.3	24.6	2.4	65.7	30.5	14.4	79.5	14.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	77.8	22.0		53.3	24.6	2.4	65.7	30.5	14.4	79.5	14.7	
LOS	E	C		D	C	A	E	C	B	E	B	
Approach Delay		23.1			29.1			25.7			26.7	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	14	304		150	395	10	39	42	69	36	37	
Queue Length 95th (ft)	m22	272		#254	452	m14	70	68	182	#78	53	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1988		542	2288	884	189	1033	668	117	999	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.89		0.84	0.70	0.16	0.53	0.14	0.62	0.73	0.37	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 110 (92%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 26.4

Intersection LOS: C

Intersection Capacity Utilization 67.7%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

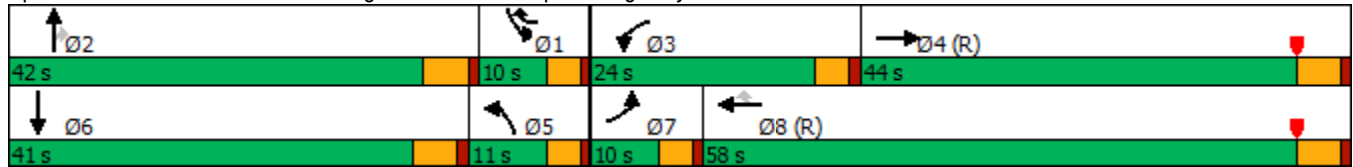
Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Existing
 AM Peak Hour

Queue shown is maximum after two cycles.

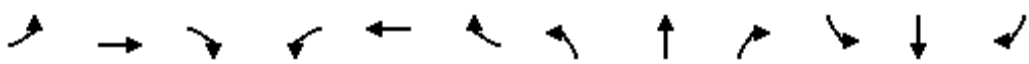
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↖	↗	↖	↔		↖	↕		↖	↕	
Traffic Volume (vph)	16	3	11	250	3	43	15	299	295	34	329	18
Future Volume (vph)	16	3	11	250	3	43	15	299	295	34	329	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.956			0.925			0.992	
Flt Protected		0.959		0.950	0.967		0.950			0.950		
Satd. Flow (prot)	0	1692	1500	1593	1550	0	1676	3101	0	1676	3326	0
Flt Permitted		0.394		0.950	0.967		0.530			0.369		
Satd. Flow (perm)	0	695	1500	1593	1550	0	935	3101	0	651	3326	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		16			223			5	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	17	3	12	291	3	50	16	311	307	37	354	19
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	0	20	12	175	169	0	16	618	0	37	373	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	31.0	31.0	31.0	33.0	33.0		11.0	45.0		11.0	45.0	
Total Split (%)	25.8%	25.8%	25.8%	27.5%	27.5%		9.2%	37.5%		9.2%	37.5%	
Maximum Green (s)	26.0	26.0	26.0	28.0	28.0		6.0	40.0		6.0	40.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effect Green (s)		11.9	11.9	18.6	18.6		75.7	71.8		77.3	74.3	
Actuated g/C Ratio		0.10	0.10	0.16	0.16		0.63	0.60		0.64	0.62	
v/c Ratio		0.29	0.05	0.71	0.67		0.03	0.32		0.08	0.18	
Control Delay		56.8	0.4	63.2	55.3		11.3	7.5		6.9	7.4	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		56.8	0.4	63.2	55.3		11.3	7.5		6.9	7.4	
LOS		E	A	E	E		B	A		A	A	
Approach Delay		35.7			59.3			7.6			7.4	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)		15	0	136	118		3	33		4	21	
Queue Length 95th (ft)		36	0	193	174		m8	175		m17	97	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		150	410	371	373		628	1944		476	2062	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.13	0.03	0.47	0.45		0.03	0.32		0.08	0.18	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 78 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 20.7

Intersection LOS: C

Intersection Capacity Utilization 51.7%

ICU Level of Service A

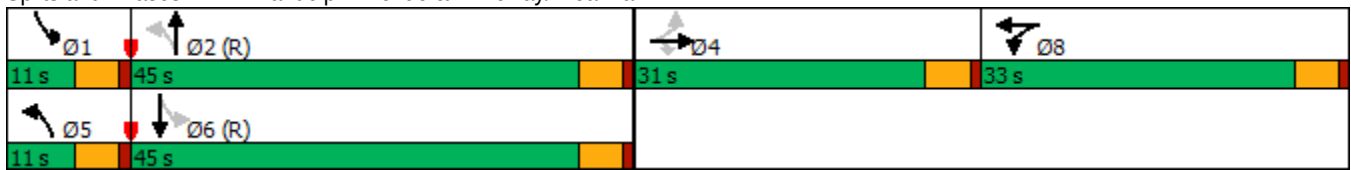
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 14: Randolph Avenue & Driveway/Brea Mall

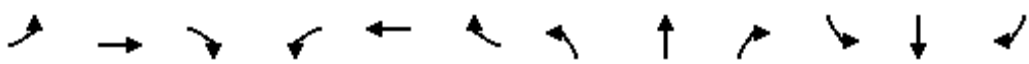
Existing
 PM Peak Hour

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall



Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	↔↔	↕↕		↔	↕↕		↔	↕	↔		↕↕	↔
Traffic Volume (vph)	452	470	21	90	394	25	131	18	61	41	12	350
Future Volume (vph)	452	470	21	90	394	25	131	18	61	41	12	350
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.994			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.964			0.962	
Satd. Flow (prot)	3252	3333	0	1676	3323	0	1593	1616	1500	0	3226	1500
Flt Permitted	0.950			0.950			0.950	0.964			0.733	
Satd. Flow (perm)	3252	3333	0	1676	3323	0	1593	1616	1500	0	2458	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			5				145			325
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	520	540	24	99	433	27	158	22	73	46	13	389
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	520	564	0	99	460	0	90	90	73	0	59	389
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	32.0	48.0		18.0	34.0		38.0	38.0	38.0	16.0	16.0	
Total Split (%)	26.7%	40.0%		15.0%	28.3%		31.7%	31.7%	31.7%	13.3%	13.3%	
Maximum Green (s)	28.0	43.0		14.0	29.0		33.0	33.0	33.0	11.0	11.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	25.6	43.0		11.6	29.0		35.4	35.4	35.4		11.0	35.6
Actuated g/C Ratio	0.21	0.36		0.10	0.24		0.30	0.30	0.30		0.09	0.30
v/c Ratio	0.75	0.47		0.61	0.57		0.19	0.19	0.13		0.26	0.58
Control Delay	34.6	41.1		71.3	37.7		34.0	33.9	0.5		54.0	6.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	34.6	41.1		71.3	37.7		34.0	33.9	0.5		54.0	6.9
LOS	C	D		E	D		C	C	A		D	A
Approach Delay		38.0			43.7			24.3			13.1	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	123	175		80	185		55	55	0		22	18
Queue Length 95th (ft)	168	225		139	244		94	94	0		45	54
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	758	1196		195	806		469	476	544		225	697
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.69	0.47		0.51	0.57		0.19	0.19	0.13		0.26	0.56

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 110 (92%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 33.1

Intersection LOS: C

Intersection Capacity Utilization 52.7%

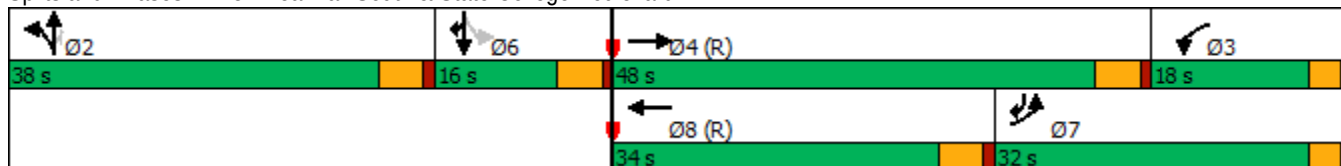
ICU Level of Service A

Analysis Period (min) 15

Lanes, Volumes, Timings
 15: Brea Mall South & State College Boulevard

Existing
 PM Peak Hour

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	TR	L	T	TR	L	LT	R	LT	T
Maximum Queue (ft)	225	227	224	230	180	235	203	144	93	66	108	11
Average Queue (ft)	107	128	113	126	74	126	114	66	25	27	39	0
95th Queue (ft)	180	193	200	208	136	205	182	128	75	54	84	6
Link Distance (ft)			591	591		979	979	172	172	172	262	262
Upstream Blk Time (%)								1				
Queuing Penalty (veh)								0				
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)	0	1	0		1	4						
Queuing Penalty (veh)	0	2	2		2	3						

Intersection: 15: Brea Mall South & State College Boulevard

Movement	SB
Directions Served	R
Maximum Queue (ft)	282
Average Queue (ft)	156
95th Queue (ft)	261
Link Distance (ft)	262
Upstream Blk Time (%)	6
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1675	87	418	1702	443	334	510	328	397	262	89
Future Volume (vph)	102	1675	87	418	1702	443	334	510	328	397	262	89
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.993				0.850			0.850		0.962	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	6028	0	3252	4818	1500	3252	3353	1500	2349	3226	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	6028	0	3252	4818	1500	3252	3353	1500	2349	3226	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				91			277		41	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	106	1745	91	435	1773	461	371	567	364	441	291	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	106	1836	0	435	1773	461	371	567	364	441	390	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	38.0		19.0	47.0	21.0	21.0	42.0	42.0	21.0	42.0	
Total Split (%)	8.3%	31.7%		15.8%	39.2%	17.5%	17.5%	35.0%	35.0%	17.5%	35.0%	
Maximum Green (s)	6.0	33.0		15.0	42.0	17.0	17.0	37.0	37.0	17.0	37.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	33.0		15.0	42.0	64.0	17.0	37.0	37.0	17.0	37.0	
Actuated g/C Ratio	0.05	0.28		0.12	0.35	0.53	0.14	0.31	0.31	0.14	0.31	
v/c Ratio	0.65	1.10		1.07	1.05	0.55	0.81	0.55	0.56	1.33	0.38	
Control Delay	54.4	81.3		108.0	66.6	14.8	64.3	37.0	12.2	203.9	25.2	
Queue Delay	0.0	0.0		0.0	19.9	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.4	81.3		108.0	86.5	14.8	64.3	37.0	12.2	203.9	25.2	
LOS	D	F		F	F	B	E	D	B	F	C	
Approach Delay		79.9			77.6			37.8			120.0	
Approach LOS		E			E			D			F	
Queue Length 50th (ft)	44	~484		~196	~543	193	145	192	49	~225	135	
Queue Length 95th (ft)	m61	#563		m#260	#638	m245	#216	250	145	#329	182	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1664		406	1686	842	460	1033	654	332	1023	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	85	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.65	1.10		1.07	1.11	0.55	0.81	0.55	0.56	1.33	0.38	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.33

Intersection Signal Delay: 75.8

Intersection LOS: E

Intersection Capacity Utilization 86.2%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Existing
PM Peak Hour

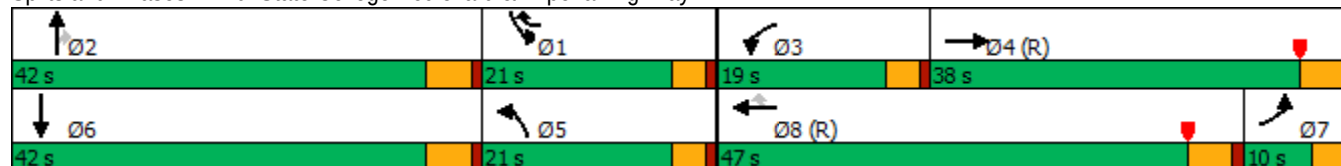
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	13	25	362	6	71	21	309	394	39	278	20
Future Volume (vph)	23	13	25	362	6	71	21	309	394	39	278	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.950			0.916			0.990	
Flt Protected		0.969		0.950	0.969		0.950			0.950		
Satd. Flow (prot)	0	1710	1500	1593	1543	0	1676	3071	0	1676	3319	0
Flt Permitted		0.226		0.950	0.969		0.536			0.277		
Satd. Flow (perm)	0	399	1500	1593	1543	0	946	3071	0	489	3319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		21			265			6	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.90	0.90	0.90	0.87	0.87	0.87	0.96	0.96	0.96	0.85	0.85	0.85
Adj. Flow (vph)	26	14	28	416	7	82	22	322	410	46	327	24
Shared Lane Traffic (%)				38%								
Lane Group Flow (vph)	0	40	28	258	247	0	22	732	0	46	351	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	31.0	31.0	31.0	40.0	40.0		11.0	38.0		11.0	38.0	
Total Split (%)	25.8%	25.8%	25.8%	33.3%	33.3%		9.2%	31.7%		9.2%	31.7%	
Maximum Green (s)	26.0	26.0	26.0	35.0	35.0		6.0	33.0		6.0	33.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effect Green (s)		15.8	15.8	25.3	25.3		61.7	56.5		63.6	59.2	
Actuated g/C Ratio		0.13	0.13	0.21	0.21		0.51	0.47		0.53	0.49	
v/c Ratio		0.77	0.10	0.77	0.72		0.04	0.46		0.14	0.21	
Control Delay		118.5	0.6	59.2	51.7		14.2	10.0		11.4	13.6	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay		118.5	0.6	59.2	51.7		14.2	10.1		11.4	13.6	
LOS		F	A	E	D		B	B		B	B	
Approach Delay		70.0			55.5			10.2			13.3	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)		30	0	198	172		5	41		8	36	
Queue Length 95th (ft)		#69	0	262	235		m9	223		28	130	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		86	410	464	464		524	1587		326	1640	
Starvation Cap Reductn		0	0	0	0		0	131		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.47	0.07	0.56	0.53		0.04	0.50		0.14	0.21	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 59.6%

ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

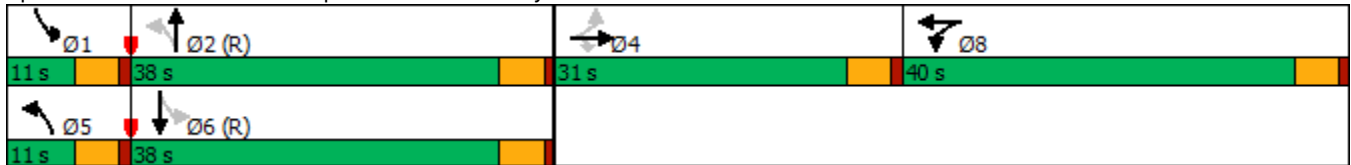
Lanes, Volumes, Timings 14: Randolph Avenue & Driveway/Brea Mall

Existing
 Sat MD Peak Hour

Queue shown is maximum after two cycles.

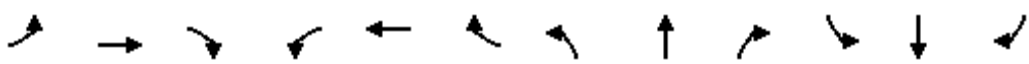
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall



Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	620	333	28	82	555	33	160	23	86	57	18	485
Future Volume (vph)	620	333	28	82	555	33	160	23	86	57	18	485
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.988			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.964			0.963	
Satd. Flow (prot)	3252	3313	0	1676	3326	0	1593	1616	1500	0	3229	1500
Flt Permitted	0.950			0.950			0.950	0.964			0.720	
Satd. Flow (perm)	3252	3313	0	1676	3326	0	1593	1616	1500	0	2414	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			5				145			268
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	660	354	30	92	624	37	193	28	104	63	20	539
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	660	384	0	92	661	0	110	111	104	0	83	539
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	28.0	44.0		17.0	33.0		38.0	38.0	38.0	21.0	21.0	
Total Split (%)	23.3%	36.7%		14.2%	27.5%		31.7%	31.7%	31.7%	17.5%	17.5%	
Maximum Green (s)	24.0	39.0		13.0	28.0		33.0	33.0	33.0	16.0	16.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	24.0	41.0		11.0	28.0		33.0	33.0	33.0		16.0	39.0
Actuated g/C Ratio	0.20	0.34		0.09	0.23		0.28	0.28	0.28		0.13	0.32
v/c Ratio	1.02	0.34		0.60	0.85		0.25	0.25	0.20		0.26	0.81
Control Delay	72.3	25.6		55.6	37.6		35.8	35.8	2.8		49.1	20.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	72.3	25.6		55.6	37.6		35.8	35.8	2.8		49.1	20.6
LOS	E	C		E	D		D	D	A		D	C
Approach Delay		55.1			39.8			25.2			24.4	
Approach LOS		E			D			C			C	
Queue Length 50th (ft)	~284	108		66	236		70	70	0		31	92
Queue Length 95th (ft)	m#296	m117		m95	#321		111	113	10		56	#203
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	650	1137		181	779		438	444	517		321	668
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	1.02	0.34		0.51	0.85		0.25	0.25	0.20		0.26	0.81

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 56 (47%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.02

Intersection Signal Delay: 40.4

Intersection LOS: D

Intersection Capacity Utilization 66.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings
 15: Brea Mall South & State College Boulevard

Existing
 Sat MD Peak Hour

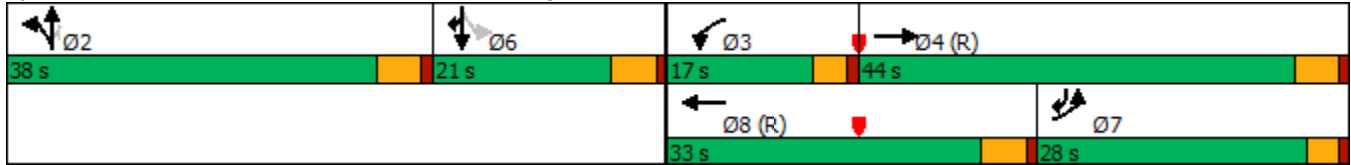
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	B108	B108	B107	B107	NB
Directions Served	L	L	T	TR	L	T	TR	T	T	T	T	L
Maximum Queue (ft)	245	253	235	120	230	1065	1061	451	438	102	102	180
Average Queue (ft)	141	159	51	52	155	691	506	113	91	8	7	94
95th Queue (ft)	219	230	168	105	301	1300	1150	447	419	98	96	158
Link Distance (ft)			591	591		979	979	766	766	502	502	172
Upstream Blk Time (%)			0			35	10	3	3	0	0	1
Queuing Penalty (veh)			0			144	41	11	11	0	1	0
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)	0	1			3	75						
Queuing Penalty (veh)	1	2			9	61						

Intersection: 15: Brea Mall South & State College Boulevard

Movement	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	T	R
Maximum Queue (ft)	130	79	106	209	310
Average Queue (ft)	38	32	44	15	273
95th Queue (ft)	96	62	91	110	322
Link Distance (ft)	172	172	262	262	262
Upstream Blk Time (%)	0			0	82
Queuing Penalty (veh)	0			0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	1420	168	603	1679	878	252	475	535	534	358	169
Future Volume (vph)	126	1420	168	603	1679	878	252	475	535	534	358	169
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.984				0.850			0.850		0.952	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3192	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3192	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				122			149			69
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.98	0.98	0.98	0.83	0.83	0.83
Adj. Flow (vph)	135	1527	181	655	1825	954	257	485	546	643	431	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	1708	0	655	1825	954	257	485	546	643	635	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	41.0		17.0	48.0	20.0	19.0	42.0	42.0	20.0	43.0	
Total Split (%)	8.3%	34.2%		14.2%	40.0%	16.7%	15.8%	35.0%	35.0%	16.7%	35.8%	
Maximum Green (s)	6.0	36.0		13.0	43.0	16.0	15.0	37.0	37.0	16.0	38.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	36.0		13.0	43.0	64.0	15.0	37.0	37.0	16.0	38.0	
Actuated g/C Ratio	0.05	0.30		0.11	0.36	0.53	0.12	0.31	0.31	0.13	0.32	
v/c Ratio	0.83	0.94		1.86	1.06	1.11	0.63	0.47	0.97	2.05	0.60	
Control Delay	73.8	30.7		422.4	69.5	84.4	57.6	35.4	60.8	508.1	21.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.8	30.7		422.4	69.5	84.4	57.6	35.4	60.8	508.1	21.8	
LOS	E	C		F	E	F	E	D	E	F	C	
Approach Delay		33.9			141.0			50.6			266.4	
Approach LOS		C			F			D			F	
Queue Length 50th (ft)	57	267		~399	~564	~438	98	159	324	~415	126	
Queue Length 95th (ft)	m#87	#434		m#484	#662	m#1018	143	212	#559	#478	164	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1809		352	1726	856	406	1033	565	313	1057	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.83	0.94		1.86	1.06	1.11	0.63	0.47	0.97	2.05	0.60	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 28 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.05

Intersection Signal Delay: 121.4

Intersection LOS: F

Intersection Capacity Utilization 94.0%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Existing
Sat MD Peak Hour

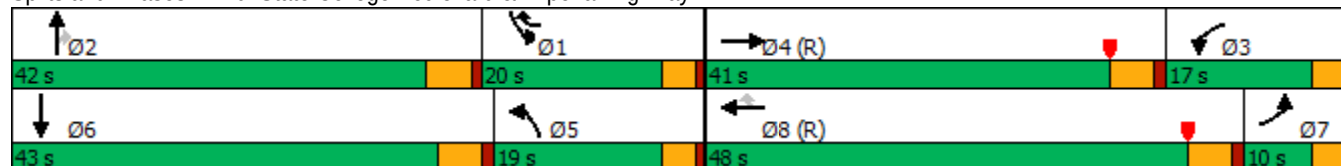
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



APPENDIX F-II

EXISTING PLUS PROJECT
TRAFFIC CONDITIONS

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	103	0	19	12	155	124	25	134	6
Future Volume (vph)	1	0	1	103	0	19	12	155	124	25	134	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.952			0.933			0.993	
Flt Protected		0.950		0.950	0.967		0.950			0.950		
Satd. Flow (prot)	0	1676	1500	1593	1543	0	1676	3128	0	1676	3329	0
Flt Permitted		0.548		0.950	0.967		0.654			0.538		
Satd. Flow (perm)	0	967	1500	1593	1543	0	1154	3128	0	949	3329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		109			149			4	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.25	0.25	0.25	0.60	0.60	0.60	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	4	0	4	172	0	32	14	187	149	27	147	7
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	0	4	4	103	101	0	14	336	0	27	154	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	34.0	34.0	34.0	35.0	35.0		13.0	38.0		13.0	38.0	
Total Split (%)	28.3%	28.3%	28.3%	29.2%	29.2%		10.8%	31.7%		10.8%	31.7%	
Maximum Green (s)	29.0	29.0	29.0	30.0	30.0		8.0	33.0		8.0	33.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effect Green (s)		11.1	11.1	14.6	14.6		82.8	79.0		84.4	81.5	
Actuated g/C Ratio		0.09	0.09	0.12	0.12		0.69	0.66		0.70	0.68	
v/c Ratio		0.04	0.02	0.53	0.36		0.02	0.16		0.04	0.07	
Control Delay		44.0	0.0	57.8	10.2		6.3	2.7		8.7	10.1	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		44.0	0.0	57.8	10.2		6.3	2.7		8.7	10.1	
LOS		D	A	E	B		A	A		A	B	
Approach Delay		22.0			34.2			2.8			9.9	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		3	0	81	0		1	1		1	4	
Queue Length 95th (ft)		4	0	80	4		m6	61		m27	76	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		233	445	398	467		840	2110		718	2261	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.02	0.01	0.26	0.22		0.02	0.16		0.04	0.07	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 82 (68%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.53

Intersection Signal Delay: 13.4

Intersection LOS: B

Intersection Capacity Utilization 36.5%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 14: Randolph Avenue & Driveway/Brea Mall

Existing Plus Project
 AM Peak Hour

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall

 Ø1 13 s		 Ø2 (R) 38 s	 Ø4 34 s	 Ø8 35 s
 Ø5 13 s		 Ø6 (R) 38 s		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	227	14	26	304	26	30	5	14	16	2	70
Future Volume (vph)	150	227	14	26	304	26	30	5	14	16	2	70
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.991			0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.966			0.958	
Satd. Flow (prot)	3252	3323	0	1676	3313	0	1593	1619	1500	0	3212	1500
Flt Permitted	0.950			0.950			0.950	0.966			0.757	
Satd. Flow (perm)	3252	3323	0	1676	3313	0	1593	1619	1500	0	2538	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			8				145			127
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.82	0.82	0.82	0.94	0.94	0.94	0.58	0.58	0.58	0.55	0.55	0.55
Adj. Flow (vph)	183	277	17	28	323	28	52	9	24	29	4	127
Shared Lane Traffic (%)							42%					
Lane Group Flow (vph)	183	294	0	28	351	0	30	31	24	0	33	127
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	20.0	51.0		12.0	43.0		38.0	38.0	38.0	19.0	19.0	
Total Split (%)	16.7%	42.5%		10.0%	35.8%		31.7%	31.7%	31.7%	15.8%	15.8%	
Maximum Green (s)	16.0	46.0		8.0	38.0		33.0	33.0	33.0	14.0	14.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	16.0	50.9		7.2	38.0		33.0	33.0	33.0		14.0	29.0
Actuated g/C Ratio	0.13	0.42		0.06	0.32		0.28	0.28	0.28		0.12	0.24
v/c Ratio	0.42	0.21		0.28	0.33		0.07	0.07	0.05		0.11	0.28
Control Delay	45.6	19.1		46.0	20.3		32.8	32.8	0.1		48.6	4.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	45.6	19.1		46.0	20.3		32.8	32.8	0.1		48.6	4.7
LOS	D	B		D	C		C	C	A		D	A
Approach Delay		29.2			22.2			23.6			13.7	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)	70	58		20	103		17	18	0		12	0
Queue Length 95th (ft)	97	75		m33	155		28	28	0		17	0
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	433	1413		111	1054		438	445	517		296	458
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.42	0.21		0.25	0.33		0.07	0.07	0.05		0.11	0.28

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 114 (95%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 24.1

Intersection LOS: C

Intersection Capacity Utilization 34.1%

ICU Level of Service A

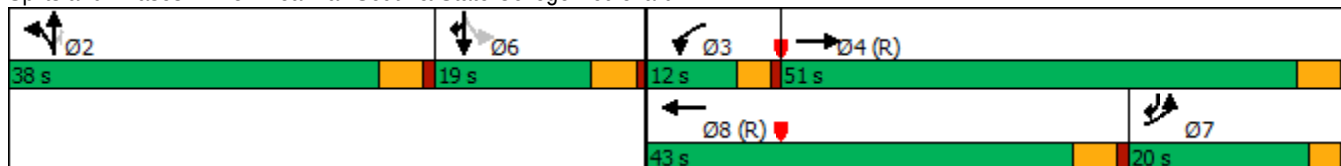
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 15: Brea Mall South & State College Boulevard

Existing Plus Project
 AM Peak Hour

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	TR	L	T	TR	L	LT	R	LT	T
Maximum Queue (ft)	104	125	86	90	68	154	163	61	41	30	55	6
Average Queue (ft)	36	65	27	39	19	78	86	22	5	8	15	0
95th Queue (ft)	81	107	67	79	53	136	147	53	23	30	44	4
Link Distance (ft)			591	591		979	979	172	172	172	262	262
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)							0					
Queuing Penalty (veh)							0					

Intersection: 15: Brea Mall South & State College Boulevard

Movement	SB
Directions Served	R
Maximum Queue (ft)	84
Average Queue (ft)	37
95th Queue (ft)	77
Link Distance (ft)	262
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1480	171	410	1456	186	95	150	378	109	341	25
Future Volume (vph)	31	1480	171	410	1456	186	95	150	378	109	341	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.984				0.850			0.850		0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3319	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				207			291		7	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	34	1626	188	456	1618	207	104	165	415	116	363	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1814	0	456	1618	207	104	165	415	116	390	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	44.0		24.0	58.0	10.0	11.0	42.0	42.0	10.0	41.0	
Total Split (%)	8.3%	36.7%		20.0%	48.3%	8.3%	9.2%	35.0%	35.0%	8.3%	34.2%	
Maximum Green (s)	6.0	39.0		20.0	53.0	6.0	7.0	37.0	37.0	6.0	36.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	39.6		19.4	57.0	65.6	7.0	37.0	37.0	6.0	36.0	
Actuated g/C Ratio	0.05	0.33		0.16	0.48	0.55	0.06	0.31	0.31	0.05	0.30	
v/c Ratio	0.21	0.91		0.87	0.71	0.23	0.55	0.16	0.63	0.99	0.39	
Control Delay	76.9	25.0		53.5	25.2	2.5	66.4	30.7	15.0	129.4	17.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	76.9	25.0		53.5	25.2	2.5	66.4	30.7	15.0	129.4	17.9	
LOS	E	C		D	C	A	E	C	B	F	B	
Approach Delay		25.9			28.8			26.6			43.4	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)	14	357		153	399	14	41	48	75	49	47	
Queue Length 95th (ft)	m22	#336		#254	458	m23	71	76	188	#113	91	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1987		542	2288	913	189	1033	663	117	1000	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.21	0.91		0.84	0.71	0.23	0.55	0.16	0.63	0.99	0.39	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 110 (92%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 28.9

Intersection LOS: C

Intersection Capacity Utilization 68.8%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

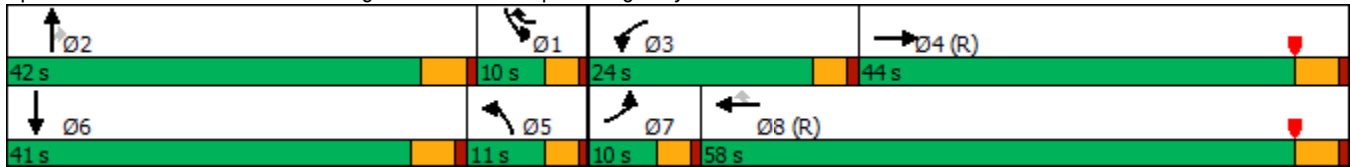
Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Existing Plus Project
 AM Peak Hour

Queue shown is maximum after two cycles.

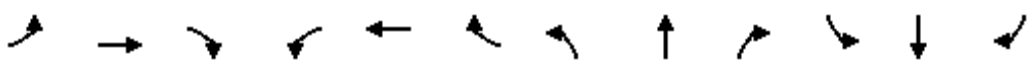
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↔	↔	↔	↔		↔	↕		↔	↕	
Traffic Volume (vph)	16	3	11	306	3	54	15	299	398	53	329	18
Future Volume (vph)	16	3	11	306	3	54	15	299	398	53	329	18
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.955			0.914			0.992	
Flt Protected		0.959		0.950	0.967		0.950			0.950		
Satd. Flow (prot)	0	1692	1500	1593	1548	0	1676	3065	0	1676	3326	0
Flt Permitted		0.394		0.950	0.967		0.530			0.303		
Satd. Flow (perm)	0	695	1500	1593	1548	0	935	3065	0	535	3326	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		17			301			5	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	17	3	12	356	3	63	16	311	415	57	354	19
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	0	20	12	214	208	0	16	726	0	57	373	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	31.0	31.0	31.0	33.0	33.0		11.0	45.0		11.0	45.0	
Total Split (%)	25.8%	25.8%	25.8%	27.5%	27.5%		9.2%	37.5%		9.2%	37.5%	
Maximum Green (s)	26.0	26.0	26.0	28.0	28.0		6.0	40.0		6.0	40.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effect Green (s)		11.9	11.9	21.3	21.3		71.8	66.9		74.7	71.9	
Actuated g/C Ratio		0.10	0.10	0.18	0.18		0.60	0.56		0.62	0.60	
v/c Ratio		0.29	0.05	0.76	0.72		0.03	0.39		0.14	0.19	
Control Delay		56.8	0.4	63.5	56.4		11.1	6.6		7.6	7.9	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay		56.8	0.4	63.5	56.4		11.1	6.7		7.6	7.9	
LOS		E	A	E	E		B	A		A	A	
Approach Delay		35.7			60.0			6.8			7.9	
Approach LOS		D			E			A			A	
Queue Length 50th (ft)		15	0	167	148		3	32		7	22	
Queue Length 95th (ft)		36	0	230	211		m6	m176		m27	103	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		150	410	371	374		596	1842		396	1994	
Starvation Cap Reductn		0	0	0	0		0	250		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.13	0.03	0.58	0.56		0.03	0.46		0.14	0.19	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 78 (65%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 21.5

Intersection LOS: C

Intersection Capacity Utilization 57.2%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 14: Randolph Avenue & Driveway/Brea Mall

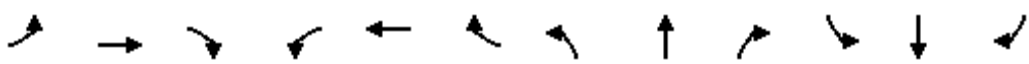
Existing Plus Project
 PM Peak Hour

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall

 Ø1	 Ø2 (R)	 Ø4	 Ø8
11 s	45 s	31 s	33 s
 Ø5	 Ø6 (R)		
11 s	45 s		

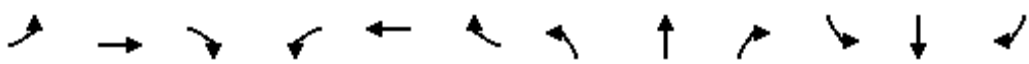
Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	586	470	21	90	394	50	131	18	61	54	12	414
Future Volume (vph)	586	470	21	90	394	50	131	18	61	54	12	414
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.994			0.983				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.964			0.961	
Satd. Flow (prot)	3252	3333	0	1676	3296	0	1593	1616	1500	0	3222	1500
Flt Permitted	0.950			0.950			0.950	0.964			0.727	
Satd. Flow (perm)	3252	3333	0	1676	3296	0	1593	1616	1500	0	2438	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			11				145			325
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	674	540	24	99	433	55	158	22	73	60	13	460
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	674	564	0	99	488	0	90	90	73	0	73	460
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	32.0	48.0		18.0	34.0		38.0	38.0	38.0	16.0	16.0	
Total Split (%)	26.7%	40.0%		15.0%	28.3%		31.7%	31.7%	31.7%	13.3%	13.3%	
Maximum Green (s)	28.0	43.0		14.0	29.0		33.0	33.0	33.0	11.0	11.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	27.4	43.0		13.4	29.0		33.6	33.6	33.6		11.0	37.4
Actuated g/C Ratio	0.23	0.36		0.11	0.24		0.28	0.28	0.28		0.09	0.31
v/c Ratio	0.91	0.47		0.53	0.61		0.20	0.20	0.14		0.33	0.67
Control Delay	46.1	40.0		65.8	37.4		34.9	34.8	0.6		55.4	10.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	46.1	40.0		65.8	37.4		34.9	34.8	0.6		55.4	10.6
LOS	D	D		E	D		C	C	A		E	B
Approach Delay		43.3			42.2			24.9			16.8	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	209	180		80	195		56	56	0		28	38
Queue Length 95th (ft)	#329	230		139	255		94	94	0		53	92
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	758	1196		195	804		445	452	523		223	697
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.89	0.47		0.51	0.61		0.20	0.20	0.14		0.33	0.66

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 110 (92%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 35.9

Intersection LOS: D

Intersection Capacity Utilization 57.7%

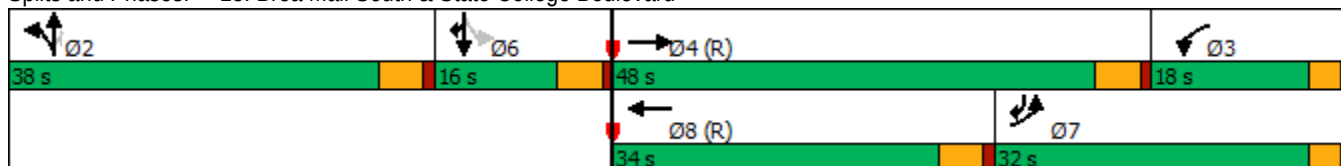
ICU Level of Service B

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	TR	L	T	TR	L	LT	R	LT	T
Maximum Queue (ft)	244	264	241	254	195	237	198	149	94	66	126	118
Average Queue (ft)	145	166	120	133	82	128	111	80	31	28	44	6
95th Queue (ft)	222	240	210	217	153	204	183	150	91	54	97	68
Link Distance (ft)			591	591		979	979	172	172	172	262	262
Upstream Blk Time (%)								2	0			0
Queuing Penalty (veh)								0	0			0
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)	0	3	0		2	4						
Queuing Penalty (veh)	1	6	1		5	4						

Intersection: 15: Brea Mall South & State College Boulevard

Movement	SB
Directions Served	R
Maximum Queue (ft)	298
Average Queue (ft)	208
95th Queue (ft)	321
Link Distance (ft)	262
Upstream Blk Time (%)	21
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

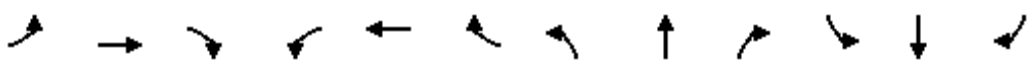
Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1688	90	418	1720	542	339	545	328	444	279	89
Future Volume (vph)	102	1688	90	418	1720	542	339	545	328	444	279	89
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.992				0.850			0.850		0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	6022	0	3252	4818	1500	3252	3353	1500	2349	3232	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	6022	0	3252	4818	1500	3252	3353	1500	2349	3232	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				78			275		37	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	106	1758	94	435	1792	565	377	606	364	493	310	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	106	1852	0	435	1792	565	377	606	364	493	409	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	38.0		19.0	47.0	21.0	21.0	42.0	42.0	21.0	42.0	
Total Split (%)	8.3%	31.7%		15.8%	39.2%	17.5%	17.5%	35.0%	35.0%	17.5%	35.0%	
Maximum Green (s)	6.0	33.0		15.0	42.0	17.0	17.0	37.0	37.0	17.0	37.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	33.0		15.0	42.0	64.0	17.0	37.0	37.0	17.0	37.0	
Actuated g/C Ratio	0.05	0.28		0.12	0.35	0.53	0.14	0.31	0.31	0.14	0.31	
v/c Ratio	0.65	1.11		1.07	1.06	0.68	0.82	0.59	0.56	1.48	0.40	
Control Delay	54.7	86.0		105.9	70.0	18.1	65.4	37.8	12.4	266.3	25.2	
Queue Delay	0.0	0.0		0.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.7	86.0		105.9	85.5	18.1	65.4	37.8	12.4	266.3	25.2	
LOS	D	F		F	F	B	E	D	B	F	C	
Approach Delay		84.3			75.0			38.7			157.0	
Approach LOS		F			E			D			F	
Queue Length 50th (ft)	44	~492		~195	~554	255	147	208	51	~262	140	
Queue Length 95th (ft)	m62	#571		m#243	#650	m317	#221	270	146	#377	178	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1662		406	1686	836	460	1033	652	332	1022	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	85	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.65	1.11		1.07	1.12	0.68	0.82	0.59	0.56	1.48	0.40	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.48

Intersection Signal Delay: 81.2

Intersection LOS: F

Intersection Capacity Utilization 89.5%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Existing Plus Project
PM Peak Hour

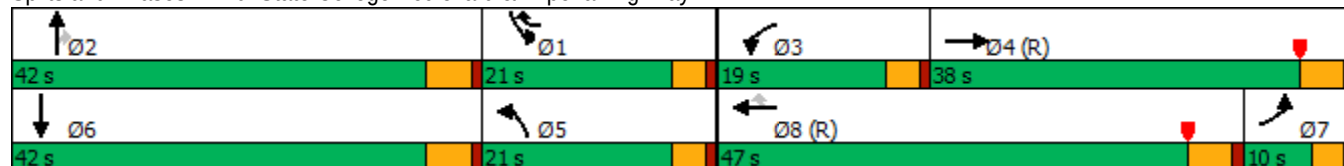
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	13	25	459	6	90	21	309	461	51	278	20
Future Volume (vph)	23	13	25	459	6	90	21	309	461	51	278	20
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.950			0.910			0.990	
Flt Protected		0.969		0.950	0.969		0.950			0.950		
Satd. Flow (prot)	0	1710	1500	1593	1543	0	1676	3051	0	1676	3319	0
Flt Permitted		0.226		0.950	0.969		0.534			0.224		
Satd. Flow (perm)	0	399	1500	1593	1543	0	942	3051	0	395	3319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		21			310			6	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.90	0.90	0.90	0.87	0.87	0.87	0.96	0.96	0.96	0.85	0.85	0.85
Adj. Flow (vph)	26	14	28	528	7	103	22	322	480	60	327	24
Shared Lane Traffic (%)				38%								
Lane Group Flow (vph)	0	40	28	327	311	0	22	802	0	60	351	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Existing Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	31.0	31.0	31.0	40.0	40.0		11.0	38.0		11.0	38.0	
Total Split (%)	25.8%	25.8%	25.8%	33.3%	33.3%		9.2%	31.7%		9.2%	31.7%	
Maximum Green (s)	26.0	26.0	26.0	35.0	35.0		6.0	33.0		6.0	33.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effct Green (s)		15.8	15.8	29.7	29.7		56.9	51.8		59.5	54.9	
Actuated g/C Ratio		0.13	0.13	0.25	0.25		0.47	0.43		0.50	0.46	
v/c Ratio		0.77	0.10	0.83	0.78		0.05	0.54		0.22	0.23	
Control Delay		118.5	0.6	60.3	52.9		14.7	10.2		13.2	15.4	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay		118.5	0.6	60.3	52.9		14.7	10.3		13.2	15.4	
LOS		F	A	E	D		B	B		B	B	
Approach Delay		70.0			56.7			10.4			15.1	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)		30	0	249	218		5	41		12	67	
Queue Length 95th (ft)		#69	0	335	304		m8	m235		37	127	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		86	410	464	464		484	1494		271	1521	
Starvation Cap Reductn		0	0	0	0		0	68		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.47	0.07	0.70	0.67		0.05	0.56		0.22	0.23	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 1 (1%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 105												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.83												
Intersection Signal Delay: 28.7						Intersection LOS: C						
Intersection Capacity Utilization 65.3%						ICU Level of Service C						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												

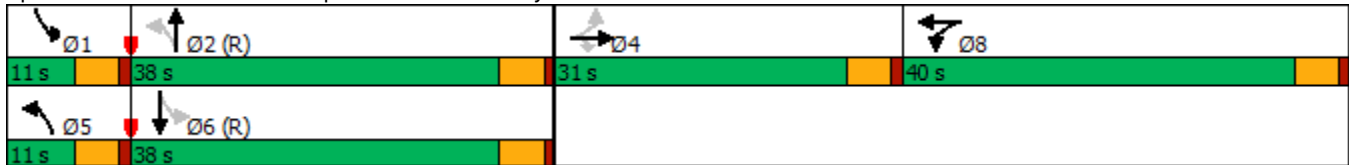
Lanes, Volumes, Timings
 14: Randolph Avenue & Driveway/Brea Mall

Existing Plus Project
 Sat MD Peak Hour

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall



Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	698	333	28	82	555	48	160	23	86	82	18	613
Future Volume (vph)	698	333	28	82	555	48	160	23	86	82	18	613
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.988			0.988				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.964			0.961	
Satd. Flow (prot)	3252	3313	0	1676	3313	0	1593	1616	1500	0	3222	1500
Flt Permitted	0.950			0.950			0.950	0.964			0.710	
Satd. Flow (perm)	3252	3313	0	1676	3313	0	1593	1616	1500	0	2381	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			7				145			268
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	743	354	30	92	624	54	193	28	104	91	20	681
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	743	384	0	92	678	0	110	111	104	0	111	681
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Existing Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	28.0	44.0		17.0	33.0		38.0	38.0	38.0	21.0	21.0	
Total Split (%)	23.3%	36.7%		14.2%	27.5%		31.7%	31.7%	31.7%	17.5%	17.5%	
Maximum Green (s)	24.0	39.0		13.0	28.0		33.0	33.0	33.0	16.0	16.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	24.0	41.0		11.0	28.0		33.0	33.0	33.0		16.0	39.0
Actuated g/C Ratio	0.20	0.34		0.09	0.23		0.28	0.28	0.28		0.13	0.32
v/c Ratio	1.14	0.34		0.60	0.87		0.25	0.25	0.20		0.35	1.02
Control Delay	112.6	25.8		55.5	39.0		35.8	35.8	2.8		50.8	56.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	112.6	25.8		55.5	39.0		35.8	35.8	2.8		50.8	56.5
LOS	F	C		E	D		D	D	A		D	E
Approach Delay		83.0			41.0			25.2			55.7	
Approach LOS		F			D			C			E	
Queue Length 50th (ft)	~355	110		66	244		70	70	0		41	~242
Queue Length 95th (ft)	m#342	m113		m94	#352		111	113	10		72	#580
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	650	1137		181	778		438	444	517		317	668
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	1.14	0.34		0.51	0.87		0.25	0.25	0.20		0.35	1.02

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 56 (47%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.14

Intersection Signal Delay: 58.9

Intersection LOS: E

Intersection Capacity Utilization 75.7%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 15: Brea Mall South & State College Boulevard

Existing Plus Project
Sat MD Peak Hour

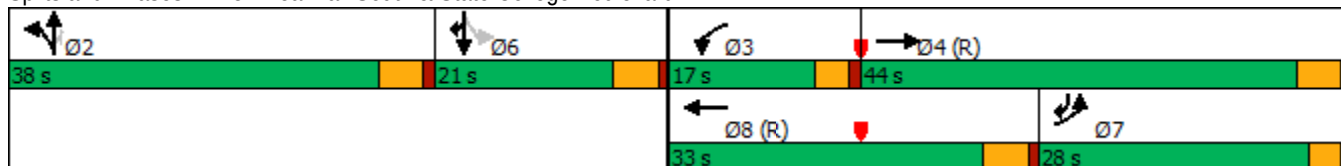
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	B108	B108	B107	B107	NB
Directions Served	L	L	T	TR	L	T	TR	T	T	T	T	L
Maximum Queue (ft)	264	301	369	115	230	1055	1041	551	553	207	198	171
Average Queue (ft)	167	185	59	54	135	678	511	154	133	24	24	94
95th Queue (ft)	259	276	201	100	288	1301	1170	589	561	188	188	156
Link Distance (ft)			591	591		979	979	766	766	502	502	172
Upstream Blk Time (%)						36	10	7	6	1	1	1
Queuing Penalty (veh)						153	43	31	27	5	5	0
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)	1	5			3	74						
Queuing Penalty (veh)	2	8			8	60						

Intersection: 15: Brea Mall South & State College Boulevard

Movement	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	T	R
Maximum Queue (ft)	131	77	90	226	306
Average Queue (ft)	35	33	42	19	279
95th Queue (ft)	96	60	82	128	292
Link Distance (ft)	172	172	262	262	262
Upstream Blk Time (%)	0			2	95
Queuing Penalty (veh)	0			0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	1437	172	603	1694	935	256	496	535	630	391	169
Future Volume (vph)	126	1437	172	603	1694	935	256	496	535	630	391	169
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.984				0.850			0.850		0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3202	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3202	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				111			148		59	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.98	0.98	0.98	0.83	0.83	0.83
Adj. Flow (vph)	135	1545	185	655	1841	1016	261	506	546	759	471	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	1730	0	655	1841	1016	261	506	546	759	675	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	41.0		17.0	48.0	20.0	19.0	42.0	42.0	20.0	43.0	
Total Split (%)	8.3%	34.2%		14.2%	40.0%	16.7%	15.8%	35.0%	35.0%	16.7%	35.8%	
Maximum Green (s)	6.0	36.0		13.0	43.0	16.0	15.0	37.0	37.0	16.0	38.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	36.0		13.0	43.0	64.0	15.0	37.0	37.0	16.0	38.0	
Actuated g/C Ratio	0.05	0.30		0.11	0.36	0.53	0.12	0.31	0.31	0.13	0.32	
v/c Ratio	0.83	0.96		1.86	1.07	1.19	0.64	0.49	0.97	2.42	0.64	
Control Delay	73.9	32.4		422.2	72.6	117.4	58.0	35.8	61.2	668.3	25.8	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	73.9	32.4		422.2	72.6	117.4	58.0	35.8	61.2	668.3	25.8	
LOS	E	C		F	E	F	E	D	E	F	C	
Approach Delay		35.4			150.8			50.8			365.9	
Approach LOS		D			F			D			F	
Queue Length 50th (ft)	57	282		~399	~572	~905	100	167	325	~508	173	
Queue Length 95th (ft)	m#87	#446		m#472	#671	m#1102	146	222	#560	m#537	m182	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1809		352	1726	851	406	1033	564	313	1054	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.83	0.96		1.86	1.07	1.19	0.64	0.49	0.97	2.42	0.64	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 28 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.42

Intersection Signal Delay: 146.1

Intersection LOS: F

Intersection Capacity Utilization 98.9%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Existing Plus Project
Sat MD Peak Hour

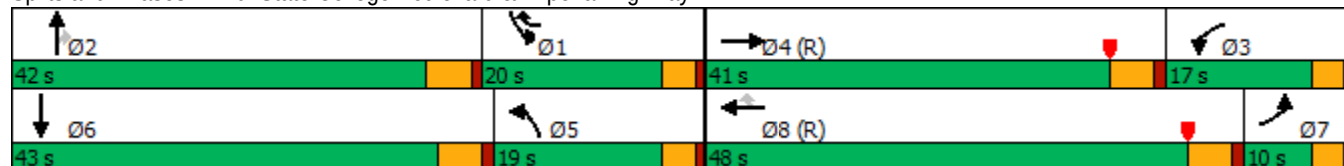
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



APPENDIX F-III

EXISTING PLUS PROJECT WITH MITIGATION
TRAFFIC CONDITIONS

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project [MIT]
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	1480	171	410	1456	186	95	150	378	109	341	25
Future Volume (vph)	31	1480	171	410	1456	186	95	150	378	109	341	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		275
Storage Lanes	2		1	2		1	2		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt		0.984				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				207			291			127
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	34	1626	188	456	1618	207	104	165	415	116	363	27
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	1814	0	456	1618	207	104	165	415	116	363	27
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			6

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project [MIT]
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	40.0
Total Split (s)	10.0	44.0		24.0	58.0	10.0	11.0	42.0	42.0	10.0	41.0	41.0
Total Split (%)	8.3%	36.7%		20.0%	48.3%	8.3%	9.2%	35.0%	35.0%	8.3%	34.2%	34.2%
Maximum Green (s)	6.0	39.0		20.0	53.0	6.0	7.0	37.0	37.0	6.0	36.0	36.0
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	28.0
Pedestrian Calls (#/hr)		2			2			2	2		2	2
Act Effect Green (s)	6.0	39.6		19.4	57.0	65.6	7.0	37.0	37.0	6.0	36.0	36.0
Actuated g/C Ratio	0.05	0.33		0.16	0.48	0.55	0.06	0.31	0.31	0.05	0.30	0.30
v/c Ratio	0.21	0.91		0.87	0.71	0.23	0.55	0.16	0.63	0.72	0.36	0.05
Control Delay	76.9	25.0		53.5	25.2	2.5	66.4	30.7	15.0	70.5	18.0	0.2
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.9	25.0		53.5	25.2	2.5	66.4	30.7	15.0	70.5	18.0	0.2
LOS	E	C		D	C	A	E	C	B	E	B	A
Approach Delay		25.9			28.8			26.6			29.1	
Approach LOS		C			C			C			C	
Queue Length 50th (ft)	14	357		153	399	14	41	48	75	48	46	0
Queue Length 95th (ft)	m22	#336		#254	458	m23	71	76	188	#93	81	1
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		275
Base Capacity (vph)	162	1987		542	2288	913	189	1033	663	162	1005	538
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.91		0.84	0.71	0.23	0.55	0.16	0.63	0.72	0.36	0.05

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 110 (92%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.91

Intersection Signal Delay: 27.6

Intersection LOS: C

Intersection Capacity Utilization 67.9%

ICU Level of Service C

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

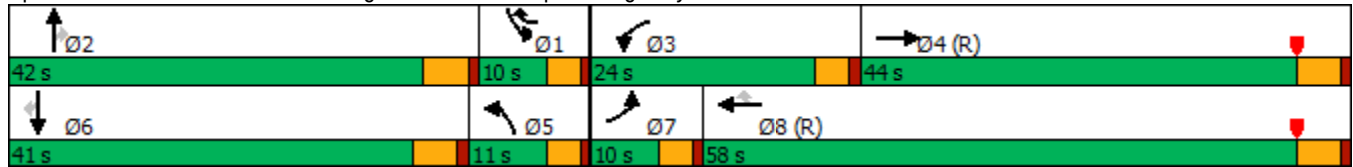
Existing Plus Project [MIT]

AM Peak Hour

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project [MIT]

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	1688	90	418	1720	542	339	545	328	444	279	89
Future Volume (vph)	102	1688	90	418	1720	542	339	545	328	444	279	89
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		275
Storage Lanes	2		1	2		1	2		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt		0.992				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	6022	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	6022	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				78			275			136
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	106	1758	94	435	1792	565	377	606	364	493	310	99
Shared Lane Traffic (%)												
Lane Group Flow (vph)	106	1852	0	435	1792	565	377	606	364	493	310	99
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			6

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project [MIT]
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	40.0
Total Split (s)	10.0	38.0		19.0	47.0	21.0	21.0	42.0	42.0	21.0	42.0	42.0
Total Split (%)	8.3%	31.7%		15.8%	39.2%	17.5%	17.5%	35.0%	35.0%	17.5%	35.0%	35.0%
Maximum Green (s)	6.0	33.0		15.0	42.0	17.0	17.0	37.0	37.0	17.0	37.0	37.0
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	28.0
Pedestrian Calls (#/hr)		2			2			2	2		2	2
Act Effect Green (s)	6.0	33.0		15.0	42.0	64.0	17.0	37.0	37.0	17.0	37.0	37.0
Actuated g/C Ratio	0.05	0.28		0.12	0.35	0.53	0.14	0.31	0.31	0.14	0.31	0.31
v/c Ratio	0.65	1.11		1.07	1.06	0.68	0.82	0.59	0.56	1.07	0.30	0.18
Control Delay	54.7	86.0		105.9	70.0	18.1	65.4	37.8	12.4	104.8	26.6	2.7
Queue Delay	0.0	0.0		0.0	15.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.7	86.0		105.9	85.5	18.1	65.4	37.8	12.4	104.8	26.6	2.7
LOS	D	F		F	F	B	E	D	B	F	C	A
Approach Delay		84.3			75.0			38.7			66.7	
Approach LOS		F			E			D			E	
Queue Length 50th (ft)	44	~492		~195	~554	255	147	208	51	~207	110	9
Queue Length 95th (ft)	m62	#571		m#243	#650	m317	#221	270	146	#322	135	m13
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		275
Base Capacity (vph)	162	1662		406	1686	836	460	1033	652	460	1033	556
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	84	0	0	0	0	0	0	3
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.65	1.11		1.07	1.12	0.68	0.82	0.59	0.56	1.07	0.30	0.18

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.11

Intersection Signal Delay: 69.6

Intersection LOS: E

Intersection Capacity Utilization 84.4%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Existing Plus Project [MIT]
 PM Peak Hour

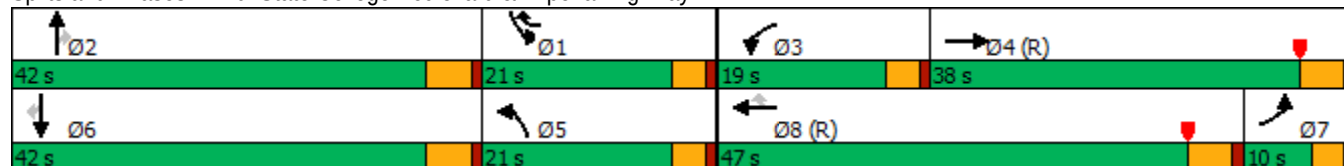
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project [MIT]
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	126	1437	172	603	1694	935	256	496	535	630	391	169
Future Volume (vph)	126	1437	172	603	1694	935	256	496	535	630	391	169
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		275
Storage Lanes	2		1	2		1	2		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt		0.984				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				111			148			136
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.98	0.98	0.98	0.83	0.83	0.83
Adj. Flow (vph)	135	1545	185	655	1841	1016	261	506	546	759	471	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	1730	0	655	1841	1016	261	506	546	759	471	204
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			6

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Existing Plus Project [MIT]
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	40.0
Total Split (s)	10.0	41.0		17.0	48.0	20.0	19.0	42.0	42.0	20.0	43.0	43.0
Total Split (%)	8.3%	34.2%		14.2%	40.0%	16.7%	15.8%	35.0%	35.0%	16.7%	35.8%	35.8%
Maximum Green (s)	6.0	36.0		13.0	43.0	16.0	15.0	37.0	37.0	16.0	38.0	38.0
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	28.0
Pedestrian Calls (#/hr)		2			2			2	2		2	2
Act Effect Green (s)	6.0	36.0		13.0	43.0	64.0	15.0	37.0	37.0	16.0	38.0	38.0
Actuated g/C Ratio	0.05	0.30		0.11	0.36	0.53	0.12	0.31	0.31	0.13	0.32	0.32
v/c Ratio	0.83	0.96		1.86	1.07	1.19	0.64	0.49	0.97	1.75	0.44	0.36
Control Delay	73.9	32.4		422.2	72.6	117.4	58.0	35.8	61.2	373.2	26.0	7.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.9	32.4		422.2	72.6	117.4	58.0	35.8	61.2	373.2	26.0	7.0
LOS	E	C		F	E	F	E	D	E	F	C	A
Approach Delay		35.4			150.8			50.8			207.1	
Approach LOS		D			F			D			F	
Queue Length 50th (ft)	57	282		~399	~572	~905	100	167	325	~457	111	7
Queue Length 95th (ft)	m#87	#446		m#472	#671	m#1102	146	222	#560	m#486	m121	m13
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		275
Base Capacity (vph)	162	1809		352	1726	851	406	1033	564	433	1061	567
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.96		1.86	1.07	1.19	0.64	0.49	0.97	1.75	0.44	0.36

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 28 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.86

Intersection Signal Delay: 118.1

Intersection LOS: F

Intersection Capacity Utilization 91.6%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Existing Plus Project [MIT]
Sat MD Peak Hour

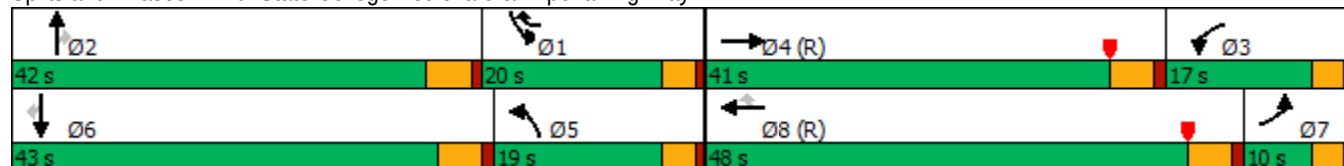
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



APPENDIX F-IV

YEAR 2022 CUMULATIVE
TRAFFIC CONDITIONS

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	26	0	5	12	160	65	14	138	6
Future Volume (vph)	1	0	1	26	0	5	12	160	65	14	138	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.952			0.957			0.993	
Flt Protected		0.950		0.950	0.967		0.950			0.950		
Satd. Flow (prot)	0	1676	1500	1593	1543	0	1676	3209	0	1676	3329	0
Flt Permitted		0.548		0.950	0.967		0.609			0.585		
Satd. Flow (perm)	0	967	1500	1593	1543	0	1075	3209	0	1032	3329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155		155			50			4	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.25	0.25	0.25	0.60	0.60	0.60	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	4	0	4	43	0	8	14	193	78	15	152	7
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	0	4	4	26	25	0	14	271	0	15	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	34.0	34.0	34.0	35.0	35.0		12.0	38.0		13.0	39.0	
Total Split (%)	28.3%	28.3%	28.3%	29.2%	29.2%		10.0%	31.7%		10.8%	32.5%	
Maximum Green (s)	29.0	29.0	29.0	30.0	30.0		7.0	33.0		8.0	34.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effect Green (s)		11.1	11.1	10.8	10.8		86.9	87.9		88.4	88.4	
Actuated g/C Ratio		0.09	0.09	0.09	0.09		0.72	0.73		0.74	0.74	
v/c Ratio		0.04	0.01	0.18	0.09		0.02	0.11		0.02	0.06	
Control Delay		44.0	0.0	49.5	0.6		9.1	4.5		9.6	6.3	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		44.0	0.0	49.5	0.6		9.1	4.5		9.6	6.3	
LOS		D	A	D	A		A	A		A	A	
Approach Delay		22.0			25.5			4.7			6.6	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		3	0	21	0		0	1		0	1	
Queue Length 95th (ft)		4	0	28	0		m17	72		m15	54	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		233	480	398	502		814	2363		794	2452	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.02	0.01	0.07	0.05		0.02	0.11		0.02	0.06	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 21 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.18

Intersection Signal Delay: 7.7

Intersection LOS: A

Intersection Capacity Utilization 28.2%

ICU Level of Service A

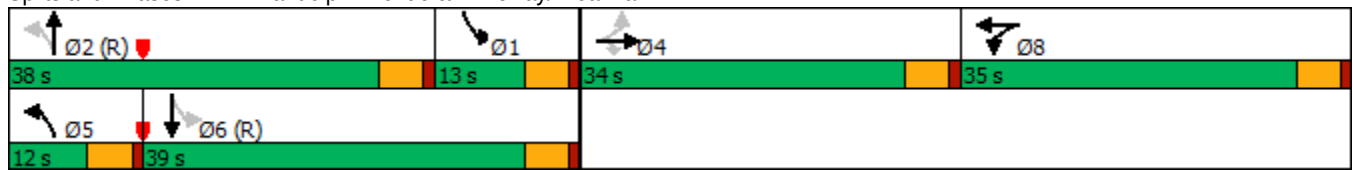
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 14: Randolph Avenue & Driveway/Brea Mall

Year 2022
 AM Peak Hour

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall



Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	286	14	27	437	11	31	5	14	3	2	27
Future Volume (vph)	75	286	14	27	437	11	31	5	14	3	2	27
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.993			0.996				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.966			0.973	
Satd. Flow (prot)	3252	3329	0	1676	3340	0	1593	1619	1500	0	3262	1500
Flt Permitted	0.950			0.950			0.950	0.966			0.867	
Satd. Flow (perm)	3252	3329	0	1676	3340	0	1593	1619	1500	0	2907	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			2				145			100
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.82	0.82	0.82	0.94	0.94	0.94	0.58	0.58	0.58	0.55	0.55	0.55
Adj. Flow (vph)	91	349	17	29	465	12	53	9	24	5	4	49
Shared Lane Traffic (%)							42%					
Lane Group Flow (vph)	91	366	0	29	477	0	31	31	24	0	9	49
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	20.0	51.0		12.0	43.0		38.0	38.0	38.0	19.0	19.0	
Total Split (%)	16.7%	42.5%		10.0%	35.8%		31.7%	31.7%	31.7%	15.8%	15.8%	
Maximum Green (s)	16.0	46.0		8.0	38.0		33.0	33.0	33.0	14.0	14.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	16.0	50.9		7.2	38.0		33.0	33.0	33.0		14.0	29.0
Actuated g/C Ratio	0.13	0.42		0.06	0.32		0.28	0.28	0.28		0.12	0.24
v/c Ratio	0.21	0.26		0.29	0.45		0.07	0.07	0.05		0.03	0.11
Control Delay	38.9	19.4		55.4	11.5		32.9	32.8	0.1		47.4	0.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	38.9	19.4		55.4	11.5		32.9	32.8	0.1		47.4	0.5
LOS	D	B		E	B		C	C	A		D	A
Approach Delay		23.3			14.1			23.7			7.8	
Approach LOS		C			B			C			A	
Queue Length 50th (ft)	25	77		19	109		18	18	0		3	0
Queue Length 95th (ft)	41	87		m26	m123		28	28	0		7	0
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	433	1415		111	1059		438	445	517		339	438
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.21	0.26		0.26	0.45		0.07	0.07	0.05		0.03	0.11

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 25 (21%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 18.3

Intersection LOS: B

Intersection Capacity Utilization 37.5%

ICU Level of Service A

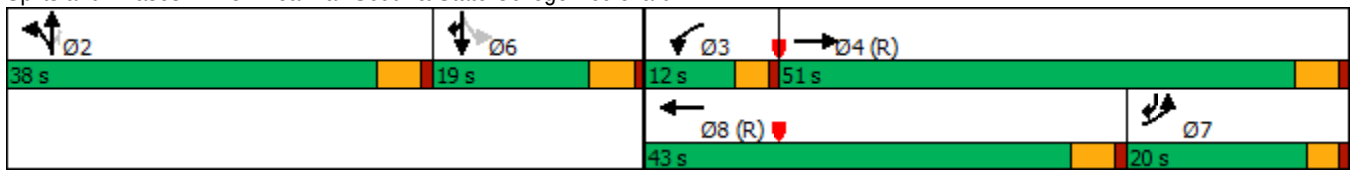
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 15: Brea Mall South & State College Boulevard

Year 2022
 AM Peak Hour

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	TR	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	49	67	101	111	67	132	115	74	37	30	29	72
Average Queue (ft)	9	32	43	50	23	57	52	17	5	9	2	17
95th Queue (ft)	31	63	84	93	57	108	97	53	23	32	15	51
Link Distance (ft)			591	591		979	979	172	172	172	262	262
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)							0					
Queuing Penalty (veh)							0					

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1533	177	422	1712	171	104	147	389	175	366	26
Future Volume (vph)	32	1533	177	422	1712	171	104	147	389	175	366	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.984				0.850			0.850		0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3319	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		24				180			242		6	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	35	1685	195	469	1902	190	114	162	427	186	389	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	1880	0	469	1902	190	114	162	427	186	417	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	43.0		22.0	55.0	13.0	12.0	42.0	42.0	13.0	43.0	
Total Split (%)	8.3%	35.8%		18.3%	45.8%	10.8%	10.0%	35.0%	35.0%	10.8%	35.8%	
Maximum Green (s)	6.0	38.0		18.0	50.0	9.0	8.0	37.0	37.0	9.0	38.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	38.0		18.0	54.0	65.6	8.0	37.0	37.0	9.0	38.0	
Actuated g/C Ratio	0.05	0.32		0.15	0.45	0.55	0.07	0.31	0.31	0.08	0.32	
v/c Ratio	0.22	0.99		0.96	0.88	0.21	0.53	0.16	0.68	1.06	0.40	
Control Delay	39.5	37.8		74.1	30.6	4.0	63.5	30.7	21.2	122.8	14.5	
Queue Delay	0.0	0.0		0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	39.5	37.8		74.1	31.0	4.0	63.5	30.7	21.2	122.8	14.5	
LOS	D	D		E	C	A	E	C	C	F	B	
Approach Delay		37.8			36.9			30.3			47.9	
Approach LOS		D			D			C			D	
Queue Length 50th (ft)	14	159		197	414	29	44	47	124	~83	133	
Queue Length 95th (ft)	m21	#490		m#279	#617	m34	76	75	246	#154	160	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1907		487	2168	902	216	1033	629	176	1055	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	46	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.22	0.99		0.96	0.90	0.21	0.53	0.16	0.68	1.06	0.40	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 6 (5%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 37.6

Intersection LOS: D

Intersection Capacity Utilization 71.5%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

20: State College Boulevard & Imperial Highway

Year 2022
AM Peak Hour

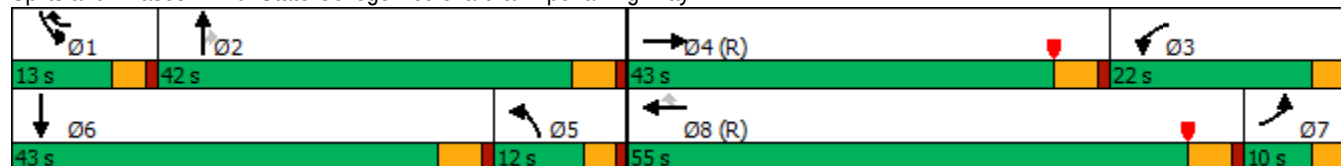
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	3	11	258	3	44	15	308	304	35	339	19
Future Volume (vph)	16	3	11	258	3	44	15	308	304	35	339	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.956			0.925			0.992	
Flt Protected		0.959		0.950	0.967		0.950			0.950		
Satd. Flow (prot)	0	1692	1500	1593	1550	0	1676	3101	0	1676	3326	0
Flt Permitted		0.394		0.950	0.967		0.513			0.367		
Satd. Flow (perm)	0	695	1500	1593	1550	0	905	3101	0	648	3326	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		16			220			5	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	17	3	12	300	3	51	16	321	317	38	365	20
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	0	20	12	180	174	0	16	638	0	38	385	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	31.0	31.0	31.0	34.0	34.0		11.0	44.0		11.0	44.0	
Total Split (%)	25.8%	25.8%	25.8%	28.3%	28.3%		9.2%	36.7%		9.2%	36.7%	
Maximum Green (s)	26.0	26.0	26.0	29.0	29.0		6.0	39.0		6.0	39.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lead		Lag	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effect Green (s)		11.9	11.9	18.9	18.9		78.1	72.1		79.1	74.3	
Actuated g/C Ratio		0.10	0.10	0.16	0.16		0.65	0.60		0.66	0.62	
v/c Ratio		0.29	0.05	0.72	0.67		0.03	0.33		0.08	0.19	
Control Delay		56.8	0.4	63.2	55.5		18.3	13.0		8.9	8.9	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		56.8	0.4	63.2	55.5		18.3	13.0		8.9	8.9	
LOS		E	A	E	E		B	B		A	A	
Approach Delay		35.7			59.4			13.2			8.9	
Approach LOS		D			E			B			A	
Queue Length 50th (ft)		15	0	141	123		5	92		5	25	
Queue Length 95th (ft)		36	0	197	178		m22	261		m28	163	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		150	410	384	386		627	1951		478	2061	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.13	0.03	0.47	0.45		0.03	0.33		0.08	0.19	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 77 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 23.6

Intersection LOS: C

Intersection Capacity Utilization 52.5%

ICU Level of Service A

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 14: Randolph Avenue & Driveway/Brea Mall

Year 2022
 PM Peak Hour

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall

 Ø2 (R)  44 s	 Ø1  11 s	 Ø4  31 s	 Ø8  34 s
 Ø6 (R)  44 s	 Ø5  11 s		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	466	614	22	93	491	26	135	19	63	42	12	361
Future Volume (vph)	466	614	22	93	491	26	135	19	63	42	12	361
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.995			0.992				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.964			0.962	
Satd. Flow (prot)	3252	3336	0	1676	3326	0	1593	1616	1500	0	3226	1500
Flt Permitted	0.950			0.950			0.950	0.964			0.730	
Satd. Flow (perm)	3252	3336	0	1676	3326	0	1593	1616	1500	0	2448	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			4				145			298
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	536	706	25	102	540	29	163	23	76	47	13	401
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	536	731	0	102	569	0	93	93	76	0	60	401
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	32.0	47.0		18.0	33.0		38.0	38.0	38.0	17.0	17.0	
Total Split (%)	26.7%	39.2%		15.0%	27.5%		31.7%	31.7%	31.7%	14.2%	14.2%	
Maximum Green (s)	28.0	42.0		14.0	28.0		33.0	33.0	33.0	12.0	12.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	25.8	42.0		11.8	28.0		35.2	35.2	35.2		12.0	36.8
Actuated g/C Ratio	0.22	0.35		0.10	0.23		0.29	0.29	0.29		0.10	0.31
v/c Ratio	0.77	0.63		0.62	0.73		0.20	0.20	0.14		0.25	0.60
Control Delay	37.2	42.6		67.1	41.0		34.2	34.1	0.5		52.7	8.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	37.2	42.6		67.1	41.0		34.2	34.1	0.5		52.7	8.5
LOS	D	D		E	D		C	C	A		D	A
Approach Delay		40.3			45.0			24.4			14.3	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	142	244		82	187		57	57	0		23	30
Queue Length 95th (ft)	197	300		m137	262		96	96	0		45	70
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	758	1169		195	779		468	474	542		244	688
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.71	0.63		0.52	0.73		0.20	0.20	0.14		0.25	0.58

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 28 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

Intersection Signal Delay: 35.4

Intersection LOS: D

Intersection Capacity Utilization 56.3%

ICU Level of Service B

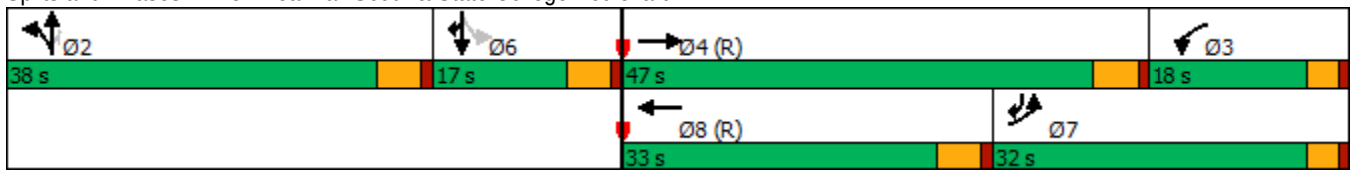
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 15: Brea Mall South & State College Boulevard

Year 2022
 PM Peak Hour

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	B108	B108	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	T	T	L	LT	R
Maximum Queue (ft)	194	204	219	228	230	808	720	149	100	189	157	67
Average Queue (ft)	98	120	132	147	136	416	255	13	8	111	45	28
95th Queue (ft)	169	184	195	211	292	903	686	111	95	198	127	58
Link Distance (ft)			591	591		979	979	766	766	172	172	172
Upstream Blk Time (%)						7	1			9	0	
Queuing Penalty (veh)						25	2			0	0	
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)	0	0	0		1	57						
Queuing Penalty (veh)	0	1	1		1	53						

Intersection: 15: Brea Mall South & State College Boulevard

Movement	SB	SB	SB
Directions Served	LT	T	R
Maximum Queue (ft)	98	161	311
Average Queue (ft)	38	16	250
95th Queue (ft)	83	114	352
Link Distance (ft)	262	262	262
Upstream Blk Time (%)		2	69
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	1813	98	431	1840	554	354	558	338	473	291	92
Future Volume (vph)	105	1813	98	431	1840	554	354	558	338	473	291	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.992				0.850			0.850		0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	6022	0	3252	4818	1500	3252	3353	1500	2349	3232	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	6022	0	3252	4818	1500	3252	3353	1500	2349	3232	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				73			219		35	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	1889	102	449	1917	577	393	620	376	526	323	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	1991	0	449	1917	577	393	620	376	526	425	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	43.0		16.0	49.0	19.0	21.0	42.0	42.0	19.0	40.0	
Total Split (%)	8.3%	35.8%		13.3%	40.8%	15.8%	17.5%	35.0%	35.0%	15.8%	33.3%	
Maximum Green (s)	6.0	38.0		12.0	44.0	15.0	17.0	37.0	37.0	15.0	35.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	38.0		12.0	44.0	64.0	17.0	37.0	37.0	15.0	35.0	
Actuated g/C Ratio	0.05	0.32		0.10	0.37	0.53	0.14	0.31	0.31	0.12	0.29	
v/c Ratio	0.67	1.04		1.38	1.09	0.69	0.85	0.60	0.61	1.80	0.44	
Control Delay	53.8	53.4		221.1	71.8	10.8	68.7	38.1	19.0	398.8	23.0	
Queue Delay	0.0	0.0		0.0	6.6	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	53.8	53.4		221.1	78.3	10.8	68.7	38.1	19.0	398.8	23.0	
LOS	D	D		F	E	B	E	D	B	F	C	
Approach Delay		53.4			86.9			41.6			230.9	
Approach LOS		D			F			D			F	
Queue Length 50th (ft)	39	~465		~236	~606	76	155	214	100	~306	135	
Queue Length 95th (ft)	m54	#546		m#300	#704	m105	#236	276	208	#431	169	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1913		325	1766	834	460	1033	613	293	967	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	239	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.67	1.04		1.38	1.26	0.69	0.85	0.60	0.61	1.80	0.44	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 36 (30%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.80

Intersection Signal Delay: 87.4

Intersection LOS: F

Intersection Capacity Utilization 93.5%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

20: State College Boulevard & Imperial Highway

Year 2022
PM Peak Hour

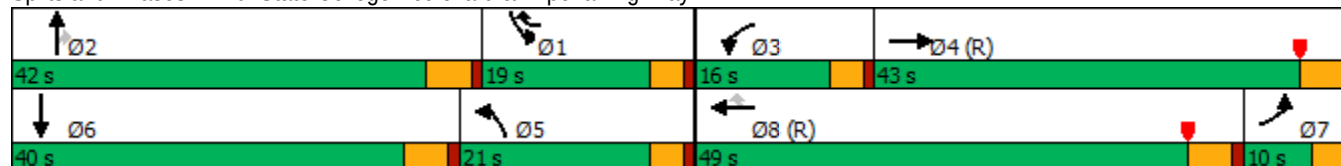
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	13	26	373	6	73	22	318	406	40	286	21
Future Volume (vph)	24	13	26	373	6	73	22	318	406	40	286	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.950			0.916			0.990	
Flt Protected		0.968		0.950	0.969		0.950			0.950		
Satd. Flow (prot)	0	1708	1500	1593	1543	0	1676	3071	0	1676	3319	0
Flt Permitted		0.223		0.950	0.969		0.536			0.229		
Satd. Flow (perm)	0	394	1500	1593	1543	0	946	3071	0	404	3319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155		21			268			6	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.90	0.90	0.90	0.87	0.87	0.87	0.96	0.96	0.96	0.85	0.85	0.85
Adj. Flow (vph)	27	14	29	429	7	84	23	331	423	47	336	25
Shared Lane Traffic (%)				38%								
Lane Group Flow (vph)	0	41	29	266	254	0	23	754	0	47	361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	31.0	31.0	31.0	39.0	39.0		11.0	39.0		11.0	39.0	
Total Split (%)	25.8%	25.8%	25.8%	32.5%	32.5%		9.2%	32.5%		9.2%	32.5%	
Maximum Green (s)	26.0	26.0	26.0	34.0	34.0		6.0	34.0		6.0	34.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effct Green (s)		16.1	16.1	25.7	25.7		55.8	55.8		58.8	58.8	
Actuated g/C Ratio		0.13	0.13	0.21	0.21		0.46	0.46		0.49	0.49	
v/c Ratio		0.79	0.09	0.78	0.73		0.05	0.48		0.17	0.22	
Control Delay		119.9	0.5	59.9	52.2		25.1	14.8		18.8	15.7	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.1		0.0	0.0	
Total Delay		119.9	0.5	59.9	52.2		25.1	14.9		18.8	15.7	
LOS		F	A	E	D		C	B		B	B	
Approach Delay		70.4			56.2			15.2			16.1	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)		31	0	205	177		8	84		20	91	
Queue Length 95th (ft)		#75	0	271	244		m13	m110		m50	146	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		85	446	451	452		476	1570		270	1629	
Starvation Cap Reductn		0	0	0	0		0	126		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.48	0.07	0.59	0.56		0.05	0.52		0.17	0.22	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 80 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 105												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.79												
Intersection Signal Delay: 29.6						Intersection LOS: C						
Intersection Capacity Utilization 60.7%						ICU Level of Service B						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												

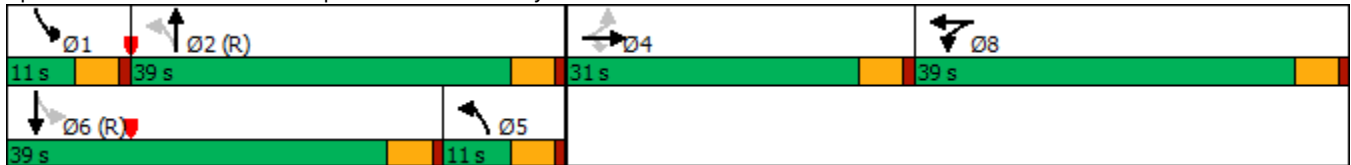
Lanes, Volumes, Timings
 14: Randolph Avenue & Driveway/Brea Mall

Year 2022
 Sat MD Peak Hour

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall



Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	639	476	29	84	705	34	165	24	89	59	19	500
Future Volume (vph)	639	476	29	84	705	34	165	24	89	59	19	500
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.991			0.993				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.964			0.963	
Satd. Flow (prot)	3252	3323	0	1676	3329	0	1593	1616	1500	0	3229	1500
Flt Permitted	0.950			0.950			0.950	0.964			0.718	
Satd. Flow (perm)	3252	3323	0	1676	3329	0	1593	1616	1500	0	2407	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			4				145			237
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	680	506	31	94	792	38	199	29	107	66	21	556
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	680	537	0	94	830	0	113	115	107	0	87	556
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	28.0	44.0		17.0	33.0		38.0	38.0	38.0	21.0	21.0	
Total Split (%)	23.3%	36.7%		14.2%	27.5%		31.7%	31.7%	31.7%	17.5%	17.5%	
Maximum Green (s)	24.0	39.0		13.0	28.0		33.0	33.0	33.0	16.0	16.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	24.0	39.0		13.0	28.0		33.0	33.0	33.0		16.0	39.0
Actuated g/C Ratio	0.20	0.32		0.11	0.23		0.28	0.28	0.28		0.13	0.32
v/c Ratio	1.05	0.50		0.52	1.07		0.26	0.26	0.21		0.27	0.86
Control Delay	73.7	32.4		57.2	74.3		35.9	35.9	3.0		49.3	26.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	73.7	32.4		57.2	74.3		35.9	35.9	3.0		49.3	26.9
LOS	E	C		E	E		D	D	A		D	C
Approach Delay		55.5			72.6			25.4			29.9	
Approach LOS		E			E			C			C	
Queue Length 50th (ft)	~297	162		74	~370		72	73	0		32	115
Queue Length 95th (ft)	m253	m147		m97	m#447		114	116	12		58	#293
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	650	1083		181	779		438	444	517		320	647
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	1.05	0.50		0.52	1.07		0.26	0.26	0.21		0.27	0.86

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 104 (87%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.07

Intersection Signal Delay: 52.0

Intersection LOS: D

Intersection Capacity Utilization 72.4%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 15: Brea Mall South & State College Boulevard

Year 2022
 Sat MD Peak Hour

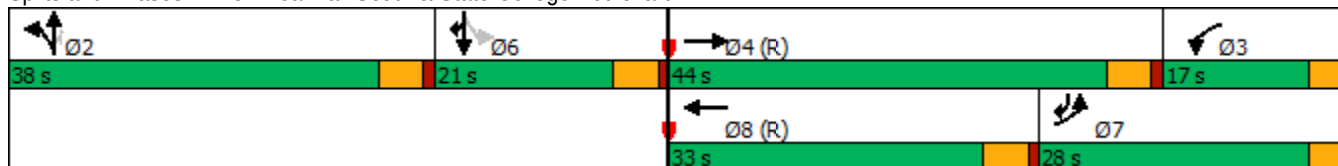
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	B108	B108	B107	B107	NB
Directions Served	L	L	T	TR	L	T	TR	T	T	T	T	L
Maximum Queue (ft)	250	279	292	194	230	1082	1068	862	865	528	532	151
Average Queue (ft)	168	189	98	101	122	913	786	579	573	290	290	80
95th Queue (ft)	241	257	208	164	290	1399	1388	1170	1174	695	697	142
Link Distance (ft)			591	591		979	979	766	766	502	502	172
Upstream Blk Time (%)						75	30	59	54	24	25	0
Queuing Penalty (veh)						370	149	291	268	120	122	0
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)	1	4			0	85						
Queuing Penalty (veh)	2	8			1	71						

Intersection: 15: Brea Mall South & State College Boulevard

Movement	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	T	R
Maximum Queue (ft)	110	79	103	215	306
Average Queue (ft)	33	35	33	21	270
95th Queue (ft)	78	64	80	132	327
Link Distance (ft)	172	172	262	262	262
Upstream Blk Time (%)				2	84
Queuing Penalty (veh)				0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1522	183	621	1838	1004	271	522	551	650	402	174
Future Volume (vph)	130	1522	183	621	1838	1004	271	522	551	650	402	174
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.984				0.850			0.850		0.955	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3202	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3202	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				100			136		59	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.98	0.98	0.98	0.83	0.83	0.83
Adj. Flow (vph)	140	1637	197	675	1998	1091	277	533	562	783	484	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	1834	0	675	1998	1091	277	533	562	783	694	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022
Sat MD Peak Hour



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	42.0		16.0	48.0	20.0	20.0	42.0	42.0	20.0	42.0	
Total Split (%)	8.3%	35.0%		13.3%	40.0%	16.7%	16.7%	35.0%	35.0%	16.7%	35.0%	
Maximum Green (s)	6.0	37.0		12.0	43.0	16.0	16.0	37.0	37.0	16.0	37.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	37.0		12.0	43.0	60.0	16.0	37.0	37.0	16.0	37.0	
Actuated g/C Ratio	0.05	0.31		0.10	0.36	0.50	0.13	0.31	0.31	0.13	0.31	
v/c Ratio	0.86	0.99		2.08	1.16	1.36	0.64	0.52	1.01	2.50	0.68	
Control Delay	72.6	39.0		516.5	109.3	187.0	56.7	36.3	72.7	700.7	28.5	
Queue Delay	0.0	0.0		0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	72.6	39.0		516.5	109.3	187.0	56.7	36.3	72.7	700.7	28.5	
LOS	E	D		F	F	F	E	D	E	F	C	
Approach Delay		41.3			204.9			55.3			384.8	
Approach LOS		D			F			E			F	
Queue Length 50th (ft)	58	275		~428	~665	~732	106	178	~363	~527	250	
Queue Length 95th (ft)	m#84	#484		m#471	m#742	m#1230	152	234	#602	m#541	m253	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1858		325	1726	800	433	1033	556	313	1028	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	30	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.86	0.99		2.08	1.18	1.36	0.64	0.52	1.01	2.50	0.68	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 3 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.50

Intersection Signal Delay: 174.3

Intersection LOS: F

Intersection Capacity Utilization 102.5%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

20: State College Boulevard & Imperial Highway

Year 2022
Sat MD Peak Hour

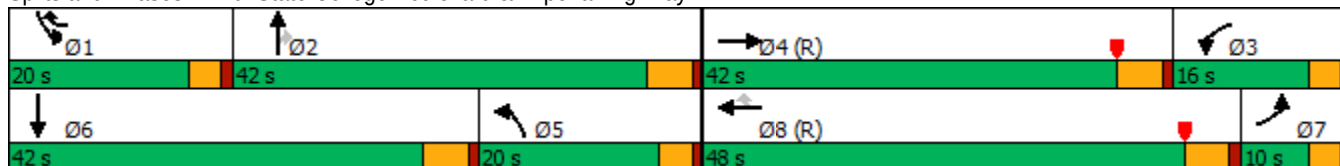
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



APPENDIX F-V

YEAR 2022 CUMULATIVE PLUS PROJECT
TRAFFIC CONDITIONS

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022 Plus Project
AM Peak Hour

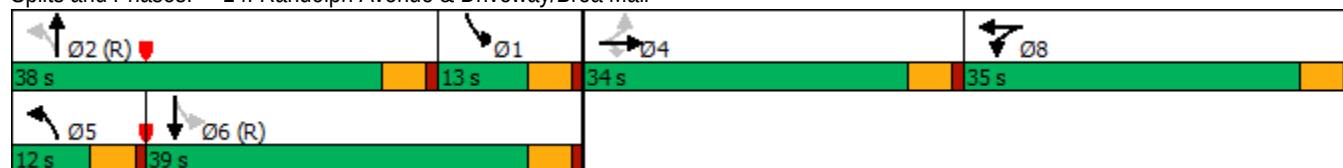
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	1	104	0	19	12	160	126	25	138	6
Future Volume (vph)	1	0	1	104	0	19	12	160	126	25	138	6
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.952			0.934			0.993	
Flt Protected		0.950		0.950	0.967		0.950			0.950		
Satd. Flow (prot)	0	1676	1500	1593	1543	0	1676	3132	0	1676	3329	0
Flt Permitted		0.548		0.950	0.967		0.604			0.545		
Satd. Flow (perm)	0	967	1500	1593	1543	0	1066	3132	0	962	3329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155		155			152			4	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.25	0.25	0.25	0.60	0.60	0.60	0.83	0.83	0.83	0.91	0.91	0.91
Adj. Flow (vph)	4	0	4	173	0	32	14	193	152	27	152	7
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	0	4	4	104	101	0	14	345	0	27	159	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022 Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	34.0	34.0	34.0	35.0	35.0		12.0	38.0		13.0	39.0	
Total Split (%)	28.3%	28.3%	28.3%	29.2%	29.2%		10.0%	31.7%		10.8%	32.5%	
Maximum Green (s)	29.0	29.0	29.0	30.0	30.0		7.0	33.0		8.0	34.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effct Green (s)		11.1	11.1	14.7	14.7		78.3	78.3		81.3	81.3	
Actuated g/C Ratio		0.09	0.09	0.12	0.12		0.65	0.65		0.68	0.68	
v/c Ratio		0.04	0.01	0.54	0.31		0.02	0.16		0.04	0.07	
Control Delay		44.0	0.0	57.8	3.8		10.8	4.4		9.9	6.9	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay		44.0	0.0	57.8	3.8		10.8	4.4		9.9	6.9	
LOS		D	A	E	A		B	A		A	A	
Approach Delay		22.0			31.2			4.6			7.4	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)		3	0	82	0		1	0		1	2	
Queue Length 95th (ft)		4	0	82	0		m16	85		m25	56	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		233	480	398	502		731	2095		699	2257	
Starvation Cap Reductn		0	0	0	0		0	0		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.02	0.01	0.26	0.20		0.02	0.16		0.04	0.07	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 21 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 105												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.54												
Intersection Signal Delay: 12.7						Intersection LOS: B						
Intersection Capacity Utilization 36.8%						ICU Level of Service A						
Analysis Period (min) 15												
m Volume for 95th percentile queue is metered by upstream signal.												

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall



Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022 Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	286	14	27	437	26	31	5	14	16	2	71
Future Volume (vph)	152	286	14	27	437	26	31	5	14	16	2	71
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.993			0.991				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.966			0.958	
Satd. Flow (prot)	3252	3329	0	1676	3323	0	1593	1619	1500	0	3212	1500
Flt Permitted	0.950			0.950			0.950	0.966			0.757	
Satd. Flow (perm)	3252	3329	0	1676	3323	0	1593	1619	1500	0	2538	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			5				145			129
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.82	0.82	0.82	0.94	0.94	0.94	0.58	0.58	0.58	0.55	0.55	0.55
Adj. Flow (vph)	185	349	17	29	465	28	53	9	24	29	4	129
Shared Lane Traffic (%)							42%					
Lane Group Flow (vph)	185	366	0	29	493	0	31	31	24	0	33	129
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022 Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	20.0	51.0		12.0	43.0		38.0	38.0	38.0	19.0	19.0	
Total Split (%)	16.7%	42.5%		10.0%	35.8%		31.7%	31.7%	31.7%	15.8%	15.8%	
Maximum Green (s)	16.0	46.0		8.0	38.0		33.0	33.0	33.0	14.0	14.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lag		Lead	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	16.0	50.9		7.2	38.0		33.0	33.0	33.0		14.0	29.0
Actuated g/C Ratio	0.13	0.42		0.06	0.32		0.28	0.28	0.28		0.12	0.24
v/c Ratio	0.43	0.26		0.29	0.47		0.07	0.07	0.05		0.11	0.28
Control Delay	43.1	19.9		55.8	11.4		32.9	32.8	0.1		48.6	4.7
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	43.1	19.9		55.8	11.4		32.9	32.8	0.1		48.6	4.7
LOS	D	B		E	B		C	C	A		D	A
Approach Delay		27.7			13.9			23.7			13.6	
Approach LOS		C			B			C			B	
Queue Length 50th (ft)	54	80		19	112		18	18	0		12	0
Queue Length 95th (ft)	75	91		m26	m126		28	28	0		17	0
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	433	1415		111	1055		438	445	517		296	460
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.43	0.26		0.26	0.47		0.07	0.07	0.05		0.11	0.28

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 25 (21%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 95

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.47

Intersection Signal Delay: 20.3

Intersection LOS: C

Intersection Capacity Utilization 38.0%

ICU Level of Service A

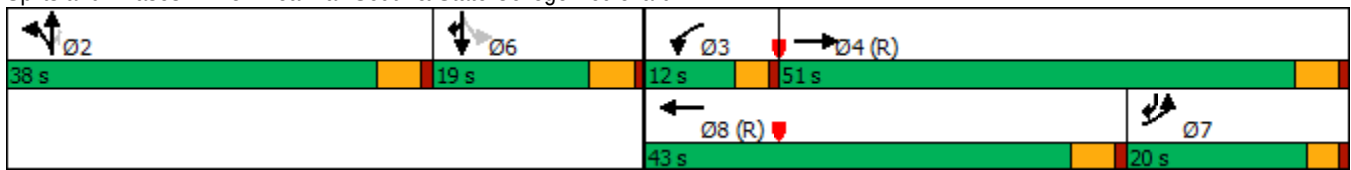
Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Lanes, Volumes, Timings
 15: Brea Mall South & State College Boulevard

Year 2022 Plus Project
 AM Peak Hour

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB
Directions Served	L	L	T	TR	L	T	TR	L	LT	R	LT	R
Maximum Queue (ft)	89	105	102	110	68	123	125	63	38	34	54	95
Average Queue (ft)	32	58	42	54	24	57	59	17	5	9	15	35
95th Queue (ft)	69	94	88	96	56	104	109	49	25	32	44	72
Link Distance (ft)			591	591		979	979	172	172	172	262	262
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)						0						
Queuing Penalty (veh)						0						

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1567	185	422	1723	229	107	167	389	204	382	26
Future Volume (vph)	32	1567	185	422	1723	229	107	167	389	204	382	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.984				0.850			0.850		0.990	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3319	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				239			240		6	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	35	1722	203	469	1914	254	118	184	427	217	406	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	1925	0	469	1914	254	118	184	427	217	434	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project
AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	43.0		22.0	55.0	13.0	12.0	42.0	42.0	13.0	43.0	
Total Split (%)	8.3%	35.8%		18.3%	45.8%	10.8%	10.0%	35.0%	35.0%	10.8%	35.8%	
Maximum Green (s)	6.0	38.0		18.0	50.0	9.0	8.0	37.0	37.0	9.0	38.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	38.0		18.0	54.0	65.6	8.0	37.0	37.0	9.0	38.0	
Actuated g/C Ratio	0.05	0.32		0.15	0.45	0.55	0.07	0.31	0.31	0.08	0.32	
v/c Ratio	0.22	1.01		0.96	0.88	0.27	0.55	0.18	0.68	1.23	0.41	
Control Delay	40.9	43.8		73.1	30.9	4.1	64.2	31.0	21.5	179.1	15.9	
Queue Delay	0.0	0.0		0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.9	43.8		73.1	31.3	4.1	64.2	31.0	21.5	179.1	15.9	
LOS	D	D		E	C	A	E	C	C	F	B	
Approach Delay		43.8			36.1			30.8			70.3	
Approach LOS		D			D			C			E	
Queue Length 50th (ft)	14	~235		197	412	39	46	54	126	~109	139	
Queue Length 95th (ft)	m21	#510		m#269	#623	m45	78	84	248	#182	168	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1908		487	2168	928	216	1033	628	176	1055	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	46	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.22	1.01		0.96	0.90	0.27	0.55	0.18	0.68	1.23	0.41	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 6 (5%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.23

Intersection Signal Delay: 41.7

Intersection LOS: D

Intersection Capacity Utilization 72.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings

20: State College Boulevard & Imperial Highway

Year 2022 Plus Project
AM Peak Hour

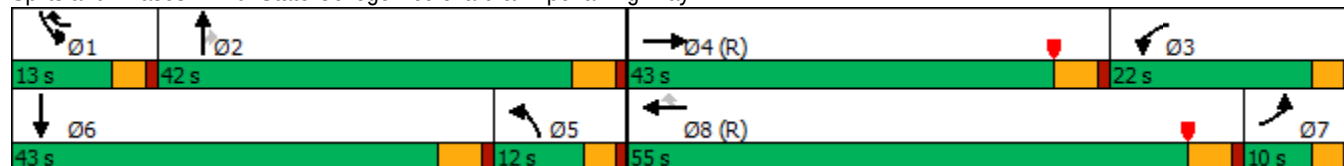
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022 Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	3	11	314	3	55	15	308	407	54	339	19
Future Volume (vph)	16	3	11	314	3	55	15	308	407	54	339	19
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.955			0.915			0.992	
Flt Protected		0.959		0.950	0.967		0.950			0.950		
Satd. Flow (prot)	0	1692	1500	1593	1548	0	1676	3068	0	1676	3326	0
Flt Permitted		0.394		0.950	0.967		0.509			0.307		
Satd. Flow (perm)	0	695	1500	1593	1548	0	898	3068	0	542	3326	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		17			294			5	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.94	0.94	0.94	0.86	0.86	0.86	0.96	0.96	0.96	0.93	0.93	0.93
Adj. Flow (vph)	17	3	12	365	3	64	16	321	424	58	365	20
Shared Lane Traffic (%)				40%								
Lane Group Flow (vph)	0	20	12	219	213	0	16	745	0	58	385	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022 Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	31.0	31.0	31.0	34.0	34.0		11.0	44.0		11.0	44.0	
Total Split (%)	25.8%	25.8%	25.8%	28.3%	28.3%		9.2%	36.7%		9.2%	36.7%	
Maximum Green (s)	26.0	26.0	26.0	29.0	29.0		6.0	39.0		6.0	39.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lead		Lag	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effect Green (s)		11.9	11.9	21.8	21.8		73.1	67.1		75.1	71.5	
Actuated g/C Ratio		0.10	0.10	0.18	0.18		0.61	0.56		0.63	0.60	
v/c Ratio		0.29	0.05	0.76	0.72		0.03	0.40		0.15	0.19	
Control Delay		56.8	0.4	62.7	56.0		19.4	13.6		10.9	10.0	
Queue Delay		0.0	0.0	0.0	0.0		0.0	0.2		0.0	0.0	
Total Delay		56.8	0.4	62.7	56.0		19.4	13.8		10.9	10.0	
LOS		E	A	E	E		B	B		B	B	
Approach Delay		35.7			59.4			13.9			10.1	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)		15	0	171	152		5	88		7	25	
Queue Length 95th (ft)		36	0	232	213		m19	m264		m45	161	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		150	410	384	386		585	1844		395	1982	
Starvation Cap Reductn		0	0	0	0		0	399		0	0	
Spillback Cap Reductn		0	0	0	0		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.13	0.03	0.57	0.55		0.03	0.52		0.15	0.19	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 77 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 25.1

Intersection LOS: C

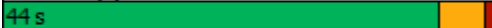
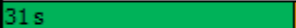
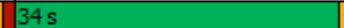
Intersection Capacity Utilization 58.0%

ICU Level of Service B

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall

 Ø2 (R)  44 s	 Ø1  11 s	 Ø4  31 s	 Ø8  34 s
 Ø6 (R)  44 s	 Ø5  11 s		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022 Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	600	614	22	93	491	51	135	19	63	55	12	425
Future Volume (vph)	600	614	22	93	491	51	135	19	63	55	12	425
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.995			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.964			0.960	
Satd. Flow (prot)	3252	3336	0	1676	3306	0	1593	1616	1500	0	3219	1500
Flt Permitted	0.950			0.950			0.950	0.964			0.723	
Satd. Flow (perm)	3252	3336	0	1676	3306	0	1593	1616	1500	0	2424	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			8				145			298
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.87	0.87	0.87	0.91	0.91	0.91	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	690	706	25	102	540	56	163	23	76	61	13	472
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	690	731	0	102	596	0	93	93	76	0	74	472
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022 Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	32.0	47.0		18.0	33.0		38.0	38.0	38.0	17.0	17.0	
Total Split (%)	26.7%	39.2%		15.0%	27.5%		31.7%	31.7%	31.7%	14.2%	14.2%	
Maximum Green (s)	28.0	42.0		14.0	28.0		33.0	33.0	33.0	12.0	12.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	27.6	42.0		13.6	28.0		33.4	33.4	33.4		12.0	38.6
Actuated g/C Ratio	0.23	0.35		0.11	0.23		0.28	0.28	0.28		0.10	0.32
v/c Ratio	0.92	0.63		0.54	0.77		0.21	0.21	0.15		0.31	0.69
Control Delay	48.0	41.5		61.5	41.9		35.0	35.0	0.6		53.9	12.6
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	48.0	41.5		61.5	41.9		35.0	35.0	0.6		53.9	12.6
LOS	D	D		E	D		D	C	A		D	B
Approach Delay		44.7			44.7			25.0			18.2	
Approach LOS		D			D			C			B	
Queue Length 50th (ft)	230	250		82	196		58	58	0		28	51
Queue Length 95th (ft)	#345	302		m134	274		96	96	0		54	118
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	758	1169		195	777		443	449	521		242	688
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	0.91	0.63		0.52	0.77		0.21	0.21	0.15		0.31	0.69

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 28 (23%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 38.0

Intersection LOS: D

Intersection Capacity Utilization 61.3%

ICU Level of Service B

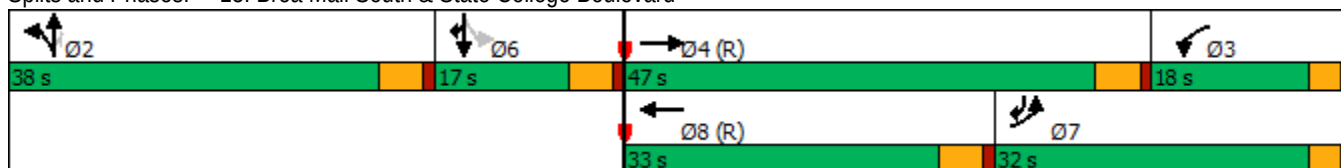
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	B108	B108	NB	NB	NB
Directions Served	L	L	T	TR	L	T	TR	T	T	L	LT	R
Maximum Queue (ft)	236	247	235	248	230	830	728	171	113	188	152	70
Average Queue (ft)	128	146	138	150	141	428	282	17	9	106	39	28
95th Queue (ft)	206	215	209	226	293	946	699	139	117	189	121	57
Link Distance (ft)			591	591		979	979	766	766	172	172	172
Upstream Blk Time (%)						8	0			8	0	
Queuing Penalty (veh)						28	0			0	0	
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)	0	1	1		1	58						
Queuing Penalty (veh)	1	4	3		2	53						

Intersection: 15: Brea Mall South & State College Boulevard

Movement	SB	SB	SB
Directions Served	LT	T	R
Maximum Queue (ft)	125	218	305
Average Queue (ft)	46	13	247
95th Queue (ft)	96	104	344
Link Distance (ft)	262	262	262
Upstream Blk Time (%)		1	66
Queuing Penalty (veh)		0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project
PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	1826	101	431	1858	653	359	593	338	520	308	92
Future Volume (vph)	105	1826	101	431	1858	653	359	593	338	520	308	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.992				0.850			0.850		0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	6022	0	3252	4818	1500	3252	3353	1500	2349	3239	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	6022	0	3252	4818	1500	3252	3353	1500	2349	3239	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				64			219		33	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	1902	105	449	1935	680	399	659	376	578	342	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	2007	0	449	1935	680	399	659	376	578	444	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	43.0		16.0	49.0	19.0	21.0	42.0	42.0	19.0	40.0	
Total Split (%)	8.3%	35.8%		13.3%	40.8%	15.8%	17.5%	35.0%	35.0%	15.8%	33.3%	
Maximum Green (s)	6.0	38.0		12.0	44.0	15.0	17.0	37.0	37.0	15.0	35.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lag		Lead	Lead	Lag	Lag	Lead	Lead	Lag	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	38.0		12.0	44.0	64.0	17.0	37.0	37.0	15.0	35.0	
Actuated g/C Ratio	0.05	0.32		0.10	0.37	0.53	0.14	0.31	0.31	0.12	0.29	
v/c Ratio	0.67	1.05		1.38	1.10	0.82	0.87	0.64	0.61	1.97	0.46	
Control Delay	54.1	56.6		220.5	75.3	15.6	70.1	39.1	19.0	474.6	23.7	
Queue Delay	0.0	0.0		0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.1	56.6		220.5	77.6	15.6	70.1	39.1	19.0	474.6	23.7	
LOS	D	E		F	E	B	E	D	B	F	C	
Approach Delay		56.4			84.8			42.4			278.7	
Approach LOS		E			F			D			F	
Queue Length 50th (ft)	39	~472		~236	~617	101	158	231	100	~356	140	
Queue Length 95th (ft)	m54	#555		m#285	#712	m160	#241	296	208	#478	174	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1913		325	1766	829	460	1033	613	293	968	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	239	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.67	1.05		1.38	1.27	0.82	0.87	0.64	0.61	1.97	0.46	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 36 (30%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.97

Intersection Signal Delay: 94.9

Intersection LOS: F

Intersection Capacity Utilization 96.9%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Year 2022 Plus Project
PM Peak Hour

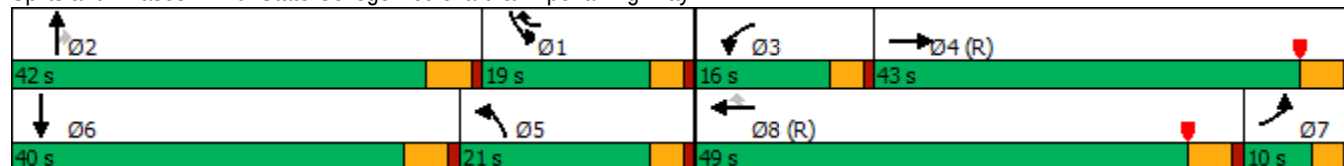
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

Year 2022 Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	13	26	470	6	92	22	318	473	52	286	21
Future Volume (vph)	24	13	26	470	6	92	22	318	473	52	286	21
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	0		0	85		0	115		0
Storage Lanes	0		1	1		0	1		0	1		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Frt			0.850		0.950			0.910			0.990	
Flt Protected		0.968		0.950	0.969		0.950			0.950		
Satd. Flow (prot)	0	1708	1500	1593	1543	0	1676	3051	0	1676	3319	0
Flt Permitted		0.223		0.950	0.969		0.536			0.172		
Satd. Flow (perm)	0	394	1500	1593	1543	0	946	3051	0	304	3319	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			155		21			313			6	
Link Speed (mph)		30			30			40			40	
Link Distance (ft)		280			340			499			1439	
Travel Time (s)		6.4			7.7			8.5			24.5	
Peak Hour Factor	0.90	0.90	0.90	0.87	0.87	0.87	0.96	0.96	0.96	0.85	0.85	0.85
Adj. Flow (vph)	27	14	29	540	7	106	23	331	493	61	336	25
Shared Lane Traffic (%)				38%								
Lane Group Flow (vph)	0	41	29	335	318	0	23	824	0	61	361	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100	20	20	100		20	100		20	100	
Trailing Detector (ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Position(ft)	0	0	0	0	0		0	0		0	0	
Detector 1 Size(ft)	20	6	20	20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA	Perm	Split	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4		8	8		5	2		1	6	
Permitted Phases	4		4				2			6		

Lanes, Volumes, Timings
14: Randolph Avenue & Driveway/Brea Mall

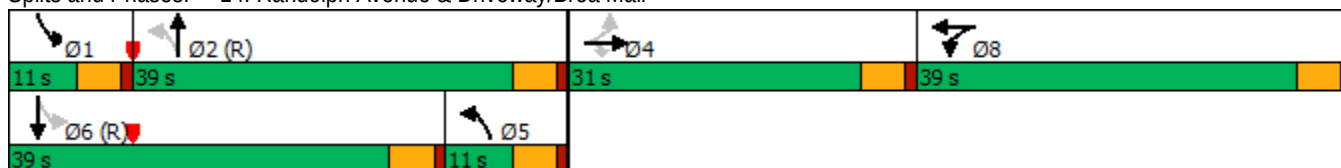
Year 2022 Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0		6.0	6.0	
Minimum Split (s)	31.0	31.0	31.0	31.0	31.0		11.0	29.0		11.0	30.0	
Total Split (s)	31.0	31.0	31.0	39.0	39.0		11.0	39.0		11.0	39.0	
Total Split (%)	25.8%	25.8%	25.8%	32.5%	32.5%		9.2%	32.5%		9.2%	32.5%	
Maximum Green (s)	26.0	26.0	26.0	34.0	34.0		6.0	34.0		6.0	34.0	
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0	5.0	5.0	5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lag	Lag		Lead	Lead	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0	7.0	7.0	7.0			7.0			7.0	
Flash Dont Walk (s)	19.0	19.0	19.0	19.0	19.0			17.0			18.0	
Pedestrian Calls (#/hr)	2	2	2	2	2			2			2	
Act Effct Green (s)		16.1	16.1	30.0	30.0		50.9	50.9		54.5	54.5	
Actuated g/C Ratio		0.13	0.13	0.25	0.25		0.42	0.42		0.45	0.45	
v/c Ratio		0.79	0.09	0.84	0.79		0.05	0.56		0.28	0.24	
Control Delay		119.9	0.5	61.3	53.6		25.8	14.6		21.9	17.8	
Queue Delay		0.0	0.0	0.1	0.1		0.0	0.1		0.0	0.0	
Total Delay		119.9	0.5	61.4	53.6		25.8	14.6		21.9	17.8	
LOS		F	A	E	D		C	B		C	B	
Approach Delay		70.4			57.6			14.9			18.4	
Approach LOS		E			E			B			B	
Queue Length 50th (ft)		31	0	254	223		8	84		30	93	
Queue Length 95th (ft)		#75	0	350	315		m11	m102		m61	144	
Internal Link Dist (ft)		200			260			419			1359	
Turn Bay Length (ft)							85			115		
Base Capacity (vph)		85	446	455	456		438	1475		221	1509	
Starvation Cap Reductn		0	0	0	0		0	51		0	0	
Spillback Cap Reductn		0	1	2	2		0	0		0	0	
Storage Cap Reductn		0	0	0	0		0	0		0	0	
Reduced v/c Ratio		0.48	0.07	0.74	0.70		0.05	0.58		0.28	0.24	
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 80 (67%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green												
Natural Cycle: 105												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.84												
Intersection Signal Delay: 31.6						Intersection LOS: C						
Intersection Capacity Utilization 66.4%						ICU Level of Service C						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 14: Randolph Avenue & Driveway/Brea Mall



Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022 Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	717	476	29	84	705	49	165	24	89	84	19	628
Future Volume (vph)	717	476	29	84	705	49	165	24	89	84	19	628
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	220		0	140		0	0		0	0		0
Storage Lanes	2		0	1		0	1		1	0		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.95	0.95	1.00	0.95	0.95	0.95	0.95	1.00	0.95	0.95	1.00
Frt		0.991			0.990				0.850			0.850
Flt Protected	0.950			0.950			0.950	0.964			0.961	
Satd. Flow (prot)	3252	3323	0	1676	3319	0	1593	1616	1500	0	3222	1500
Flt Permitted	0.950			0.950			0.950	0.964			0.709	
Satd. Flow (perm)	3252	3323	0	1676	3319	0	1593	1616	1500	0	2377	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			6				145			237
Link Speed (mph)		35			35			30			30	
Link Distance (ft)		728			1060			230			317	
Travel Time (s)		14.2			20.6			5.2			7.2	
Peak Hour Factor	0.94	0.94	0.94	0.89	0.89	0.89	0.83	0.83	0.83	0.90	0.90	0.90
Adj. Flow (vph)	763	506	31	94	792	55	199	29	107	93	21	698
Shared Lane Traffic (%)							43%					
Lane Group Flow (vph)	763	537	0	94	847	0	113	115	107	0	114	698
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Split	NA	Perm	Perm	NA	pt+ov
Protected Phases	7	4		3	8		2	2			6	6 7
Permitted Phases									2	6		

Lanes, Volumes, Timings
15: Brea Mall South & State College Boulevard

Year 2022 Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2	2	6	6	6 7
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0		6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	32.0		10.0	33.0		38.0	38.0	38.0	11.0	11.0	
Total Split (s)	28.0	44.0		17.0	33.0		38.0	38.0	38.0	21.0	21.0	
Total Split (%)	23.3%	36.7%		14.2%	27.5%		31.7%	31.7%	31.7%	17.5%	17.5%	
Maximum Green (s)	24.0	39.0		13.0	28.0		33.0	33.0	33.0	16.0	16.0	
Yellow Time (s)	3.0	4.0		3.0	4.0		4.0	4.0	4.0	4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0		5.0	5.0	5.0		5.0	
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max		Max	Max	Max	Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0	7.0			
Flash Dont Walk (s)		20.0			21.0		26.0	26.0	26.0			
Pedestrian Calls (#/hr)		2			2		2	2	2			
Act Effect Green (s)	24.0	39.0		13.0	28.0		33.0	33.0	33.0		16.0	39.0
Actuated g/C Ratio	0.20	0.32		0.11	0.23		0.28	0.28	0.28		0.13	0.32
v/c Ratio	1.17	0.50		0.52	1.09		0.26	0.26	0.21		0.36	1.08
Control Delay	123.8	32.0		57.2	81.5		35.9	35.9	3.0		51.0	76.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0		0.0	0.0
Total Delay	123.8	32.0		57.2	81.5		35.9	35.9	3.0		51.0	76.9
LOS	F	C		E	F		D	D	A		D	E
Approach Delay		85.9			79.0			25.4			73.2	
Approach LOS		F			E			C			E	
Queue Length 50th (ft)	~367	161		74	~382		72	73	0		43	~305
Queue Length 95th (ft)	m#288	m141		m97	m#457		114	116	12		73	#702
Internal Link Dist (ft)		648			980			150			237	
Turn Bay Length (ft)	220			140								
Base Capacity (vph)	650	1083		181	779		438	444	517		316	647
Starvation Cap Reductn	0	0		0	0		0	0	0		0	0
Spillback Cap Reductn	0	0		0	0		0	0	0		0	0
Storage Cap Reductn	0	0		0	0		0	0	0		0	0
Reduced v/c Ratio	1.17	0.50		0.52	1.09		0.26	0.26	0.21		0.36	1.08

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 104 (87%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 75.0

Intersection LOS: E

Intersection Capacity Utilization 81.3%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 15: Brea Mall South & State College Boulevard

Year 2022 Plus Project
Sat MD Peak Hour

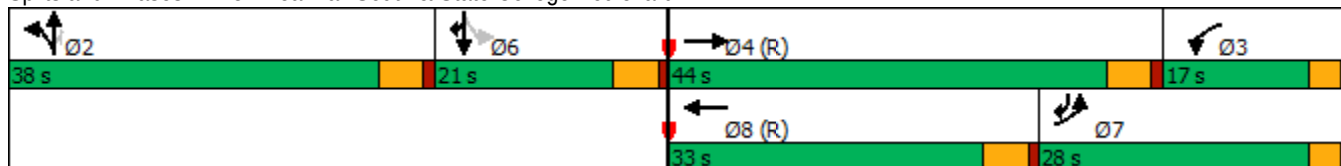
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 15: Brea Mall South & State College Boulevard



Intersection: 15: Brea Mall South & State College Boulevard

Movement	EB	EB	EB	EB	WB	WB	WB	B108	B108	B107	B107	NB
Directions Served	L	L	T	TR	L	T	TR	T	T	T	T	L
Maximum Queue (ft)	264	307	317	180	230	1078	1076	859	866	530	530	176
Average Queue (ft)	188	207	95	100	127	890	780	562	552	266	263	81
95th Queue (ft)	270	287	201	163	297	1407	1391	1165	1170	675	671	146
Link Distance (ft)			591	591		979	979	766	766	502	502	172
Upstream Blk Time (%)						73	31	55	48	25	24	1
Queuing Penalty (veh)						366	156	277	242	127	120	0
Storage Bay Dist (ft)	220	220			140							
Storage Blk Time (%)	3	8			0	84						
Queuing Penalty (veh)	8	18			0	71						

Intersection: 15: Brea Mall South & State College Boulevard

Movement	NB	NB	SB	SB	SB
Directions Served	LT	R	LT	T	R
Maximum Queue (ft)	115	80	109	228	307
Average Queue (ft)	35	33	37	29	280
95th Queue (ft)	81	62	87	162	292
Link Distance (ft)	172	172	262	262	262
Upstream Blk Time (%)				4	94
Queuing Penalty (veh)				0	0
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1539	187	621	1853	1061	275	543	551	746	435	174
Future Volume (vph)	130	1539	187	621	1853	1061	275	543	551	746	435	174
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1300	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		0
Storage Lanes	2		1	2		1	2		1	2		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	0.95
Frt		0.984				0.850			0.850		0.957	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3209	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	2349	3209	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26				100			136		52	
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.98	0.98	0.98	0.83	0.83	0.83
Adj. Flow (vph)	140	1655	201	675	2014	1153	281	554	562	899	524	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	1856	0	675	2014	1153	281	554	562	899	734	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.60	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project
Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	
Total Split (s)	10.0	42.0		16.0	48.0	20.0	20.0	42.0	42.0	20.0	42.0	
Total Split (%)	8.3%	35.0%		13.3%	40.0%	16.7%	16.7%	35.0%	35.0%	16.7%	35.0%	
Maximum Green (s)	6.0	37.0		12.0	43.0	16.0	16.0	37.0	37.0	16.0	37.0	
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	
Lead/Lag	Lag	Lead		Lag	Lead	Lead	Lag	Lag	Lag	Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	
Pedestrian Calls (#/hr)		2			2			2	2		2	
Act Effect Green (s)	6.0	37.0		12.0	43.0	60.0	16.0	37.0	37.0	16.0	37.0	
Actuated g/C Ratio	0.05	0.31		0.10	0.36	0.50	0.13	0.31	0.31	0.13	0.31	
v/c Ratio	0.86	1.00		2.08	1.17	1.44	0.65	0.54	1.01	2.87	0.72	
Control Delay	72.8	41.7		516.2	113.1	221.5	57.1	36.7	72.7	863.4	28.1	
Queue Delay	0.0	0.0		0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	72.8	41.7		516.2	113.1	221.5	57.1	36.7	72.7	863.4	28.1	
LOS	E	D		F	F	F	E	D	E	F	C	
Approach Delay		43.9			216.5			55.3			487.9	
Approach LOS		D			F			E			F	
Queue Length 50th (ft)	58	291		~428	~676	~1204	107	186	~363	~625	253	
Queue Length 95th (ft)	m#85	#493		m#460	m#729	m#1302	155	244	#602	m#581	m242	
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		
Base Capacity (vph)	162	1859		325	1726	800	433	1033	556	313	1025	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	30	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.86	1.00		2.08	1.19	1.44	0.65	0.54	1.01	2.87	0.72	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 3 (3%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.87

Intersection Signal Delay: 202.2

Intersection LOS: F

Intersection Capacity Utilization 107.5%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Year 2022 Plus Project
Sat MD Peak Hour

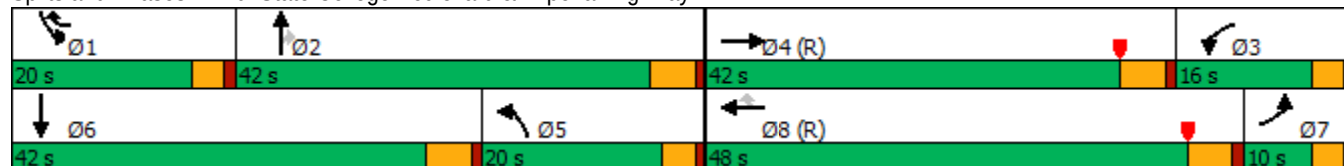
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



APPENDIX F-VI

YEAR 2022 CUMULATIVE PLUS PROJECT
WITH MITIGATION TRAFFIC CONDITIONS

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	1567	185	422	1723	229	107	167	389	204	382	26
Future Volume (vph)	32	1567	185	422	1723	229	107	167	389	204	382	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		275
Storage Lanes	2		1	2		1	2		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt		0.984				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25				254			244			136
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.91	0.91	0.91	0.90	0.90	0.90	0.91	0.91	0.91	0.94	0.94	0.94
Adj. Flow (vph)	35	1722	203	469	1914	254	118	184	427	217	406	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	35	1925	0	469	1914	254	118	184	427	217	406	28
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			6

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	40.0
Total Split (s)	10.0	43.0		22.0	55.0	13.0	12.0	42.0	42.0	13.0	43.0	43.0
Total Split (%)	8.3%	35.8%		18.3%	45.8%	10.8%	10.0%	35.0%	35.0%	10.8%	35.8%	35.8%
Maximum Green (s)	6.0	38.0		18.0	50.0	9.0	8.0	37.0	37.0	9.0	38.0	38.0
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	28.0
Pedestrian Calls (#/hr)		2			2			2	2		2	2
Act Effect Green (s)	6.0	38.0		18.0	54.0	68.0	8.0	37.0	37.0	9.0	38.0	38.0
Actuated g/C Ratio	0.05	0.32		0.15	0.45	0.57	0.07	0.31	0.31	0.08	0.32	0.32
v/c Ratio	0.22	1.01		0.96	0.88	0.26	0.55	0.18	0.68	0.89	0.38	0.05
Control Delay	41.6	43.0		73.1	30.9	2.0	64.2	31.0	21.0	76.8	13.3	0.2
Queue Delay	0.0	0.0		0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.6	43.0		73.1	31.3	2.0	64.2	31.0	21.0	76.8	13.3	0.2
LOS	D	D		E	C	A	E	C	C	E	B	A
Approach Delay		43.0			35.9			30.5			33.9	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	14	~244		197	412	18	46	54	123	92	42	0
Queue Length 95th (ft)	m21	#510		m#269	#623	m20	78	84	244	#165	61	m0
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		275
Base Capacity (vph)	162	1908		487	2168	960	216	1033	631	243	1061	567
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	46	0	0	0	0	0	0	1
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	1.01		0.96	0.90	0.26	0.55	0.18	0.68	0.89	0.38	0.05

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 5 (4%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 105

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 37.3

Intersection LOS: D

Intersection Capacity Utilization 71.3%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]
AM Peak Hour

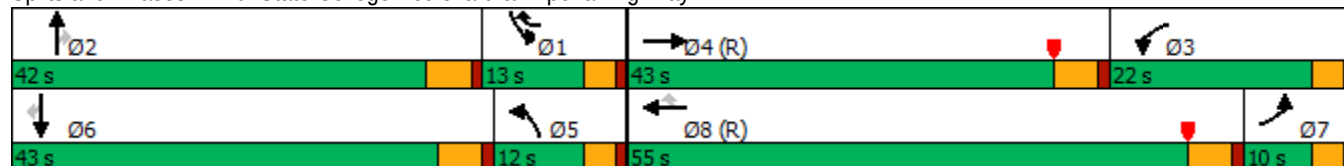
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	1826	101	431	1858	653	359	593	338	520	308	92
Future Volume (vph)	105	1826	101	431	1858	653	359	593	338	520	308	92
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		275
Storage Lanes	2		1	2		1	2		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt		0.992				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	6022	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	6022	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		10				62			136			136
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	109	1902	105	449	1935	680	399	659	376	578	342	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	109	2007	0	449	1935	680	399	659	376	578	342	102
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			6

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	40.0
Total Split (s)	10.0	43.0		16.0	49.0	19.0	21.0	42.0	42.0	19.0	40.0	40.0
Total Split (%)	8.3%	35.8%		13.3%	40.8%	15.8%	17.5%	35.0%	35.0%	15.8%	33.3%	33.3%
Maximum Green (s)	6.0	38.0		12.0	44.0	15.0	17.0	37.0	37.0	15.0	35.0	35.0
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	28.0
Pedestrian Calls (#/hr)		2			2			2	2		2	2
Act Effect Green (s)	6.0	38.0		12.0	44.0	64.0	17.0	37.0	37.0	15.0	35.0	35.0
Actuated g/C Ratio	0.05	0.32		0.10	0.37	0.53	0.14	0.31	0.31	0.12	0.29	0.29
v/c Ratio	0.67	1.05		1.38	1.10	0.82	0.87	0.64	0.68	1.42	0.35	0.19
Control Delay	53.7	56.4		218.6	83.7	26.7	70.1	39.1	29.6	239.3	22.9	1.3
Queue Delay	0.0	0.0		0.0	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.7	56.4		218.6	86.0	26.7	70.1	39.1	29.6	239.3	22.9	1.3
LOS	D	E		F	F	C	E	D	C	F	C	A
Approach Delay		56.2			92.3			45.2			143.2	
Approach LOS		E			F			D			F	
Queue Length 50th (ft)	45	~472		~238	~612	230	158	231	164	~320	72	0
Queue Length 95th (ft)	m58	#554		m#285	#712	m302	#241	296	279	#437	m109	m3
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		275
Base Capacity (vph)	162	1913		325	1766	828	460	1033	556	406	977	533
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	237	0	0	0	0	0	0	7
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	1.05		1.38	1.27	0.82	0.87	0.64	0.68	1.42	0.35	0.19

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 112 (93%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.42

Intersection Signal Delay: 80.3

Intersection LOS: F

Intersection Capacity Utilization 90.9%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]

PM Peak Hour

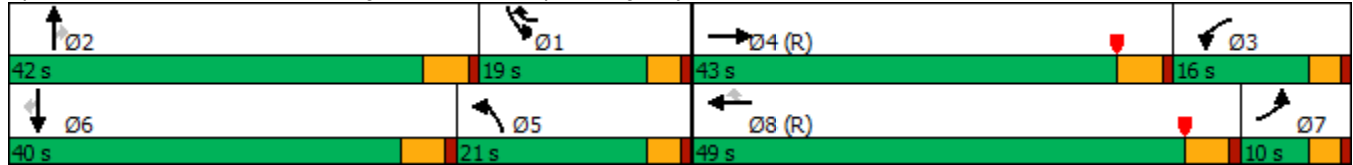
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway



Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]

Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	130	1539	187	621	1853	1061	275	543	551	746	435	174
Future Volume (vph)	130	1539	187	621	1853	1061	275	543	551	746	435	174
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	180		290	325		250	150		200	260		275
Storage Lanes	2		1	2		1	2		1	1		1
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	0.97	0.86	0.86	0.97	0.91	1.00	0.97	0.95	1.00	0.97	0.95	1.00
Frt		0.984				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3252	5973	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3252	5973	0	3252	4818	1500	3252	3353	1500	3252	3353	1500
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26				90			136			136
Link Speed (mph)		45			45			40			40	
Link Distance (ft)		626			521			1426			728	
Travel Time (s)		9.5			7.9			24.3			12.4	
Peak Hour Factor	0.93	0.93	0.93	0.92	0.92	0.92	0.98	0.98	0.98	0.83	0.83	0.83
Adj. Flow (vph)	140	1655	201	675	2014	1153	281	554	562	899	524	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	140	1856	0	675	2014	1153	281	554	562	899	524	210
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			36			36	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	20
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	0
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8	1	5	2		1	6	
Permitted Phases						8			2			6

Lanes, Volumes, Timings
20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]

Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8	1	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Minimum Split (s)	10.0	35.0		10.0	42.0	10.0	10.0	42.0	42.0	10.0	40.0	40.0
Total Split (s)	10.0	42.0		16.0	48.0	20.0	20.0	42.0	42.0	20.0	42.0	42.0
Total Split (%)	8.3%	35.0%		13.3%	40.0%	16.7%	16.7%	35.0%	35.0%	16.7%	35.0%	35.0%
Maximum Green (s)	6.0	37.0		12.0	43.0	16.0	16.0	37.0	37.0	16.0	37.0	37.0
Yellow Time (s)	3.0	4.0		3.0	4.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0		4.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lag	Lead		Lag	Lead	Lag	Lag	Lead	Lead	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	None	None	Max	Max	None	Max	Max
Walk Time (s)		7.0			7.0			7.0	7.0		7.0	7.0
Flash Dont Walk (s)		23.0			30.0			30.0	30.0		28.0	28.0
Pedestrian Calls (#/hr)		2			2			2	2		2	2
Act Effect Green (s)	6.0	37.0		12.0	43.0	64.0	16.0	37.0	37.0	16.0	37.0	37.0
Actuated g/C Ratio	0.05	0.31		0.10	0.36	0.53	0.13	0.31	0.31	0.13	0.31	0.31
v/c Ratio	0.86	1.00		2.08	1.17	1.37	0.65	0.54	1.01	2.08	0.51	0.38
Control Delay	75.1	39.5		516.6	114.4	195.2	57.1	36.7	72.7	511.5	24.8	5.1
Queue Delay	0.0	0.0		0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.1	39.5		516.6	114.4	195.2	57.1	36.7	72.7	511.5	24.8	5.1
LOS	E	D		F	F	F	E	D	E	F	C	A
Approach Delay		42.0			209.3			55.3			290.2	
Approach LOS		D			F			E			F	
Queue Length 50th (ft)	59	325		~427	~676	~1144	107	186	~363	~568	158	16
Queue Length 95th (ft)	m#85	#493		m#460	m#729	m#1241	155	244	#602	m#527	m147	m15
Internal Link Dist (ft)		546			441			1346			648	
Turn Bay Length (ft)	180			325		250	150		200	260		275
Base Capacity (vph)	162	1859		325	1726	842	433	1033	556	433	1033	556
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	30	0	0	0	0	0	0	1
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.86	1.00		2.08	1.19	1.37	0.65	0.54	1.01	2.08	0.51	0.38

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 1 (1%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 115

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.08

Intersection Signal Delay: 162.3

Intersection LOS: F

Intersection Capacity Utilization 101.0%

ICU Level of Service G

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Lanes, Volumes, Timings 20: State College Boulevard & Imperial Highway

Year 2022 Plus Project [MIT]
 Sat MD Peak Hour

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 20: State College Boulevard & Imperial Highway

 42 s	 20 s	 42 s	 16 s
 42 s	 20 s	 48 s	 10 s

APPENDIX G

CALTRANS QUEUING WORKSHEETS

APPENDIX G-1

YEAR 2022 CUMULATIVE PLUS PROJECT
TRAFFIC CONDITIONS

4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑↑
Traffic Volume (vph)	0	1770	577	213	2034	0	0	0	0	1006	0	662
Future Volume (vph)	0	1770	577	213	2034	0	0	0	0	1006	0	662
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		2	2		0	0		0	2		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	0.88	0.97	0.91	1.00	1.00	1.00	1.00	0.97	1.00	0.88
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			507									55
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			598			824			1360	
Travel Time (s)		6.9			9.1			18.7			30.9	
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	1.00	1.00	1.00	0.86	0.86	0.86
Adj. Flow (vph)	0	1883	614	232	2211	0	0	0	0	1170	0	770
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1883	614	232	2211	0	0	0	0	1170	0	770
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									

4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		20.5	20.5	9.5	25.5					9.5		9.5
Total Split (s)		55.0	55.0	15.0	70.0					50.0		50.0
Total Split (%)		45.8%	45.8%	12.5%	58.3%					41.7%		41.7%
Maximum Green (s)		50.5	50.5	10.5	65.5					45.5		45.5
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	None	C-Max					None		None
Walk Time (s)		7.0	7.0		7.0							
Flash Dont Walk (s)		9.0	9.0		14.0							
Pedestrian Calls (#/hr)		2	2		2							
Act Effect Green (s)		50.7	50.7	10.5	65.7					45.3		45.3
Actuated g/C Ratio		0.42	0.42	0.09	0.55					0.38		0.38
v/c Ratio		0.93	0.44	0.82	0.84					0.95		0.75
Control Delay		31.9	6.4	76.4	26.5					53.2		35.2
Queue Delay		6.1	0.2	0.0	10.2					0.0		0.0
Total Delay		37.9	6.6	76.4	36.7					53.2		35.2
LOS		D	A	E	D					D		D
Approach Delay		30.2			40.5						46.1	
Approach LOS		C			D						D	
Queue Length 50th (ft)		271	39	92	504					448		271
Queue Length 95th (ft)		m#424	m65	#157	576					#543		330
Internal Link Dist (ft)		373			518			744			1280	
Turn Bay Length (ft)				70								
Base Capacity (vph)		2033	1407	284	2635					1233		1035
Starvation Cap Reductn		130	195	0	431					0		0
Spillback Cap Reductn		0	0	0	113					0		1
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.99	0.51	0.82	1.00					0.95		0.74

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 111 (93%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 38.3

Intersection LOS: D

Intersection Capacity Utilization 83.6%

ICU Level of Service E

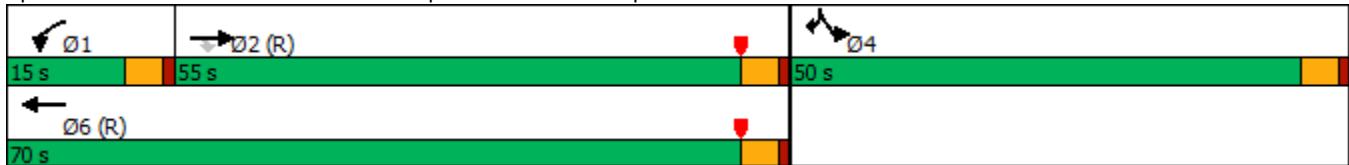
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑		↑↑↑	↑	↑↑		↑			
Traffic Volume (vph)	0	2384	383	0	1259	466	999	0	473	0	0	0
Future Volume (vph)	0	2384	383	0	1259	466	999	0	473	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		100	0		0	215		0	0		0
Storage Lanes	0		1	0		1	1		1	0		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.998	0.850			0.850			0.850			
Flt Protected							0.950					
Satd. Flow (prot)	0	4544	1290	0	4818	1500	3252	0	1500	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	4544	1290	0	4818	1500	3252	0	1500	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4	170			445			18			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		598			633			831			1116	
Travel Time (s)		9.1			9.6			18.9			25.4	
Peak Hour Factor	0.97	0.97	0.97	0.88	0.88	0.88	0.89	0.89	0.89	1.00	1.00	1.00
Adj. Flow (vph)	0	2458	395	0	1431	530	1122	0	531	0	0	0
Shared Lane Traffic (%)			10%									
Lane Group Flow (vph)	0	2498	355	0	1431	530	1122	0	531	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2	1	1		1			
Detector Template		Thru	Right		Thru	Right	Left		Right			
Leading Detector (ft)		100	20		100	20	20		20			
Trailing Detector (ft)		0	0		0	0	0		0			
Detector 1 Position(ft)		0	0		0	0	0		0			
Detector 1 Size(ft)		6	20		6	20	20		20			
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm		NA	Free	Prot		Prot			
Protected Phases		2			6		3		3			
Permitted Phases			2			Free						

5: SR-57 NB Off-Ramp/SR-57 NB On-Ramp & Lambert Road

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2		6		3		3			
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0		5.0		5.0			
Minimum Split (s)		32.5	32.5		9.5		9.5		9.5			
Total Split (s)		54.0	54.0		54.0		36.0		36.0			
Total Split (%)		60.0%	60.0%		60.0%		40.0%		40.0%			
Maximum Green (s)		49.5	49.5		49.5		31.5		31.5			
Yellow Time (s)		3.5	3.5		3.5		3.5		3.5			
All-Red Time (s)		1.0	1.0		1.0		1.0		1.0			
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0			
Total Lost Time (s)		4.5	4.5		4.5		4.5		4.5			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Recall Mode		C-Max	C-Max		C-Max		None		None			
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		21.0	21.0									
Pedestrian Calls (#/hr)		2	2									
Act Effect Green (s)		49.5	49.5		49.5	90.0	31.5		31.5			
Actuated g/C Ratio		0.55	0.55		0.55	1.00	0.35		0.35			
v/c Ratio		1.00	0.45		0.54	0.35	0.99		0.99			
Control Delay		38.9	8.0		13.9	0.7	53.8		66.8			
Queue Delay		4.6	0.0		0.0	0.0	0.0		0.0			
Total Delay		43.5	8.0		13.9	0.7	53.8		66.8			
LOS		D	A		B	A	D		E			
Approach Delay		39.1			10.3			58.0				
Approach LOS		D			B			E				
Queue Length 50th (ft)		514	60		178	0	322		288			
Queue Length 95th (ft)		#680	134		211	0	#455		#496			
Internal Link Dist (ft)		518			553			751			1036	
Turn Bay Length (ft)			100				215					
Base Capacity (vph)		2501	786		2649	1500	1138		536			
Starvation Cap Reductn		42	0		0	0	0		0			
Spillback Cap Reductn		0	0		0	0	0		0			
Storage Cap Reductn		0	0		0	0	0		0			
Reduced v/c Ratio		1.02	0.45		0.54	0.35	0.99		0.99			
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 90												
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 90												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.00												
Intersection Signal Delay: 35.2	Intersection LOS: D											
Intersection Capacity Utilization 90.0%	ICU Level of Service E											
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												

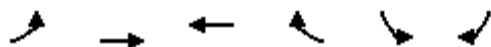
Queue shown is maximum after two cycles.

Splits and Phases: 5: SR-57 NB Off-Ramp/SR-57 NB On-Ramp & Lambert Road



Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

Year 2022 Plus Project [MIT]
AM Peak Hour

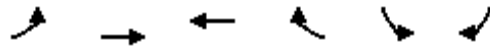


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑
Traffic Volume (vph)	0	1440	1903	0	577	493
Future Volume (vph)	0	1440	1903	0	577	493
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	90				90	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.968	0.850
Flt Protected					0.962	
Satd. Flow (prot)	0	4818	4818	0	3188	1365
Flt Permitted					0.962	
Satd. Flow (perm)	0	4818	4818	0	3188	1365
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					4	4
Link Speed (mph)		45	45		30	
Link Distance (ft)		293	273		775	
Travel Time (s)		4.4	4.1		17.6	
Peak Hour Factor	0.93	0.93	0.94	0.94	0.88	0.88
Adj. Flow (vph)	0	1548	2024	0	656	560
Shared Lane Traffic (%)						32%
Lane Group Flow (vph)	0	1548	2024	0	835	381
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

Year 2022 Plus Project [MIT]

AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		9.0	25.0		11.0	11.0
Total Split (s)		35.0	35.0		25.0	25.0
Total Split (%)		58.3%	58.3%		41.7%	41.7%
Maximum Green (s)		32.0	30.0		20.0	20.0
Yellow Time (s)		2.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		3.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			13.0			
Pedestrian Calls (#/hr)			2			
Act Effect Green (s)		32.0	30.0		20.0	20.0
Actuated g/C Ratio		0.53	0.50		0.33	0.33
v/c Ratio		0.60	0.84		0.78	0.83
Control Delay		7.3	11.5		24.6	37.3
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		7.3	11.5		24.6	37.3
LOS		A	B		C	D
Approach Delay		7.3	11.5		28.6	
Approach LOS		A	B		C	
Queue Length 50th (ft)		115	219		137	135
Queue Length 95th (ft)		m104	m214		192	#280
Internal Link Dist (ft)		213	193		695	
Turn Bay Length (ft)						260
Base Capacity (vph)		2569	2409		1065	457
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.60	0.84		0.78	0.83

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 12 (20%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 14.5

Intersection LOS: B

Intersection Capacity Utilization 106.4%

ICU Level of Service G

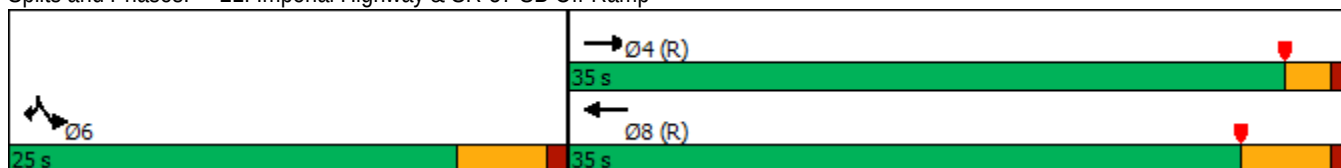
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Imperial Highway & SR-57 SB Off-Ramp



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 				 
Traffic Volume (vph)	180	1297	0	0	1440	20	1029	189	768	0	0	136
Future Volume (vph)	180	1297	0	0	1440	20	1029	189	768	0	0	136
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	260		0	0		0	610		350	0		0
Storage Lanes	1		0	0		0	1		1	0		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.998			0.929	0.850			0.850
Flt Protected	0.950						0.950	0.991				
Satd. Flow (prot)	1676	4818	0	0	6058	0	3051	1397	1425	0	0	2640
Flt Permitted	0.950						0.950	0.991				
Satd. Flow (perm)	1676	4818	0	0	6058	0	3051	1397	1425	0	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			13	55			64
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		271			270			932			494	
Travel Time (s)		4.1			4.1			21.2			11.2	
Peak Hour Factor	0.88	0.88	0.88	0.89	0.89	0.89	0.91	0.91	0.91	0.68	0.68	0.68
Adj. Flow (vph)	205	1474	0	0	1618	22	1131	208	844	0	0	200
Shared Lane Traffic (%)							10%		34%			
Lane Group Flow (vph)	205	1474	0	0	1640	0	1018	608	557	0	0	200
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	32.0			28.0		11.0	11.0	11.0			10.0
Total Split (s)	21.0	60.0			39.0		60.0	60.0	60.0			21.0
Total Split (%)	17.5%	50.0%			32.5%		50.0%	50.0%	50.0%			17.5%
Maximum Green (s)	17.0	55.0			34.0		55.0	55.0	55.0			17.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lead				Lag							Lead
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		20.0			16.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	16.5	55.0			34.5		55.0	55.0	55.0			16.5
Actuated g/C Ratio	0.14	0.46			0.29		0.46	0.46	0.46			0.14
v/c Ratio	0.89	0.67			0.94		0.73	0.94	0.82			0.48
Control Delay	86.2	19.9			53.6		30.2	54.6	36.6			36.2
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Delay	86.2	19.9			53.6		30.2	54.6	36.6			36.2
LOS	F	B			D		C	D	D			D
Approach Delay		28.0			53.6			38.6			36.2	
Approach LOS		C			D			D			D	
Queue Length 50th (ft)	139	257			362		343	501	351			55
Queue Length 95th (ft)	m#266	316			#433		430	#789	#548			64
Internal Link Dist (ft)		191			190			852			414	
Turn Bay Length (ft)	260						610		350			
Base Capacity (vph)	237	2208			1741		1398	647	682			428
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	0			0		0	0	0			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.86	0.67			0.94		0.73	0.94	0.82			0.47

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 54 (45%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 39.7

Intersection LOS: D

Intersection Capacity Utilization 73.6%

ICU Level of Service D

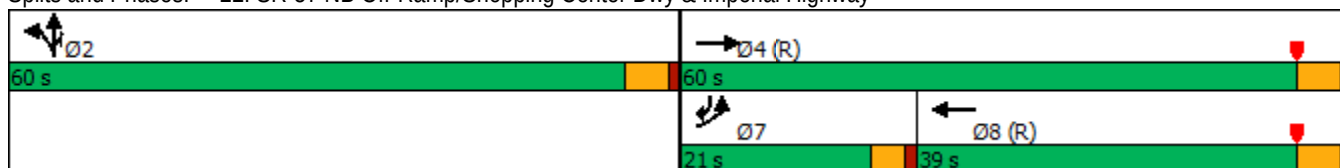
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: SR-57 NB Off-Ramp/Shopping Center Dwy & Imperial Highway



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑↑
Traffic Volume (vph)	0	1339	808	221	1615	0	0	0	0	435	0	809
Future Volume (vph)	0	1339	808	221	1615	0	0	0	0	435	0	809
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		2	2		0	0		0	2		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	0.88	0.97	0.91	1.00	1.00	1.00	1.00	0.97	1.00	0.88
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			899									55
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			598			824			1360	
Travel Time (s)		6.9			9.1			18.7			30.9	
Peak Hour Factor	0.88	0.88	0.88	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Adj. Flow (vph)	0	1522	918	233	1700	0	0	0	0	458	0	852
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1522	918	233	1700	0	0	0	0	458	0	852
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									

4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		20.5	20.5	9.5	25.5					9.5		9.5
Total Split (s)		52.0	52.0	18.0	70.0					50.0		50.0
Total Split (%)		43.3%	43.3%	15.0%	58.3%					41.7%		41.7%
Maximum Green (s)		47.5	47.5	13.5	65.5					45.5		45.5
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lead	Lead	Lag								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	None	C-Max					None		None
Walk Time (s)		7.0	7.0		7.0							
Flash Dont Walk (s)		9.0	9.0		14.0							
Pedestrian Calls (#/hr)		2	2		2							
Act Effect Green (s)		51.0	51.0	13.5	69.0					42.0		42.0
Actuated g/C Ratio		0.42	0.42	0.11	0.58					0.35		0.35
v/c Ratio		0.74	0.56	0.64	0.61					0.40		0.89
Control Delay		20.0	2.0	58.3	18.3					30.2		46.3
Queue Delay		0.9	0.5	0.0	0.3					0.0		0.0
Total Delay		20.8	2.5	58.3	18.6					30.2		46.3
LOS		C	A	E	B					C		D
Approach Delay		13.9			23.4						40.7	
Approach LOS		B			C						D	
Queue Length 50th (ft)		173	25	85	269					132		322
Queue Length 95th (ft)		m226	m29	m129	429					175		412
Internal Link Dist (ft)		373			518			744			1280	
Turn Bay Length (ft)				70								
Base Capacity (vph)		2049	1639	365	2771					1233		1035
Starvation Cap Reductn		250	327	0	434					0		0
Spillback Cap Reductn		0	0	0	15					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.85	0.70	0.64	0.73					0.37		0.82

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 88 (73%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 60

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 23.3

Intersection LOS: C

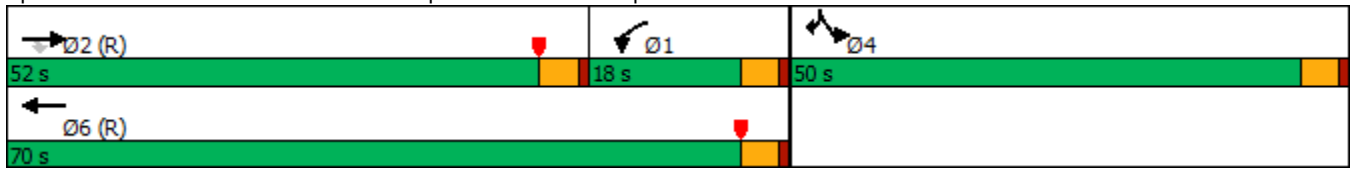
Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

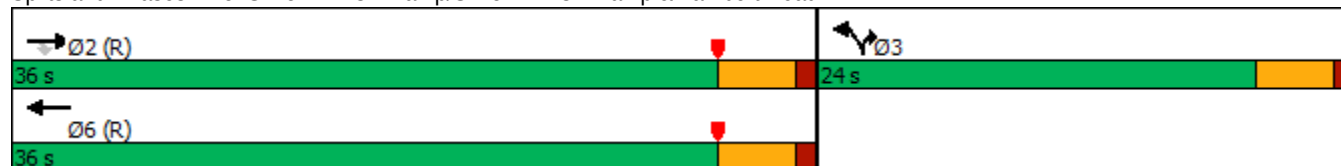
Splits and Phases: 4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1430	544	0	1040	502	624	0	255	0	0	0
Future Volume (vph)	0	1430	544	0	1040	502	624	0	255	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		100	0		0	215		0	0		0
Storage Lanes	0		1	0		1	1		1	0		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.990	0.850			0.850			0.850			
Flt Protected							0.950					
Satd. Flow (prot)	0	4507	1290	0	4818	1500	3252	0	1500	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	4507	1290	0	4818	1500	3252	0	1500	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27	525			528			27			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		598			633			831			1116	
Travel Time (s)		9.1			9.6			18.9			25.4	
Peak Hour Factor	0.84	0.84	0.84	0.95	0.95	0.95	0.84	0.84	0.84	1.00	1.00	1.00
Adj. Flow (vph)	0	1702	648	0	1095	528	743	0	304	0	0	0
Shared Lane Traffic (%)			19%									
Lane Group Flow (vph)	0	1825	525	0	1095	528	743	0	304	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2	1	1		1			
Detector Template		Thru	Right		Thru	Right	Left		Right			
Leading Detector (ft)		100	20		100	20	20		20			
Trailing Detector (ft)		0	0		0	0	0		0			
Detector 1 Position(ft)		0	0		0	0	0		0			
Detector 1 Size(ft)		6	20		6	20	20		20			
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm		NA	Free	Prot		Prot			
Protected Phases		2			6		3		3			
Permitted Phases			2			Free						

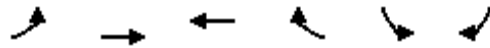
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2		6		3		3			
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0		5.0		5.0			
Minimum Split (s)		32.5	32.5		9.5		9.5		9.5			
Total Split (s)		36.0	36.0		36.0		24.0		24.0			
Total Split (%)		60.0%	60.0%		60.0%		40.0%		40.0%			
Maximum Green (s)		31.5	31.5		31.5		19.5		19.5			
Yellow Time (s)		3.5	3.5		3.5		3.5		3.5			
All-Red Time (s)		1.0	1.0		1.0		1.0		1.0			
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0			
Total Lost Time (s)		4.5	4.5		4.5		4.5		4.5			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Recall Mode		C-Max	C-Max		C-Max		None		None			
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		21.0	21.0									
Pedestrian Calls (#/hr)		2	2									
Act Effct Green (s)		33.0	33.0		33.0	60.0	18.0		18.0			
Actuated g/C Ratio		0.55	0.55		0.55	1.00	0.30		0.30			
v/c Ratio		0.73	0.55		0.41	0.35	0.76		0.65			
Control Delay		8.5	3.3		8.8	0.7	24.7		23.5			
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0			
Total Delay		8.5	3.3		8.8	0.7	24.7		23.5			
LOS		A	A		A	A	C		C			
Approach Delay		7.4			6.1			24.3				
Approach LOS		A			A			C				
Queue Length 50th (ft)		125	19		81	0	119		82			
Queue Length 95th (ft)		168	76		109	0	157		139			
Internal Link Dist (ft)		518			553			751			1036	
Turn Bay Length (ft)			100				215					
Base Capacity (vph)		2492	946		2651	1500	1056		505			
Starvation Cap Reductn		0	0		0	0	0		0			
Spillback Cap Reductn		0	0		0	0	0		0			
Storage Cap Reductn		0	0		0	0	0		0			
Reduced v/c Ratio		0.73	0.55		0.41	0.35	0.70		0.60			
Intersection Summary												
Area Type:	Other											
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 18 (30%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 55												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.76												
Intersection Signal Delay: 10.5												
Intersection LOS: B												
Intersection Capacity Utilization 59.3%												
ICU Level of Service B												
Analysis Period (min) 15												

Splits and Phases: 5: SR-57 NB Off-Ramp/SR-57 NB On-Ramp & Lambert Road



Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

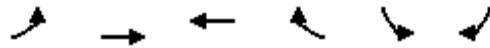
Year 2022 Plus Project [MIT]
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑
Traffic Volume (vph)	0	1680	2406	0	652	537
Future Volume (vph)	0	1680	2406	0	652	537
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	90				90	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.970	0.850
Flt Protected					0.962	
Satd. Flow (prot)	0	4818	4818	0	3195	1365
Flt Permitted					0.962	
Satd. Flow (perm)	0	4818	4818	0	3195	1365
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)		45	45		30	
Link Distance (ft)		293	273		775	
Travel Time (s)		4.4	4.1		17.6	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.94	0.94
Adj. Flow (vph)	0	1768	2533	0	694	571
Shared Lane Traffic (%)						31%
Lane Group Flow (vph)	0	1768	2533	0	871	394
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

Year 2022 Plus Project [MIT]
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		9.0	25.0		11.0	11.0
Total Split (s)		75.0	75.0		45.0	45.0
Total Split (%)		62.5%	62.5%		37.5%	37.5%
Maximum Green (s)		72.0	70.0		40.0	40.0
Yellow Time (s)		2.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		3.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			13.0			
Pedestrian Calls (#/hr)			2			
Act Effect Green (s)		72.0	70.0		40.0	40.0
Actuated g/C Ratio		0.60	0.58		0.33	0.33
v/c Ratio		0.61	0.90		0.82	0.86
Control Delay		3.5	13.5		44.0	57.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		3.5	13.5		44.0	57.4
LOS		A	B		D	E
Approach Delay		3.5	13.5		48.2	
Approach LOS		A	B		D	
Queue Length 50th (ft)		53	306		316	310
Queue Length 95th (ft)		m56	m333		397	#510
Internal Link Dist (ft)		213	193		695	
Turn Bay Length (ft)						260
Base Capacity (vph)		2890	2810		1066	456
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.61	0.90		0.82	0.86

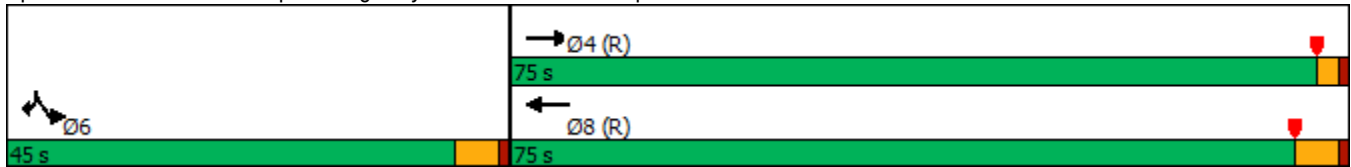
Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 20 (17%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 18.2
Intersection Capacity Utilization 129.0%
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Imperial Highway & SR-57 SB Off-Ramp



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 				 
Traffic Volume (vph)	207	1764	0	0	2293	57	1071	77	401	0	0	282
Future Volume (vph)	207	1764	0	0	2293	57	1071	77	401	0	0	282
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	260		0	0		0	610		350	0		0
Storage Lanes	1		0	0		0	1		1	0		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.996			0.984	0.850			0.850
Flt Protected	0.950						0.950	0.966				
Satd. Flow (prot)	1676	4818	0	0	6046	0	3051	1443	1425	0	0	2640
Flt Permitted	0.950						0.950	0.966				
Satd. Flow (perm)	1676	4818	0	0	6046	0	3051	1443	1425	0	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5			5	64			64
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		271			270			932			494	
Travel Time (s)		4.1			4.1			21.2			11.2	
Peak Hour Factor	0.95	0.95	0.95	0.98	0.98	0.98	0.95	0.95	0.95	0.88	0.88	0.88
Adj. Flow (vph)	218	1857	0	0	2340	58	1127	81	422	0	0	320
Shared Lane Traffic (%)							26%		11%			
Lane Group Flow (vph)	218	1857	0	0	2398	0	834	420	376	0	0	320
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	32.0			28.0		11.0	11.0	11.0			10.0
Total Split (s)	22.0	76.0			54.0		44.0	44.0	44.0			22.0
Total Split (%)	18.3%	63.3%			45.0%		36.7%	36.7%	36.7%			18.3%
Maximum Green (s)	18.0	71.0			49.0		39.0	39.0	39.0			18.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lag				Lead							Lag
Lead-Lag Optimize?	Yes				Yes							Yes
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		20.0			16.0							
Pedestrian Calls (#/hr)		2			2							
Act Effect Green (s)	18.0	71.0			49.0		39.0	39.0	39.0			18.0
Actuated g/C Ratio	0.15	0.59			0.41		0.32	0.32	0.32			0.15
v/c Ratio	0.87	0.65			0.97		0.84	0.89	0.74			0.71
Control Delay	67.8	12.2			47.3		46.7	60.4	39.9			48.2
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Delay	67.8	12.2			47.3		46.7	60.4	39.9			48.2
LOS	E	B			D		D	E	D			D
Approach Delay		18.0			47.3			48.7			48.2	
Approach LOS		B			D			D			D	
Queue Length 50th (ft)	159	234			520		328	354	228			108
Queue Length 95th (ft)	m#282	247			#618		416	#577	358			160
Internal Link Dist (ft)		191			190			852			414	
Turn Bay Length (ft)	260						610		350			
Base Capacity (vph)	251	2850			2471		991	472	506			450
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	0			0		0	0	0			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.87	0.65			0.97		0.84	0.89	0.74			0.71

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 38.3

Intersection LOS: D

Intersection Capacity Utilization 85.0%

ICU Level of Service E

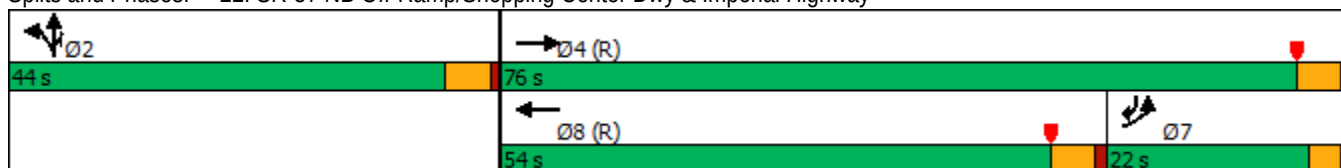
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: SR-57 NB Off-Ramp/Shopping Center Dwy & Imperial Highway



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑↑
Traffic Volume (vph)	0	1418	552	162	1659	0	0	0	0	779	0	1134
Future Volume (vph)	0	1418	552	162	1659	0	0	0	0	779	0	1134
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		2	2		0	0		0	2		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	0.88	0.97	0.91	1.00	1.00	1.00	1.00	0.97	1.00	0.88
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			550									55
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			598			824			1360	
Travel Time (s)		6.9			9.1			18.7			30.9	
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	1.00	1.00	1.00	0.95	0.95	0.95
Adj. Flow (vph)	0	1541	600	171	1746	0	0	0	0	820	0	1194
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1541	600	171	1746	0	0	0	0	820	0	1194
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									

4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

Sat MD Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		20.5	20.5	9.5	25.5					9.5		9.5
Total Split (s)		47.9	47.9	12.1	60.0					60.0		60.0
Total Split (%)		39.9%	39.9%	10.1%	50.0%					50.0%		50.0%
Maximum Green (s)		43.4	43.4	7.6	55.5					55.5		55.5
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	None	C-Max					None		None
Walk Time (s)		7.0	7.0		7.0							
Flash Dont Walk (s)		9.0	9.0		14.0							
Pedestrian Calls (#/hr)		2	2		2							
Act Effect Green (s)		43.5	43.5	7.9	55.9					55.1		55.1
Actuated g/C Ratio		0.36	0.36	0.07	0.47					0.46		0.46
v/c Ratio		0.88	0.46	0.80	0.78					0.55		0.96
Control Delay		32.6	5.0	84.5	29.7					25.1		48.3
Queue Delay		4.4	0.0	0.0	0.4					0.0		0.0
Total Delay		37.0	5.0	84.5	30.1					25.1		48.3
LOS		D	A	F	C					C		D
Approach Delay		28.0			34.9						38.9	
Approach LOS		C			C						D	
Queue Length 50th (ft)		235	25	71	423					229		477
Queue Length 95th (ft)		m345	m36	m#108	463					289		#655
Internal Link Dist (ft)		373			518			744			1280	
Turn Bay Length (ft)				70								
Base Capacity (vph)		1746	1307	213	2244					1504		1250
Starvation Cap Reductn		150	0	0	137					0		0
Spillback Cap Reductn		0	0	0	0					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.97	0.46	0.80	0.83					0.55		0.96

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 80 (67%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 33.8

Intersection LOS: C

Intersection Capacity Utilization 83.2%

ICU Level of Service E

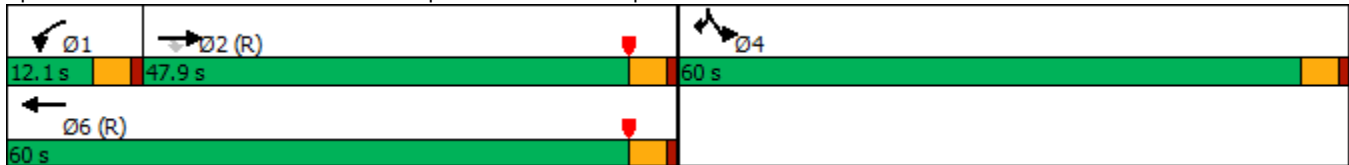
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road



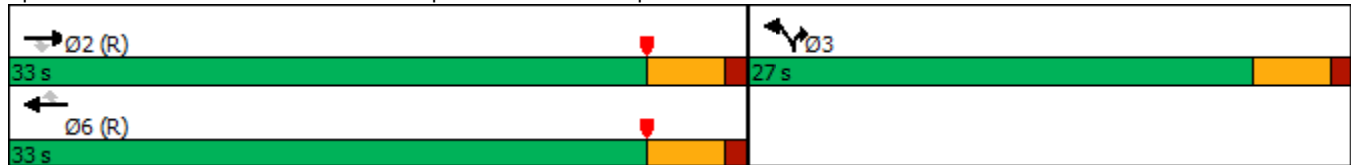
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1521	679	0	810	391	1011	0	413	0	0	0
Future Volume (vph)	0	1521	679	0	810	391	1011	0	413	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		100	0		0	215		0	0		0
Storage Lanes	0		1	0		1	1		1	0		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.984	0.850			0.850			0.850			
Flt Protected							0.950					
Satd. Flow (prot)	0	4480	1290	0	4818	1500	3252	0	1500	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	4480	1290	0	4818	1500	3252	0	1500	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44	545			416			27			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		598			633			831			1116	
Travel Time (s)		9.1			9.6			18.9			25.4	
Peak Hour Factor	0.91	0.91	0.91	0.94	0.94	0.94	0.99	0.99	0.99	1.00	1.00	1.00
Adj. Flow (vph)	0	1671	746	0	862	416	1021	0	417	0	0	0
Shared Lane Traffic (%)			27%									
Lane Group Flow (vph)	0	1872	545	0	862	416	1021	0	417	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2	1	1		1			
Detector Template		Thru	Right		Thru	Right	Left		Right			
Leading Detector (ft)		100	20		100	20	20		20			
Trailing Detector (ft)		0	0		0	0	0		0			
Detector 1 Position(ft)		0	0		0	0	0		0			
Detector 1 Size(ft)		6	20		6	20	20		20			
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm		NA	Perm	Prot		Prot			
Protected Phases		2			6		3		3			
Permitted Phases			2			6						

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2		6	6	3		3			
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0	5.0	5.0		5.0			
Minimum Split (s)		32.5	32.5		9.5	9.5	9.5		9.5			
Total Split (s)		33.0	33.0		33.0	33.0	27.0		27.0			
Total Split (%)		55.0%	55.0%		55.0%	55.0%	45.0%		45.0%			
Maximum Green (s)		28.5	28.5		28.5	28.5	22.5		22.5			
Yellow Time (s)		3.5	3.5		3.5	3.5	3.5		3.5			
All-Red Time (s)		1.0	1.0		1.0	1.0	1.0		1.0			
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Total Lost Time (s)		4.5	4.5		4.5	4.5	4.5		4.5			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0	3.0	3.0		3.0			
Recall Mode		C-Max	C-Max		C-Max	C-Max	None		None			
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		21.0	21.0									
Pedestrian Calls (#/hr)		2	2									
Act Effct Green (s)		29.1	29.1		29.1	29.1	21.9		21.9			
Actuated g/C Ratio		0.48	0.48		0.48	0.48	0.36		0.36			
v/c Ratio		0.85	0.60		0.37	0.44	0.86		0.74			
Control Delay		13.0	4.0		10.4	2.9	26.9		25.1			
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0			
Total Delay		13.0	4.0		10.4	2.9	26.9		25.1			
LOS		B	A		B	A	C		C			
Approach Delay		11.0			8.0			26.4				
Approach LOS		B			A			C				
Queue Length 50th (ft)		232	17		68	0	168		117			
Queue Length 95th (ft)		302	m56		93	39	#271		#242			
Internal Link Dist (ft)		518			553			751			1036	
Turn Bay Length (ft)			100				215					
Base Capacity (vph)		2197	906		2338	941	1219		579			
Starvation Cap Reductn		0	0		0	0	0		0			
Spillback Cap Reductn		0	0		82	0	0		0			
Storage Cap Reductn		0	0		0	0	0		0			
Reduced v/c Ratio		0.85	0.60		0.38	0.44	0.84		0.72			
Intersection Summary												
Area Type:	Other											
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 17 (28%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 60												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.86												
Intersection Signal Delay: 14.5						Intersection LOS: B						
Intersection Capacity Utilization 73.9%						ICU Level of Service D						
Analysis Period (min) 15												
# 95th percentile volume exceeds capacity, queue may be longer.												

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

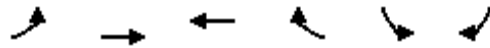
Splits and Phases: 5: SR-57 NB Off-Ramp/SR-57 NB On-Ramp & Lambert Road



Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

Year 2022 Plus Project [MIT]

Sat MD Peak Hour

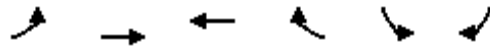


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑
Traffic Volume (vph)	0	1951	2667	0	537	735
Future Volume (vph)	0	1951	2667	0	537	735
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	90				90	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.943	0.850
Flt Protected					0.970	
Satd. Flow (prot)	0	4818	4818	0	3132	1365
Flt Permitted					0.970	
Satd. Flow (perm)	0	4818	4818	0	3132	1365
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)		45	45		30	
Link Distance (ft)		293	273		775	
Travel Time (s)		4.4	4.1		17.6	
Peak Hour Factor	0.95	0.95	0.97	0.97	0.92	0.92
Adj. Flow (vph)	0	2054	2749	0	584	799
Shared Lane Traffic (%)						45%
Lane Group Flow (vph)	0	2054	2749	0	944	439
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

Year 2022 Plus Project [MIT]

Sat MD Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		9.0	25.0		11.0	11.0
Total Split (s)		76.0	76.0		44.0	44.0
Total Split (%)		63.3%	63.3%		36.7%	36.7%
Maximum Green (s)		73.0	71.0		39.0	39.0
Yellow Time (s)		2.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		3.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			13.0			
Pedestrian Calls (#/hr)			2			
Act Effect Green (s)		73.0	71.0		39.0	39.0
Actuated g/C Ratio		0.61	0.59		0.32	0.32
v/c Ratio		0.70	0.96		0.93	0.99
Control Delay		6.7	16.4		54.7	80.8
Queue Delay		0.0	41.3		0.0	0.0
Total Delay		6.7	57.7		54.7	80.8
LOS		A	E		D	F
Approach Delay		6.7	57.7		63.0	
Approach LOS		A	E		E	
Queue Length 50th (ft)		156	421		361	369
Queue Length 95th (ft)		m87	m423		#490	#608
Internal Link Dist (ft)		213	193		695	
Turn Bay Length (ft)						260
Base Capacity (vph)		2930	2850		1019	444
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	341		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.70	1.10		0.93	0.99

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 30 (25%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 41.9

Intersection LOS: D

Intersection Capacity Utilization 145.5%

ICU Level of Service H

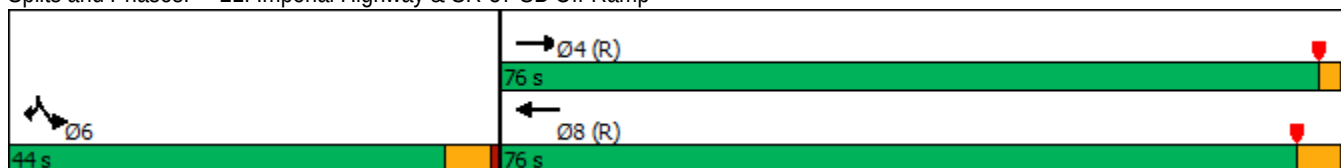
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

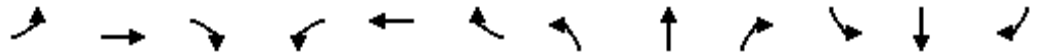
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Imperial Highway & SR-57 SB Off-Ramp



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 				 
Traffic Volume (vph)	273	1764	0	0	1787	43	1441	168	542	0	0	259
Future Volume (vph)	273	1764	0	0	1787	43	1441	168	542	0	0	259
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	260		0	0		0	610		350	0		0
Storage Lanes	1		0	0		0	1		1	0		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.996			0.985	0.850			0.850
Flt Protected	0.950						0.950	0.971				
Satd. Flow (prot)	1676	4818	0	0	6046	0	3051	1452	1425	0	0	2640
Flt Permitted	0.950						0.950	0.971				
Satd. Flow (perm)	1676	4818	0	0	6046	0	3051	1452	1425	0	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					4			5	64			64
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		271			270			932			494	
Travel Time (s)		4.1			4.1			21.2			11.2	
Peak Hour Factor	0.93	0.93	0.93	0.95	0.95	0.95	0.93	0.93	0.93	0.80	0.80	0.80
Adj. Flow (vph)	294	1897	0	0	1881	45	1549	181	583	0	0	324
Shared Lane Traffic (%)							23%		10%			
Lane Group Flow (vph)	294	1897	0	0	1926	0	1193	595	525	0	0	324
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	32.0			28.0		11.0	11.0	11.0			10.0
Total Split (s)	25.0	68.0			43.0		52.0	52.0	52.0			25.0
Total Split (%)	20.8%	56.7%			35.8%		43.3%	43.3%	43.3%			20.8%
Maximum Green (s)	21.0	63.0			38.0		47.0	47.0	47.0			21.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lag				Lead				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		20.0			16.0							
Pedestrian Calls (#/hr)		2			2							
Act Effect Green (s)	21.0	63.0			38.0		47.0	47.0	47.0			21.0
Actuated g/C Ratio	0.18	0.52			0.32		0.39	0.39	0.39			0.18
v/c Ratio	1.00	0.75			1.00		1.00	1.04	0.88			0.63
Control Delay	85.1	13.5			62.6		62.6	85.1	47.4			42.7
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Delay	85.1	13.5			62.6		62.6	85.1	47.4			42.7
LOS	F	B			E		E	F	D			D
Approach Delay		23.1			62.6			64.9			42.7	
Approach LOS		C			E			E			D	
Queue Length 50th (ft)	~226	203			~436		501	~576	352			107
Queue Length 95th (ft)	m#386	m233			#530		#669	#841	#577			138
Internal Link Dist (ft)		191			190			852			414	
Turn Bay Length (ft)	260						610		350			
Base Capacity (vph)	293	2529			1917		1194	571	597			514
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	0			0		0	0	0			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	1.00	0.75			1.00		1.00	1.04	0.88			0.63

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 8 (7%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.04

Intersection Signal Delay: 49.6

Intersection LOS: D

Intersection Capacity Utilization 90.8%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

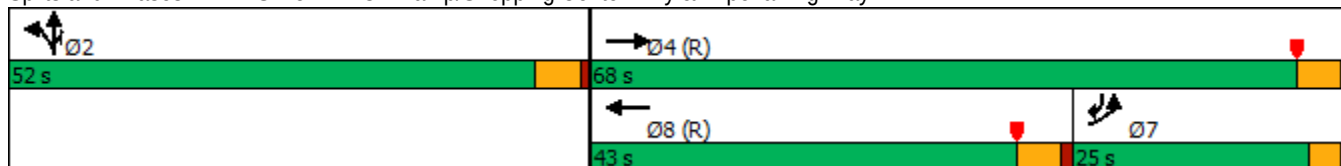
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: SR-57 NB Off-Ramp/Shopping Center Dwy & Imperial Highway



APPENDIX G-II

YEAR 2040 PLUS PROJECT
TRAFFIC CONDITIONS

4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑↑
Traffic Volume (vph)	0	1868	606	234	2152	0	0	0	0	1090	0	695
Future Volume (vph)	0	1868	606	234	2152	0	0	0	0	1090	0	695
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		2	2		0	0		0	2		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	0.88	0.97	0.91	1.00	1.00	1.00	1.00	0.97	1.00	0.88
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			512									55
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			598			824			1360	
Travel Time (s)		6.9			9.1			18.7			30.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1868	606	234	2152	0	0	0	0	1090	0	695
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1868	606	234	2152	0	0	0	0	1090	0	695
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									

4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		20.5	20.5	9.5	25.5					9.5		9.5
Total Split (s)		56.0	56.0	15.0	71.0					49.0		49.0
Total Split (%)		46.7%	46.7%	12.5%	59.2%					40.8%		40.8%
Maximum Green (s)		51.5	51.5	10.5	66.5					44.5		44.5
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	None	C-Max					None		None
Walk Time (s)		7.0	7.0		7.0							
Flash Dont Walk (s)		9.0	9.0		14.0							
Pedestrian Calls (#/hr)		2	2		2							
Act Effect Green (s)		52.3	52.3	10.5	67.3					43.7		43.7
Actuated g/C Ratio		0.44	0.44	0.09	0.56					0.36		0.36
v/c Ratio		0.89	0.42	0.82	0.80					0.92		0.70
Control Delay		28.5	5.4	74.6	24.8					49.8		34.0
Queue Delay		6.8	0.0	0.0	0.3					0.0		0.0
Total Delay		35.3	5.4	74.6	25.1					49.8		34.0
LOS		D	A	E	C					D		C
Approach Delay		28.0			29.9						43.7	
Approach LOS		C			C						D	
Queue Length 50th (ft)		265	36	97	580					407		236
Queue Length 95th (ft)		m356	m48	m#127	m627					#536		313
Internal Link Dist (ft)		373			518			744			1280	
Turn Bay Length (ft)				70								
Base Capacity (vph)		2099	1439	285	2702					1205		1013
Starvation Cap Reductn		158	0	0	133					0		0
Spillback Cap Reductn		207	0	0	86					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.99	0.42	0.82	0.84					0.90		0.69

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 31 (26%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 32.9

Intersection LOS: C

Intersection Capacity Utilization 88.8%

ICU Level of Service E

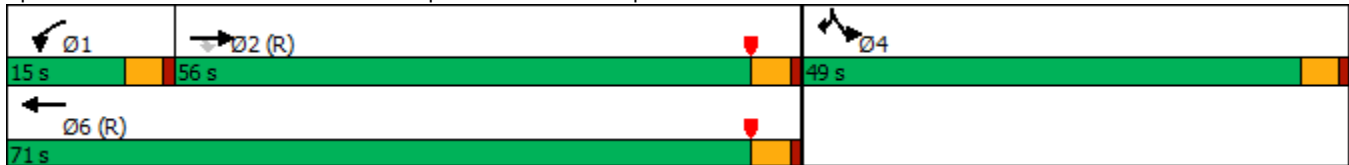
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	2616	402	0	1350	518	1080	0	500	0	0	0
Future Volume (vph)	0	2616	402	0	1350	518	1080	0	500	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		100	0		0	215		0	0		0
Storage Lanes	0		1	0		1	1		1	0		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.998	0.850			0.850			0.850			
Flt Protected							0.950					
Satd. Flow (prot)	0	4544	1290	0	4818	1500	3252	0	1500	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	4544	1290	0	4818	1500	3252	0	1500	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3	130			345			14			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		598			633			831			1116	
Travel Time (s)		9.1			9.6			18.9			25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2616	402	0	1350	518	1080	0	500	0	0	0
Shared Lane Traffic (%)			10%									
Lane Group Flow (vph)	0	2656	362	0	1350	518	1080	0	500	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2	1	1		1			
Detector Template		Thru	Right		Thru	Right	Left		Right			
Leading Detector (ft)		100	20		100	20	20		20			
Trailing Detector (ft)		0	0		0	0	0		0			
Detector 1 Position(ft)		0	0		0	0	0		0			
Detector 1 Size(ft)		6	20		6	20	20		20			
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm		NA	Free	Prot		Prot			
Protected Phases		2			6		3		3			
Permitted Phases			2			Free						

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2		6		3		3			
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0		5.0		5.0			
Minimum Split (s)		32.5	32.5		9.5		9.5		9.5			
Total Split (s)		74.0	74.0		74.0		46.0		46.0			
Total Split (%)		61.7%	61.7%		61.7%		38.3%		38.3%			
Maximum Green (s)		69.5	69.5		69.5		41.5		41.5			
Yellow Time (s)		3.5	3.5		3.5		3.5		3.5			
All-Red Time (s)		1.0	1.0		1.0		1.0		1.0			
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0			
Total Lost Time (s)		4.5	4.5		4.5		4.5		4.5			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Recall Mode		C-Max	C-Max		C-Max		None		None			
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		21.0	21.0									
Pedestrian Calls (#/hr)		2	2									
Act Effct Green (s)		69.6	69.6		69.6	120.0	41.4		41.4			
Actuated g/C Ratio		0.58	0.58		0.58	1.00	0.34		0.34			
v/c Ratio		1.01	0.45		0.48	0.35	0.96		0.95			
Control Delay		31.6	8.1		15.4	0.6	58.2		66.7			
Queue Delay		6.3	0.0		0.2	0.0	0.0		0.0			
Total Delay		38.0	8.1		15.7	0.6	58.2		66.7			
LOS		D	A		B	A	E		E			
Approach Delay		34.4			11.5			60.9				
Approach LOS		C			B			E				
Queue Length 50th (ft)		~344	84		212	0	419		366			
Queue Length 95th (ft)		#920	m122		249	0	#561		#587			
Internal Link Dist (ft)		518			553			751			1036	
Turn Bay Length (ft)			100				215					
Base Capacity (vph)		2635	802		2793	1500	1124		527			
Starvation Cap Reductn		51	0		0	0	0		0			
Spillback Cap Reductn		0	0		624	0	0		0			
Storage Cap Reductn		0	0		0	0	0		0			
Reduced v/c Ratio		1.03	0.45		0.62	0.35	0.96		0.95			
Intersection Summary												
Area Type:	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Offset: 34 (28%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 100												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 1.01												
Intersection Signal Delay: 34.2						Intersection LOS: C						
Intersection Capacity Utilization 96.7%						ICU Level of Service F						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

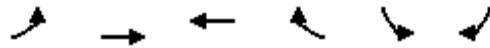
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR-57 NB Off-Ramp/SR-57 NB On-Ramp & Lambert Road

→ Ø2 (R) 74 s	↖ Ø3 46 s
← Ø6 (R) 74 s	

Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

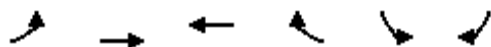
Year 2040 Plus Project
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑
Traffic Volume (vph)	0	1729	1998	0	792	517
Future Volume (vph)	0	1729	1998	0	792	517
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	90				90	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.982	0.850
Flt Protected					0.958	
Satd. Flow (prot)	0	4818	4818	0	3221	1365
Flt Permitted					0.958	
Satd. Flow (perm)	0	4818	4818	0	3221	1365
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					3	3
Link Speed (mph)		45	45		30	
Link Distance (ft)		293	273		775	
Travel Time (s)		4.4	4.1		17.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1729	1998	0	792	517
Shared Lane Traffic (%)						21%
Lane Group Flow (vph)	0	1729	1998	0	901	408
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

Year 2040 Plus Project
AM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		9.0	25.0		11.0	11.0
Total Split (s)		33.0	33.0		27.0	27.0
Total Split (%)		55.0%	55.0%		45.0%	45.0%
Maximum Green (s)		30.0	28.0		22.0	22.0
Yellow Time (s)		2.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		3.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			13.0			
Pedestrian Calls (#/hr)			2			
Act Effect Green (s)		30.0	28.0		22.0	22.0
Actuated g/C Ratio		0.50	0.47		0.37	0.37
v/c Ratio		0.72	0.89		0.76	0.81
Control Delay		11.1	14.9		21.9	33.0
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		11.1	14.9		21.9	33.0
LOS		B	B		C	C
Approach Delay		11.1	14.9		25.3	
Approach LOS		B	B		C	
Queue Length 50th (ft)		135	105		142	140
Queue Length 95th (ft)		m139	231		205	#300
Internal Link Dist (ft)		213	193		695	
Turn Bay Length (ft)						260
Base Capacity (vph)		2409	2248		1182	502
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.72	0.89		0.76	0.81

Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Offset: 11 (18%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 16.3

Intersection LOS: B

Intersection Capacity Utilization 121.2%

ICU Level of Service H

Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

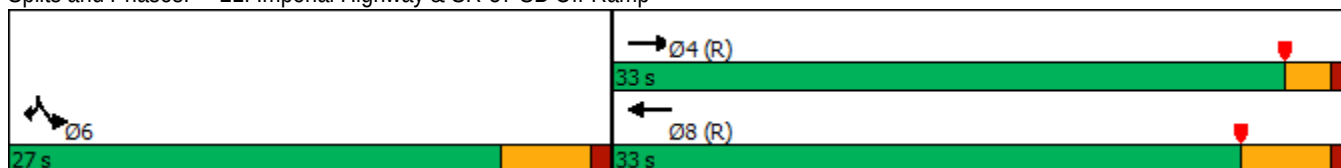
Lanes, Volumes, Timings 21: Imperial Highway & SR-57 SB Off-Ramp

Year 2040 Plus Project
AM Peak Hour

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 21: Imperial Highway & SR-57 SB Off-Ramp



Lanes, Volumes, Timings

Year 2040 Plus Project

22: SR-57 NB Off-Ramp/Shopping Center Dwy & Imperial Highway

AM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	189	1820	0	0	1446	21	1079	198	848	0	0	143
Future Volume (vph)	189	1820	0	0	1446	21	1079	198	848	0	0	143
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	260		0	0		0	610		350	0		0
Storage Lanes	1		0	0		0	1		1	0		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.998			0.927	0.850			0.850
Flt Protected	0.950						0.950	0.991				
Satd. Flow (prot)	1676	4818	0	0	6058	0	3051	1394	1425	0	0	2640
Flt Permitted	0.950						0.950	0.991				
Satd. Flow (perm)	1676	4818	0	0	6058	0	3051	1394	1425	0	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			3	64			64
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		271			270			932			494	
Travel Time (s)		4.1			4.1			21.2			11.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	189	1820	0	0	1446	21	1079	198	848	0	0	143
Shared Lane Traffic (%)							10%		34%			
Lane Group Flow (vph)	189	1820	0	0	1467	0	971	594	560	0	0	143
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	32.0			28.0		11.0	11.0	11.0			10.0
Total Split (s)	20.0	58.0			38.0		62.0	62.0	62.0			20.0
Total Split (%)	16.7%	48.3%			31.7%		51.7%	51.7%	51.7%			16.7%
Maximum Green (s)	16.0	53.0			33.0		57.0	57.0	57.0			16.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lag				Lead				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		20.0			16.0							
Pedestrian Calls (#/hr)		2			2							
Act Effct Green (s)	16.0	53.0			33.0		57.0	57.0	57.0			16.0
Actuated g/C Ratio	0.13	0.44			0.28		0.48	0.48	0.48			0.13
v/c Ratio	0.85	0.86			0.88		0.67	0.90	0.79			0.35
Control Delay	68.6	27.7			48.8		27.1	46.9	32.8			28.8
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Delay	68.6	27.7			48.8		27.1	46.9	32.8			28.8
LOS	E	C			D		C	D	C			C
Approach Delay		31.5			48.8			34.1			28.8	
Approach LOS		C			D			C			C	
Queue Length 50th (ft)	134	444			315		309	474	335			31
Queue Length 95th (ft)	m#235	512			364		389	#752	510			67
Internal Link Dist (ft)		191			190			852			414	
Turn Bay Length (ft)	260						610		350			
Base Capacity (vph)	223	2127			1667		1449	663	710			407
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	0			0		0	0	0			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	0.85	0.86			0.88		0.67	0.90	0.79			0.35

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 57 (48%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 36.8

Intersection LOS: D

Intersection Capacity Utilization 82.4%

ICU Level of Service E

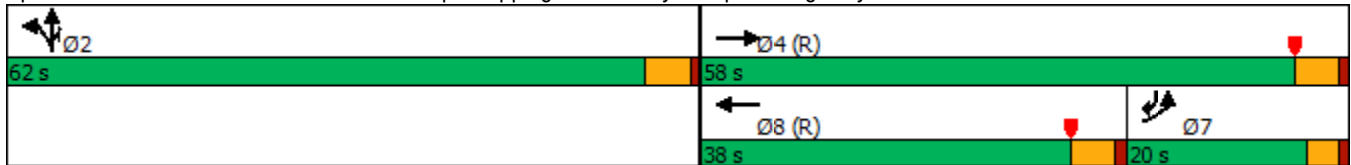
Analysis Period (min) 15

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 22: SR-57 NB Off-Ramp/Shopping Center Dwy & Imperial Highway



4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑↑	↑↑	↑↑↑					↑↑		↑↑
Traffic Volume (vph)	0	1421	848	249	1860	0	0	0	0	485	0	849
Future Volume (vph)	0	1421	848	249	1860	0	0	0	0	485	0	849
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		0	70		0	0		0	0		0
Storage Lanes	0		2	2		0	0		0	2		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	0.88	0.97	0.91	1.00	1.00	1.00	1.00	0.97	1.00	0.88
Frt			0.850									0.850
Flt Protected				0.950						0.950		
Satd. Flow (prot)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Flt Permitted				0.950						0.950		
Satd. Flow (perm)	0	4818	2640	3252	4818	0	0	0	0	3252	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			848									55
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		453			598			824			1360	
Travel Time (s)		6.9			9.1			18.7			30.9	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1421	848	249	1860	0	0	0	0	485	0	849
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1421	848	249	1860	0	0	0	0	485	0	849
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1	1	2					1		1
Detector Template		Thru	Right	Left	Thru					Left		Right
Leading Detector (ft)		100	20	20	100					20		20
Trailing Detector (ft)		0	0	0	0					0		0
Detector 1 Position(ft)		0	0	0	0					0		0
Detector 1 Size(ft)		6	20	20	6					20		20
Detector 1 Type		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex					Cl+Ex		Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Queue (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 1 Delay (s)		0.0	0.0	0.0	0.0					0.0		0.0
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm	Prot	NA					Prot		Prot
Protected Phases		2		1	6					4		4
Permitted Phases			2									

4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

PM Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2	1	6					4		4
Switch Phase												
Minimum Initial (s)		5.0	5.0	5.0	5.0					5.0		5.0
Minimum Split (s)		20.5	20.5	9.5	25.5					9.5		9.5
Total Split (s)		50.0	50.0	19.0	69.0					51.0		51.0
Total Split (%)		41.7%	41.7%	15.8%	57.5%					42.5%		42.5%
Maximum Green (s)		45.5	45.5	14.5	64.5					46.5		46.5
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		1.0	1.0	1.0	1.0					1.0		1.0
Lost Time Adjust (s)		0.0	0.0	0.0	0.0					0.0		0.0
Total Lost Time (s)		4.5	4.5	4.5	4.5					4.5		4.5
Lead/Lag		Lag	Lag	Lead								
Lead-Lag Optimize?		Yes	Yes	Yes								
Vehicle Extension (s)		3.0	3.0	3.0	3.0					3.0		3.0
Recall Mode		C-Max	C-Max	None	C-Max					None		None
Walk Time (s)		7.0	7.0		7.0							
Flash Dont Walk (s)		9.0	9.0		14.0							
Pedestrian Calls (#/hr)		2	2		2							
Act Effect Green (s)		50.9	50.9	13.3	68.7					42.3		42.3
Actuated g/C Ratio		0.42	0.42	0.11	0.57					0.35		0.35
v/c Ratio		0.70	0.53	0.69	0.67					0.42		0.88
Control Delay		15.5	2.4	63.5	19.3					30.3		45.1
Queue Delay		1.2	0.5	0.0	0.1					0.0		0.0
Total Delay		16.7	2.9	63.5	19.4					30.3		45.1
LOS		B	A	E	B					C		D
Approach Delay		11.6			24.6						39.7	
Approach LOS		B			C						D	
Queue Length 50th (ft)		320	39	102	370					142		321
Queue Length 95th (ft)		m385	m53	146	422					183		403
Internal Link Dist (ft)		373			518			744			1280	
Turn Bay Length (ft)				70								
Base Capacity (vph)		2044	1608	392	2759					1260		1056
Starvation Cap Reductn		372	356	0	91					0		0
Spillback Cap Reductn		0	0	0	5					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.85	0.68	0.64	0.70					0.38		0.80

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 56 (47%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 23.0

Intersection LOS: C

Intersection Capacity Utilization 76.8%

ICU Level of Service D

Analysis Period (min) 15

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: SR-57 SB On-Ramp/SR-57 SB Off-Ramp & Lambert Road

 Ø1 19 s	 Ø2 (R) 50 s	 Ø4 51 s
 Ø6 (R) 69 s		

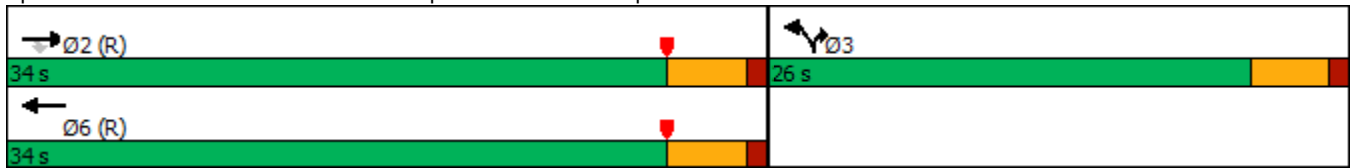
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1543	571	0	1234	541	709	0	310	0	0	0
Future Volume (vph)	0	1543	571	0	1234	541	709	0	310	0	0	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0		100	0		0	215		0	0		0
Storage Lanes	0		1	0		1	1		1	0		0
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.86	0.86	1.00	0.91	1.00	0.97	1.00	1.00	1.00	1.00	1.00
Frt		0.991	0.850			0.850			0.850			
Flt Protected							0.950					
Satd. Flow (prot)	0	4512	1290	0	4818	1500	3252	0	1500	0	0	0
Flt Permitted							0.950					
Satd. Flow (perm)	0	4512	1290	0	4818	1500	3252	0	1500	0	0	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23	468			541			27			
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		598			633			831			1116	
Travel Time (s)		9.1			9.6			18.9			25.4	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1543	571	0	1234	541	709	0	310	0	0	0
Shared Lane Traffic (%)			18%									
Lane Group Flow (vph)	0	1646	468	0	1234	541	709	0	310	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors		2	1		2	1	1		1			
Detector Template		Thru	Right		Thru	Right	Left		Right			
Leading Detector (ft)		100	20		100	20	20		20			
Trailing Detector (ft)		0	0		0	0	0		0			
Detector 1 Position(ft)		0	0		0	0	0		0			
Detector 1 Size(ft)		6	20		6	20	20		20			
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			
Detector 1 Channel												
Detector 1 Extend (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Queue (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 1 Delay (s)		0.0	0.0		0.0	0.0	0.0		0.0			
Detector 2 Position(ft)		94			94							
Detector 2 Size(ft)		6			6							
Detector 2 Type		Cl+Ex			Cl+Ex							
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0							
Turn Type		NA	Perm		NA	Free	Prot		Prot			
Protected Phases		2			6		3		3			
Permitted Phases			2			Free						

Lanes, Volumes, Timings
5: SR-57 NB Off-Ramp/SR-57 NB On-Ramp & Lambert Road

Year 2040 Plus Project
PM Peak Hour

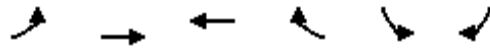
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase		2	2		6		3		3			
Switch Phase												
Minimum Initial (s)		5.0	5.0		5.0		5.0		5.0			
Minimum Split (s)		32.5	32.5		9.5		9.5		9.5			
Total Split (s)		34.0	34.0		34.0		26.0		26.0			
Total Split (%)		56.7%	56.7%		56.7%		43.3%		43.3%			
Maximum Green (s)		29.5	29.5		29.5		21.5		21.5			
Yellow Time (s)		3.5	3.5		3.5		3.5		3.5			
All-Red Time (s)		1.0	1.0		1.0		1.0		1.0			
Lost Time Adjust (s)		0.0	0.0		0.0		0.0		0.0			
Total Lost Time (s)		4.5	4.5		4.5		4.5		4.5			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)		3.0	3.0		3.0		3.0		3.0			
Recall Mode		C-Max	C-Max		C-Max		None		None			
Walk Time (s)		7.0	7.0									
Flash Dont Walk (s)		21.0	21.0									
Pedestrian Calls (#/hr)		2	2									
Act Effct Green (s)		32.4	32.4		32.4	60.0	18.6		18.6			
Actuated g/C Ratio		0.54	0.54		0.54	1.00	0.31		0.31			
v/c Ratio		0.67	0.51		0.47	0.36	0.70		0.64			
Control Delay		9.2	3.2		9.8	0.7	22.1		22.3			
Queue Delay		0.0	0.0		0.0	0.0	0.0		0.0			
Total Delay		9.2	3.2		9.8	0.7	22.1		22.3			
LOS		A	A		A	A	C		C			
Approach Delay		7.9			7.0			22.1				
Approach LOS		A			A			C				
Queue Length 50th (ft)		175	9		95	0	111		84			
Queue Length 95th (ft)		237	75		137	0	154		149			
Internal Link Dist (ft)		518			553			751			1036	
Turn Bay Length (ft)			100				215					
Base Capacity (vph)		2447	911		2601	1500	1165		554			
Starvation Cap Reductn		0	0		0	0	0		0			
Spillback Cap Reductn		0	0		0	0	0		0			
Storage Cap Reductn		0	0		0	0	0		0			
Reduced v/c Ratio		0.67	0.51		0.47	0.36	0.61		0.56			
Intersection Summary												
Area Type:	Other											
Cycle Length: 60												
Actuated Cycle Length: 60												
Offset: 50 (83%), Referenced to phase 2:EBT and 6:WBT, Start of Yellow												
Natural Cycle: 55												
Control Type: Actuated-Coordinated												
Maximum v/c Ratio: 0.70												
Intersection Signal Delay: 10.6						Intersection LOS: B						
Intersection Capacity Utilization 64.4%						ICU Level of Service C						
Analysis Period (min) 15												

Splits and Phases: 5: SR-57 NB Off-Ramp/SR-57 NB On-Ramp & Lambert Road



Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

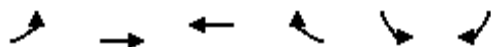
Year 2040 Plus Project
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↑↑↑	↑
Traffic Volume (vph)	0	1765	2522	0	682	553
Future Volume (vph)	0	1765	2522	0	682	553
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (ft)	0			0	0	260
Storage Lanes	0			0	2	1
Taper Length (ft)	90				90	
Lane Util. Factor	1.00	0.91	0.91	1.00	0.97	0.91
Frt					0.971	0.850
Flt Protected					0.961	
Satd. Flow (prot)	0	4818	4818	0	3195	1365
Flt Permitted					0.961	
Satd. Flow (perm)	0	4818	4818	0	3195	1365
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					2	2
Link Speed (mph)		45	45		30	
Link Distance (ft)		293	273		775	
Travel Time (s)		4.4	4.1		17.6	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1765	2522	0	682	553
Shared Lane Traffic (%)						30%
Lane Group Flow (vph)	0	1765	2522	0	848	387
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		24	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15			9	15	9
Number of Detectors		2	2		1	1
Detector Template		Thru	Thru		Left	Right
Leading Detector (ft)		100	100		20	20
Trailing Detector (ft)		0	0		0	0
Detector 1 Position(ft)		0	0		0	0
Detector 1 Size(ft)		6	6		20	20
Detector 1 Type		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)		0.0	0.0		0.0	0.0
Detector 1 Queue (s)		0.0	0.0		0.0	0.0
Detector 1 Delay (s)		0.0	0.0		0.0	0.0
Detector 2 Position(ft)		94	94			
Detector 2 Size(ft)		6	6			
Detector 2 Type		Cl+Ex	Cl+Ex			
Detector 2 Channel						
Detector 2 Extend (s)		0.0	0.0			
Turn Type		NA	NA		Prot	Prot
Protected Phases		4	8		6	6
Permitted Phases						

Lanes, Volumes, Timings
21: Imperial Highway & SR-57 SB Off-Ramp

Year 2040 Plus Project
PM Peak Hour



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Detector Phase		4	8		6	6
Switch Phase						
Minimum Initial (s)		6.0	6.0		6.0	6.0
Minimum Split (s)		9.0	25.0		11.0	11.0
Total Split (s)		9.0	25.0		11.0	11.0
Total Split (%)		25.0%	69.4%		30.6%	30.6%
Maximum Green (s)		6.0	20.0		6.0	6.0
Yellow Time (s)		2.0	4.0		4.0	4.0
All-Red Time (s)		1.0	1.0		1.0	1.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0
Total Lost Time (s)		3.0	5.0		5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)		3.0	3.0		3.0	3.0
Recall Mode		C-Max	C-Max		Max	Max
Walk Time (s)			7.0			
Flash Dont Walk (s)			13.0			
Pedestrian Calls (#/hr)			2			
Act Effect Green (s)		22.0	20.0		6.0	6.0
Actuated g/C Ratio		0.61	0.56		0.17	0.17
v/c Ratio		0.60	0.94		1.59	1.69
Control Delay		5.4	17.9		293.6	349.4
Queue Delay		0.0	0.0		0.0	0.0
Total Delay		5.4	17.9		293.6	349.4
LOS		A	B		F	F
Approach Delay		5.4	17.9		311.1	
Approach LOS		A	B		F	
Queue Length 50th (ft)		56	135		~137	~137
Queue Length 95th (ft)		81	#267		#216	#261
Internal Link Dist (ft)		213	193		695	
Turn Bay Length (ft)						260
Base Capacity (vph)		2944	2676		534	229
Starvation Cap Reductn		0	0		0	0
Spillback Cap Reductn		0	0		0	0
Storage Cap Reductn		0	0		0	0
Reduced v/c Ratio		0.60	0.94		1.59	1.69

Intersection Summary

Area Type: Other

Cycle Length: 36

Actuated Cycle Length: 36

Offset: 24 (67%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.69

Intersection Signal Delay: 79.5

Intersection LOS: E

Intersection Capacity Utilization 135.4%

ICU Level of Service H

Analysis Period (min) 15

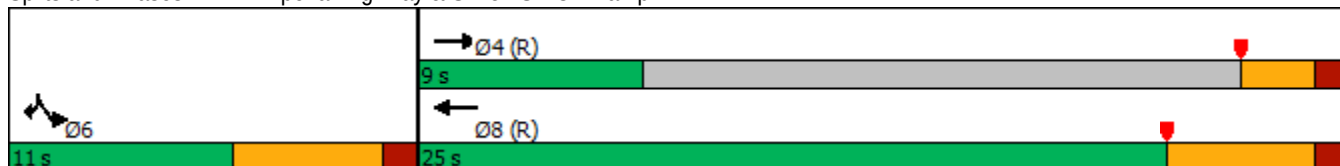
~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

- # 95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 21: Imperial Highway & SR-57 SB Off-Ramp



												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 					 
Traffic Volume (vph)	217	1852	0	0	2536	60	1122	81	453	0	0	296
Future Volume (vph)	217	1852	0	0	2536	60	1122	81	453	0	0	296
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (ft)	260		0	0		0	610		350	0		0
Storage Lanes	1		0	0		0	1		1	0		2
Taper Length (ft)	90			90			90			90		
Lane Util. Factor	1.00	0.91	1.00	1.00	0.86	0.86	0.91	0.86	0.95	1.00	1.00	0.88
Frt					0.997			0.976	0.850			0.850
Flt Protected	0.950						0.950	0.968				
Satd. Flow (prot)	1676	4818	0	0	6052	0	3051	1434	1425	0	0	2640
Flt Permitted	0.950						0.950	0.968				
Satd. Flow (perm)	1676	4818	0	0	6052	0	3051	1434	1425	0	0	2640
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					12			16	156			156
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		271			270			932			494	
Travel Time (s)		4.1			4.1			21.2			11.2	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	217	1852	0	0	2536	60	1122	81	453	0	0	296
Shared Lane Traffic (%)							25%		15%			
Lane Group Flow (vph)	217	1852	0	0	2596	0	841	430	385	0	0	296
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2			2		1	2	1			1
Detector Template	Left	Thru			Thru		Left	Thru	Right			Right
Leading Detector (ft)	20	100			100		20	100	20			20
Trailing Detector (ft)	0	0			0		0	0	0			0
Detector 1 Position(ft)	0	0			0		0	0	0			0
Detector 1 Size(ft)	20	6			6		20	6	20			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Detector 2 Position(ft)		94			94			94				
Detector 2 Size(ft)		6			6			6				
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex				
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0				
Turn Type	Prot	NA			NA		Split	NA	Prot			Over
Protected Phases	7	4			8		2	2	2			7
Permitted Phases												



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4			8		2	2	2			7
Switch Phase												
Minimum Initial (s)	6.0	6.0			6.0		6.0	6.0	6.0			6.0
Minimum Split (s)	10.0	32.0			28.0		11.0	11.0	11.0			10.0
Total Split (s)	10.0	32.0			28.0		11.0	11.0	11.0			10.0
Total Split (%)	20.4%	65.3%			57.1%		22.4%	22.4%	22.4%			20.4%
Maximum Green (s)	6.0	27.0			23.0		6.0	6.0	6.0			6.0
Yellow Time (s)	3.0	4.0			4.0		4.0	4.0	4.0			3.0
All-Red Time (s)	1.0	1.0			1.0		1.0	1.0	1.0			1.0
Lost Time Adjust (s)	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Lost Time (s)	4.0	5.0			5.0		5.0	5.0	5.0			4.0
Lead/Lag	Lag				Lead				Lag			
Lead-Lag Optimize?	Yes				Yes				Yes			
Vehicle Extension (s)	3.0	3.0			3.0		3.0	3.0	3.0			3.0
Recall Mode	None	C-Max			C-Max		Max	Max	Max			None
Walk Time (s)		7.0			7.0							
Flash Dont Walk (s)		20.0			16.0							
Pedestrian Calls (#/hr)		2			2							
Act Effect Green (s)	6.0	33.0			23.0		6.0	6.0	6.0			6.0
Actuated g/C Ratio	0.12	0.67			0.47		0.12	0.12	0.12			0.12
v/c Ratio	1.06	0.57			0.91		2.25	2.28	1.24			0.64
Control Delay	108.1	5.1			18.8		592.2	608.9	150.4			17.9
Queue Delay	0.0	0.0			0.0		0.0	0.0	0.0			0.0
Total Delay	108.1	5.1			18.8		592.2	608.9	150.4			17.9
LOS	F	A			B		F	F	F			B
Approach Delay		15.9			18.8			493.8			17.9	
Approach LOS		B			B			F			B	
Queue Length 50th (ft)	~72	76			182		~224	~246	~104			21
Queue Length 95th (ft)	#175	104			#284		#322	#412	#249			#64
Internal Link Dist (ft)		191			190			852			414	
Turn Bay Length (ft)	260						610		350			
Base Capacity (vph)	205	3244			2847		373	189	311			460
Starvation Cap Reductn	0	0			0		0	0	0			0
Spillback Cap Reductn	0	0			0		0	0	0			0
Storage Cap Reductn	0	0			0		0	0	0			0
Reduced v/c Ratio	1.06	0.57			0.91		2.25	2.28	1.24			0.64

Intersection Summary

Area Type: Other

Cycle Length: 49

Actuated Cycle Length: 49

Offset: 4 (8%), Referenced to phase 4:EBT and 8:WBT, Start of Yellow

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 2.28

Intersection Signal Delay: 136.7

Intersection LOS: F

Intersection Capacity Utilization 90.8%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 22: SR-57 NB Off-Ramp/Shopping Center Dwy & Imperial Highway



APPENDIX H

CALTRANS BASIC FREEWAY SEGMENT WORKSHEETS

APPENDIX H-1

EXISTING TRAFFIC CONDITIONS

HCS7 Basic Freeway Report

Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, South of Imperial Highway	Time Period Analyzed	AM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6872	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1476
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.63
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, South of Lambert Road	Time Period Analyzed	AM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, In	6	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6168	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1104
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.47
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	17.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, North of Lambert Road	Time Period Analyzed	AM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5453	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1464
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 SB, North of Lambert Road	Time Period Analyzed	AM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5921	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1590
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.68
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	64.5
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	24.7
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 SB, South of Lambert Road	Time Period Analyzed	AM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5200	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1396
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.59
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	21.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

HCS7 Basic Freeway Report

Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 SB, South of Imperial Highway	Time Period Analyzed	AM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	4995	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1341
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.57
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	20.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, South of Imperial Highway	Time Period Analyzed	PM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, In	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5582	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1199
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.51
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	18.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, South of Lambert Road	Time Period Analyzed	PM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	6	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5445	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	975
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.41
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	15.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, North of Lambert Road	Time Period Analyzed	PM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5417	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1454
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 SB, North of Lambert Road	Time Period Analyzed	PM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5427	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1457
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 SB, South of Lambert Road	Time Period Analyzed	PM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5266	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1414
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.60
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	21.8
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 SB, South of Imperial Highway	Time Period Analyzed	PM Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5316	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1428
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.0
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, South of Imperial Highway	Time Period Analyzed	Sat MD Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	5	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6774	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1455
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.4
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, South of Lambert Road	Time Period Analyzed	Sat MD Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	6	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5931	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1062
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.45
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	16.3
Total Ramp Density Adjustment	-	Level of Service (LOS)	B
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 NB, North of Lambert Road	Time Period Analyzed	Sat MD Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5441	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1461
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.62
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	64.9
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.5
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

Analyst	AB	Date	11/8/19
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Jurisdiction	SR-57 SB, North of Lambert Road	Time Period Analyzed	Sat MD Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, ln	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	6316	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1696
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.72
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	63.8
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	26.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	D
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

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Agency	LLG Engineers	Analysis Year	Existing (Year 2019)
Jurisdiction	SR-57 SB, South of Lambert Road	Time Period Analyzed	Sat MD Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5241	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1407
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.60
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	21.6
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

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Project Information

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Jurisdiction	SR-57 SB, South of Imperial Highway	Time Period Analyzed	Sat MD Peak Hour
Project Description	2-19-4099-1 Brea Mall Expansion & Improvement, Brea		

Geometric Data

Number of Lanes, In	4	Terrain Type	Level
Segment Length (L), ft	-	Percent Grade, %	-
Measured or Base Free-Flow Speed	Measured	Grade Length, mi	-
Base Free-Flow Speed (BFFS), mi/h	65.0	Total Ramp Density (TRD), ramps/mi	-
Lane Width, ft	-	Free-Flow Speed (FFS), mi/h	65.0
Right-Side Lateral Clearance, ft	-		

Adjustment Factors

Driver Population	All Familiar	Final Speed Adjustment Factor (SAF)	1.000
Weather Type	Non-Severe Weather	Final Capacity Adjustment Factor (CAF)	1.000
Incident Type	No Incident	Demand Adjustment Factor (DAF)	1.000

Demand and Capacity

Demand Volume veh/h	5339	Heavy Vehicle Adjustment Factor (fHV)	0.980
Peak Hour Factor	0.95	Flow Rate (Vp), pc/h/ln	1434
Total Trucks, %	2.00	Capacity (c), pc/h/ln	2350
Single-Unit Trucks (SUT), %	-	Adjusted Capacity (cadj), pc/h/ln	2350
Tractor-Trailers (TT), %	-	Volume-to-Capacity Ratio (v/c)	0.61
Passenger Car Equivalent (ET)	2.000		

Speed and Density

Lane Width Adjustment (fLW)	-	Average Speed (S), mi/h	65.0
Right-Side Lateral Clearance Adj. (fRLC)	-	Density (D), pc/mi/ln	22.1
Total Ramp Density Adjustment	-	Level of Service (LOS)	C
Adjusted Free-Flow Speed (FFSadj), mi/h	65.0		

Appendices

Appendix J: Tribal Consultation Correspondence

Appendices

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1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
 - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE, such as known archaeological sites;
 - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
 - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the APE; and
 - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.
2. The results of any archaeological inventory survey that was conducted, including:
 - Any report that may contain site forms, site significance, and suggested mitigation measures.

All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.
3. The result of the Sacred Lands File (SFL) check conducted through the NAHC was negative.
4. Any ethnographic studies conducted for any area including all or part of the APE; and
5. Any geotechnical reports regarding all or part of the APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a tribal cultural resource. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the event, that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify the NAHC. With your assistance, we can assure that our consultation list remains current.

If you have any questions, please contact me at my email address: steven.quinn@nahc.ca.gov.

Sincerely,



Steven Quinn
Associate Governmental Program Analyst

Attachment

**Native American Heritage Commission
Tribal Consultation List
Orange County
6/4/2019**

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#231
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36190 Church Road, Suite 1 Diegueno
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This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed Brea Mall Redevelopment Project, Orange County.

**Native American Heritage Commission
Tribal Consultation List
Orange County
6/4/2019**

**Juaneno Band of Mission
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**Native American Heritage Commission
Tribal Consultation List
Orange County
6/4/2019**

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This list is applicable only for consultation with Native American tribes under Government Code Sections 65352.3, 65352.4 et seq. and Public Resources Code Sections 21080.3.1 for the proposed Brea Mall Redevelopment Project, Orange County.



GABRIELENO BAND OF MISSION INDIANS - KIZH NATION

Historically known as The San Gabriel Band of Mission Indians
recognized by the State of California as the aboriginal tribe of the Los Angeles basin

Project Name: Brea Mall Mixed Use Project City of Brea , Orange County CA

Dear Jessica,

Thank you for your letter dated August 16,2019 regarding AB52 consultation. The above proposed project location is within our Ancestral Tribal Territory; therefore, our Tribal Government requests to schedule a consultation with you as the lead agency, to discuss the project and the surrounding location in further detail .

Please contact us at your earliest convenience. ***Please Note :AB 52, “consultation” shall have the same meaning as provided in SB 18 (Govt. Code Section 65352.4).***

Thank you for your time,

Andrew Salas, Chairman
Gabrieleno Band of Mission Indians – Kizh Nation
1(844)390-0787

Andrew Salas, Chairman

Albert Perez, treasurer I

Nadine Salas, Vice-Chairman

Martha Gonzalez Lemos, treasurer II

Dr. Christina Swindall Martinez, secretary

Richard Gradias, Chairman of the council of Elders

PO Box 393 Covina, CA 91723

www.gabrielenoindians@yahoo.com

gabrielenoindians@yahoo.com



GABRIELINO- TONGVA TRIBE

A California Indian Tribe historically known as San Gabriel Band of Mission Indians

TRIBAL CULTURAL RESOURCES AB52/SECTION 106 CONSULTATION
GABRIELINO TONGVA TRIB



Linda Candelaria
Co-Chairwoman Gabrielino Tongva Tribe

October 6, 2019

Attention:
Planning Division
City of Brea

This letter is to inform the City of Brea that the Gabrielino Tongva Tribe will be actively participating in the tribal consultation process. Our cultural resource representative will be Sam Dunlap (Email: TongvaTCR@gmail.com, Mobile: (909) 262-9351). The Gabrielino Tongva Tribe has authorized Sam Dunlap to act on our behalf in the government to government consultation process.

The Gabrielino Tongva Tribe would like to express our ongoing concerns with the AB52/Section 106 consultation process that the Gabrielino Tongva Tribe has encountered over the last few years. The Gabrielino Tongva Tribe has ancestral ties and cultural affiliation to the city's jurisdictional area. We therefore have a vested interest in the AB52 and Section 106 consultation process with the City of Brea.

The City of Brea should be aware that the State of California's Native American Heritage Commission (NAHC) maintains a list of culturally affiliated Gabrielino Tongva Tribes for your area for a reason. It has been our experience as one of the designated Gabrielino Tongva Tribes that several cities within our tribal territory have been misled into believing that one particular Gabrielino tribe has sole jurisdiction over another. This particular issue is being carried out by a recently formed (2008) tribal group that has managed to abuse the AB52 process for their own benefit.

The AB52/Section 106 consultation process enables our Tribe to have an equal opportunity in future mitigation measures that the City of Brea may implement that affect Tribal Cultural Resources (TCR's), the Tribe would prefer to see language that enables our presence on site during ground disturbance/excavation activity so that we may identify and assess the significance of any Tribal Cultural resource that may be encountered.

The Gabrielino Tongva Tribe looks forward to cooperating with the City of Brea as an equal partner in determining a rational approach to environmental compliance and establishing a fair and equal protocol for our tribal participation.

Sincerely,

Linda Candelaria
Co-Chairwoman
Gabrielino Tongva Tribe

Linda Candelaria, Councilwoman
Jerry Maldonado, Councilman

Vincent Holguin, Councilman
Charles Alvarez, Councilman
Jane Hussey, Councilwoman



**MEMORANDUM TO FILE
PLANNING DIVISION**

1 Civic Center Circle
Brea, CA 92821
(714) 671.4462

TO: FILE for Brea Mall Mixed Use Project
FROM: Jessica Magaña, Associate Planner
DATE: October 10, 2019
RE: GABRIELENO BAND OF MISSION INDIANS – KIZH NATION

A conference call was conducted on October 10, 2019 at 11:00 am with Matt Teutimez and Andrew Salas of the Gabrieleno Bands of Mission Indians – Kizh Nation, with City Planning representatives Maribeth Tinio and Jessica Magaña.

Mr. Teutimez and Mr. Salas stated that the Brea area is within their ancestral territory. Regarding the project site, they inquired about development history at the Brea Mall and told us the site may have tribal culture resources because its proximity to Imperial Highway, which was a route for travel and an important trade corridor. They stated that burial sites were often along travel corridors and trade routes. They stated the desire to protect cultural resources and find artifacts which may be buried.

They indicated they would like to obtain any soil reports that may have been previously conducted for the site and would like to review future soil reports to determine the current soil conditions and potential disturbances on the site. If limited information is provided in the soil reports they would like to provide recommended mitigation language for the City to consider.

The City said that they would provide them with any soil reports on file and would work with them to review appropriate mitigation, if any. The City thanked them for the information and said we will keep the tribe updated on the project.

Appendices

Appendix K: Wastewater Flow Monitoring

Appendices

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Wastewater Flow Monitoring Services

For

raSmith

Brea Mall Mixed Use Project

1065 Brea Mall

Brea, CA 92821

September 24, 2019 through October 10, 2019



Leaders in Sewer Flow Monitoring
Services

601 N. Parkcenter Dr., Suite 209
Santa Ana, CA 92705

Phone: 714-542-1004
Fax: 714-542-1332

www.uscubed.com
www.sewerflow.com

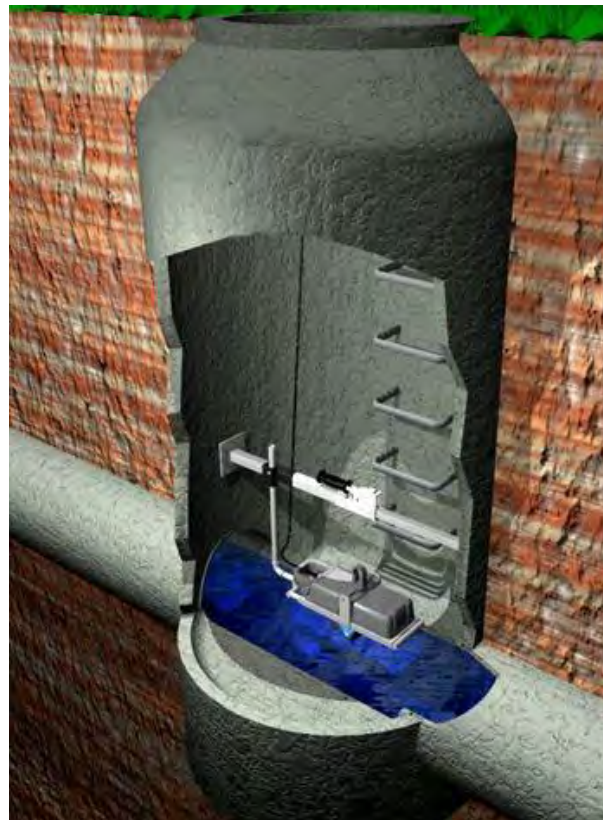


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Tab 2: Calibration Site Sheets & Flo-Ware Graphs

Tab 3: Methods & Procedures & Equipment

3.1 Methods & Procedures
3.2 Equipment
3.3 Benefits
3.4 How it Works
3.5 Accurate Flow Measurements

Tab 4: DVD with Raw Flow Monitoring Data

Tab 5: US³ Company Information



Tab 1: Overview & Site-Specific Information***1.1 Overview***

The City of Brea (City) currently serves a population of approximately 41,000 people within a 12 square mile area. The City's wastewater collection system is managed by the City's Street, Sewer, Storm Drain & Sanitation Division. The collection system consists of about 119 miles of gravity sewer lines and three pump (lift) stations. Flows from these local sewers discharge into Orange County Sanitation District facilities for treatment and disposal.

City personnel provide engineering evaluation of proposed and existing sewer facilities, administer the City's sewer service charge ordinance, carry out annexation proceedings for new service areas, form and dissolve service zones, maintain facility record plans and administer preventive maintenance and sewer construction programs. Since the City is responsible for properly managing, operating, and maintaining all portions of their wastewater collection system, as well as providing adequate capacity to carry peak capacity flows, sewer flow monitoring is required as a condition of development whenever a project proposes to construct 10 or more residential dwelling units or add 10,000 square feet (sf) or more of commercial space. This requirement not only helps to ensure adequate capacity, but continually updates their databases with the most current information, allowing the City to improve the condition and performance of its wastewater collection system, reducing the occurrences of SSOs, and ensuring the health and safety of the community.

1.2 Project Description

Utility Systems Science & Software, Inc. (US³) was contracted by raSmith to perform sewer flow monitoring at five sewer manholes for a period of seven days for their Brea Mall Mixed Use Project. Two sewer monitoring sites within Brea Mall were selected for concurrent monitoring with three downstream manholes. This sewer system assessment was developed under conditions existing between 09/24/2019 and 10/10/2019 to analyze for potential capacity limitations in the monitored lines, which includes the anticipated effects of redeveloping the property at 1065 Brea Mall in Brea.

The Brea Mall encompasses approximately 74 acres in northeast Orange County. The Mall is west of State Route 57 (SR-57) and is generally bounded by State College Boulevard to the east, Imperial Highway (SR 91) to the south, S. Randolph Av to the west, the City of Brea City Hall and Embassy Suites by Hilton to the northwest, and E. Birch St to the north. The project site is generally in the southwest portion of the Brea Mall, in the area formerly occupied by Sears.

US³ assessed permitting and traffic control requirements for the selected monitoring sites. Site-specific diagrams from the California Work Area Traffic Control Handbook (CA WATCH) were prepared for submittal with the City Encroachment Permit applications, which fully conformed with the California Manual of Uniform Traffic Control Devices. Due to the distance between the monitoring locations, two encroachment permits were approved by the City prior to flow monitoring.

US³ performed site inspections to evaluate the site hydraulics at the selected monitoring sites as part of the installation process. **Note:** Each wastewater collection system is different, and some of the differences that affect flow monitoring include: slope of sewer line; age, condition and material of sewer line; number and type of connections; and sewer design, specifically the proximity of baffles, drop structures, pumps, siphons, and weirs. Only one of these structures was noted during the initial installations, which was a drop inlet, but since no flow was observed discharging from the drop inlet, it was deemed acceptable for flow monitoring during the inspection. Therefore, the initial installations occurred on 09/24/2019 at the Nordstrom MH and at Sites 1, 2, 3 and 4.

Upon review of the field installation documents and photos, it was determined that what were assumed to be the locations of Sites 3 and 4 were actually Site 3A (most likely a brine line) and Site 3. Therefore, installation at the correct Site 4 MH occurred on 10/02/2019. It was then determined that an upstream manhole should be monitored concurrently as was done during the initial monitoring. Therefore, installation at the Site 1 Upstream (US) MH occurred on 10/04/2019. Monitoring at the Site 4 MH and the Site 1 US MH is also referred to as the second week of monitoring or secondary monitoring. The monitoring site locations and sewer lines for both the first and second week of monitoring are shown on maps in Section 1.3.

The manholes were equipped with Hach Marsh-McBirney Flo-Dar® AV Sensors and Loggers. With the installation and removal of the equipment, the manholes were opened and confined space entry was limited to crossing the plane with hands and arms, but not actually entering the manholes. Even though US³ personnel did not enter the manholes during equipment installation or removal, they were fully trained and certified in Confined Space Entry and CPR, and in accordance with safety standards, gas readings were taken and recorded throughout the duration of the installation and removal process.



In summary, US³ performed the following services as part of this project:

- Sewer Flow Monitoring
 - o Assessment of permitting and traffic control requirements
 - o Installation of Marsh-McBirney Flo-Dar® AV Sensor/s and Logger/s
 - Validation of hydraulic suitability
 - Calibration of flow monitoring equipment
 - Documentation of installation and calibration
 - o First week of flow monitoring between 09/24/2019 and 10/02/2019
 - o Second week of flow monitoring between 10/02/2019 and 10/10/2019
 - o Removal of flow monitoring equipment
 - o Validation of flow monitoring data
- Evaluation of the sanitary sewer at the monitored sites
- Development of a report to discuss the flow monitoring data, including system statistics and graphs

1.3 Site Maps

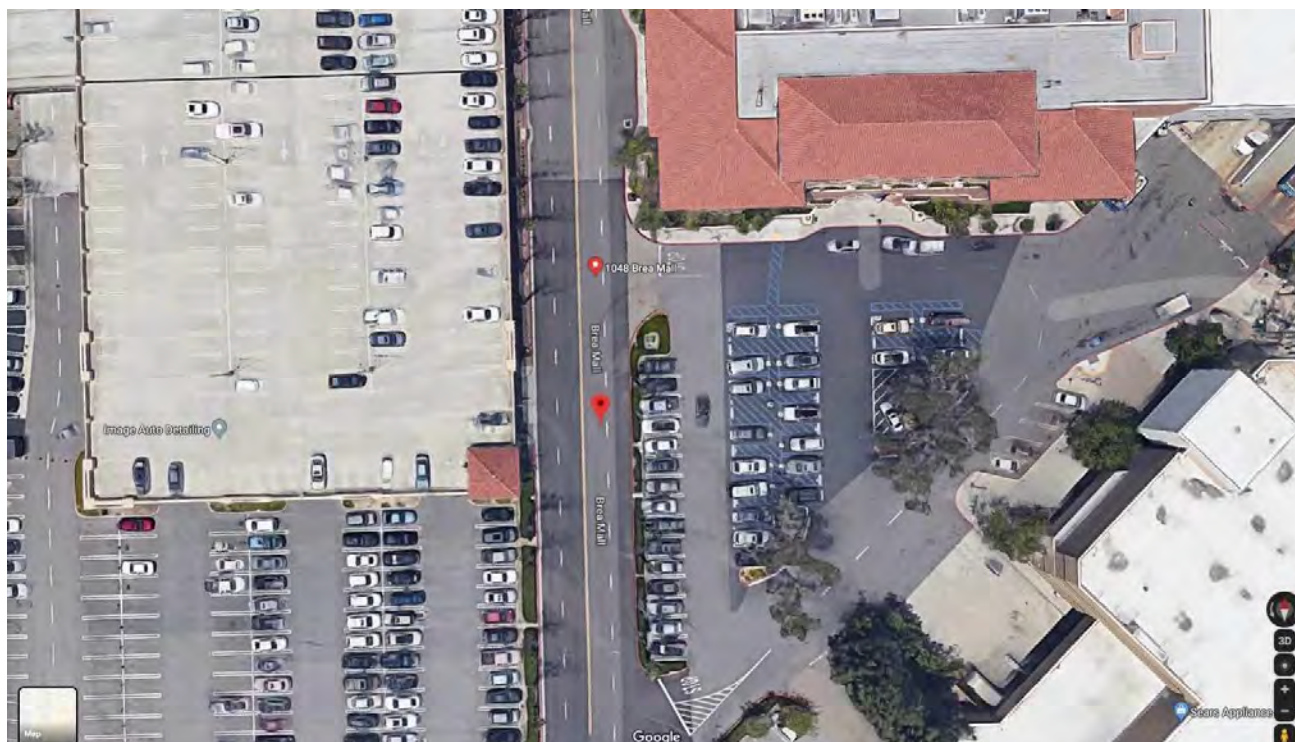
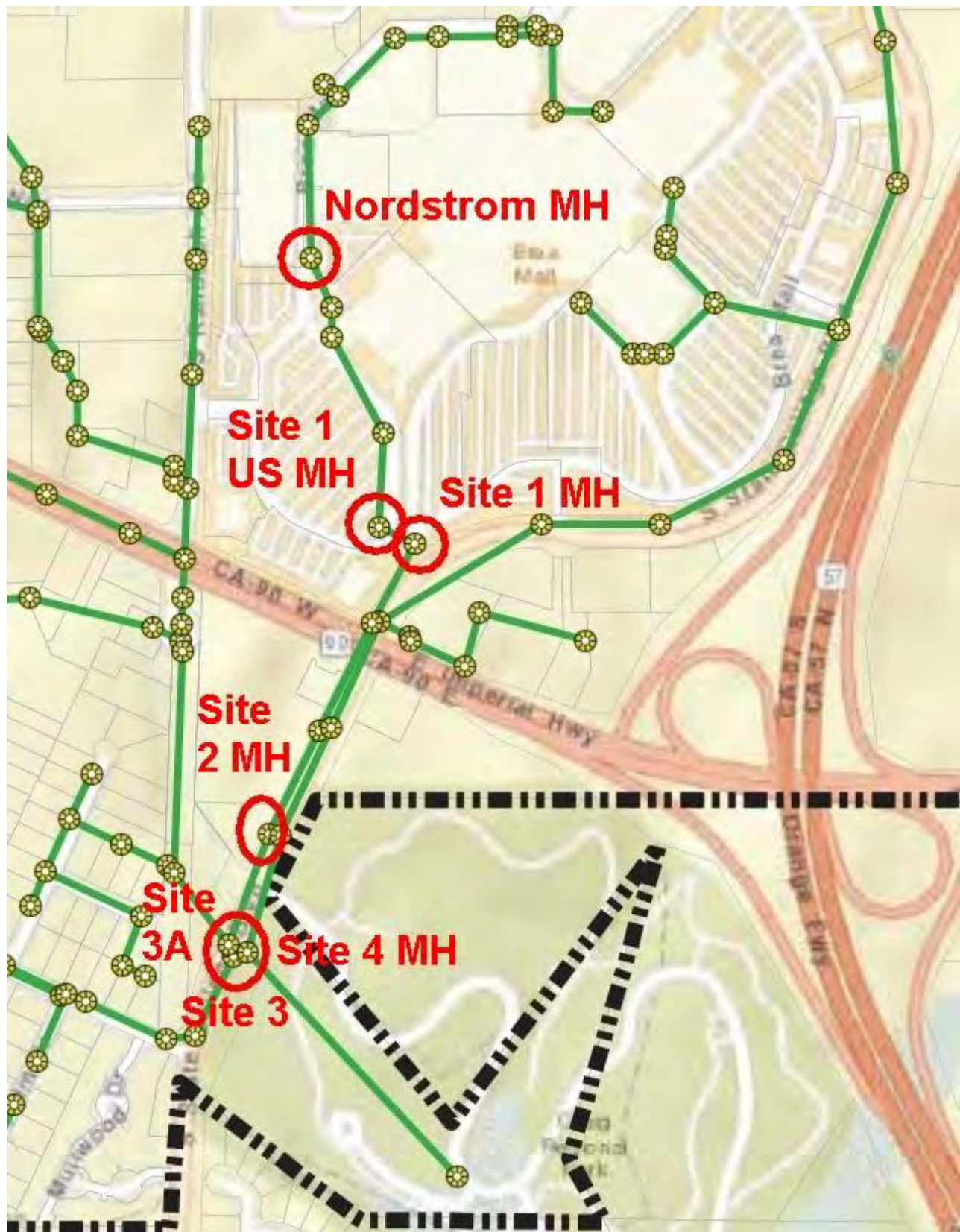


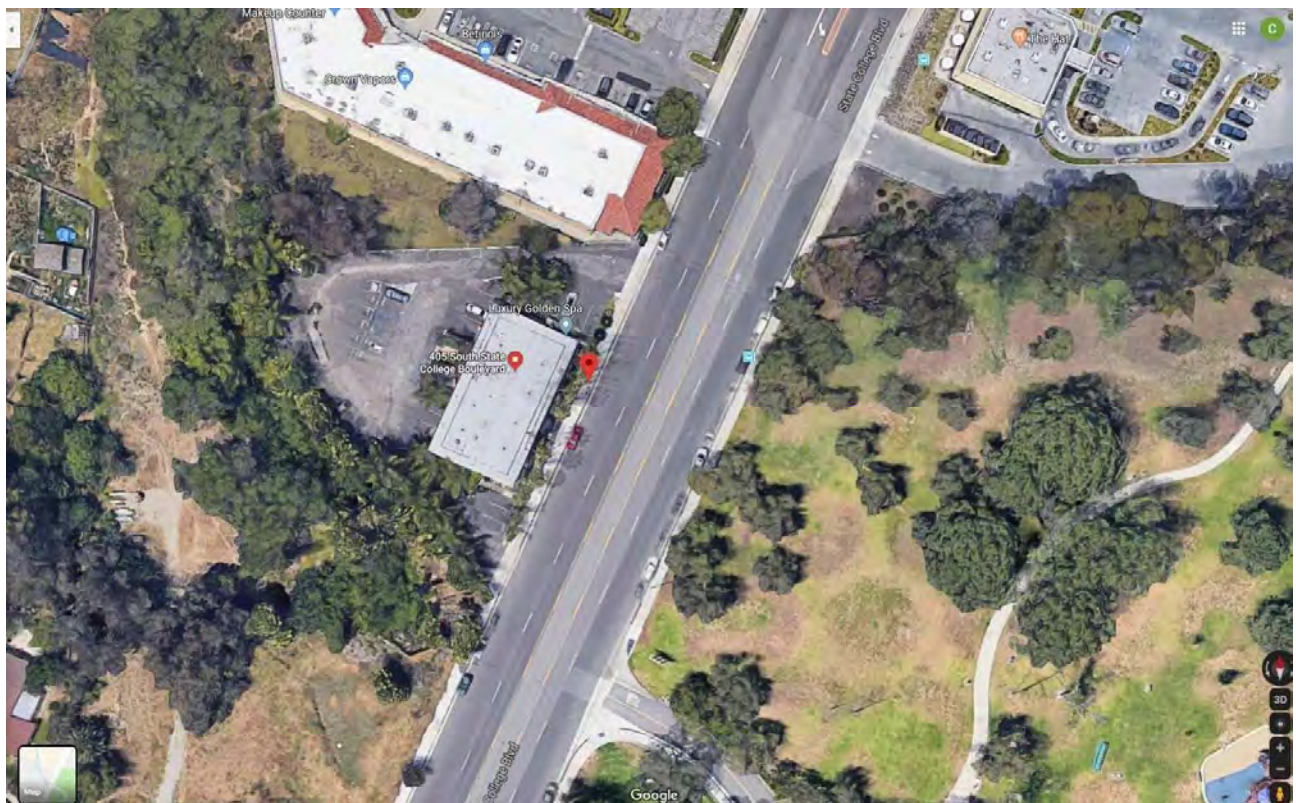
Figure above: The vicinity map shows the temporary wastewater flow monitoring location of the Nordstrom MH. The Nordstrom MH is located at latitude 33.915117 and longitude -117.888619.

Figure below: The sewer map shows the plan view of all seven of the monitored sewer lines.





Figures: The vicinity map (above) shows the temporary wastewater flow monitoring location of the Site 1 MH. The Site 1 MH is located at latitude 33.912802 and longitude -117.887424. The vicinity map (below) shows the temporary wastewater flow monitoring location of the Site 2 MH. The Site 2 MH is located at latitude 33.910330 and longitude -117.888919.





Figures: The vicinity map (above) shows the temporary wastewater flow monitoring locations of the Site 3A MH and the Site 3 MH. Site 3A MH is at latitude 33.909343 and longitude -117.889338 and Site 3 MH is at latitude 33.909322 and longitude -117.889302. The sewer map (below) shows the locations of Sites 3 and 4, which were incorrectly identified during the first week of monitoring.





Figures: The vicinity map (above) shows the temporary wastewater flow monitoring location of the Site 4 MH. The Site 4 MH is located at latitude 33.909049 and longitude -117.889105. The vicinity map (below) shows the temporary wastewater flow monitoring location of the Site 1 US MH, which was monitored concurrently with the Site 4 MH during the second week of monitoring. The Site 1 US MH is at latitude 33.915117 and longitude -117.888619 between the Nordstrom & Site 1 MHs.

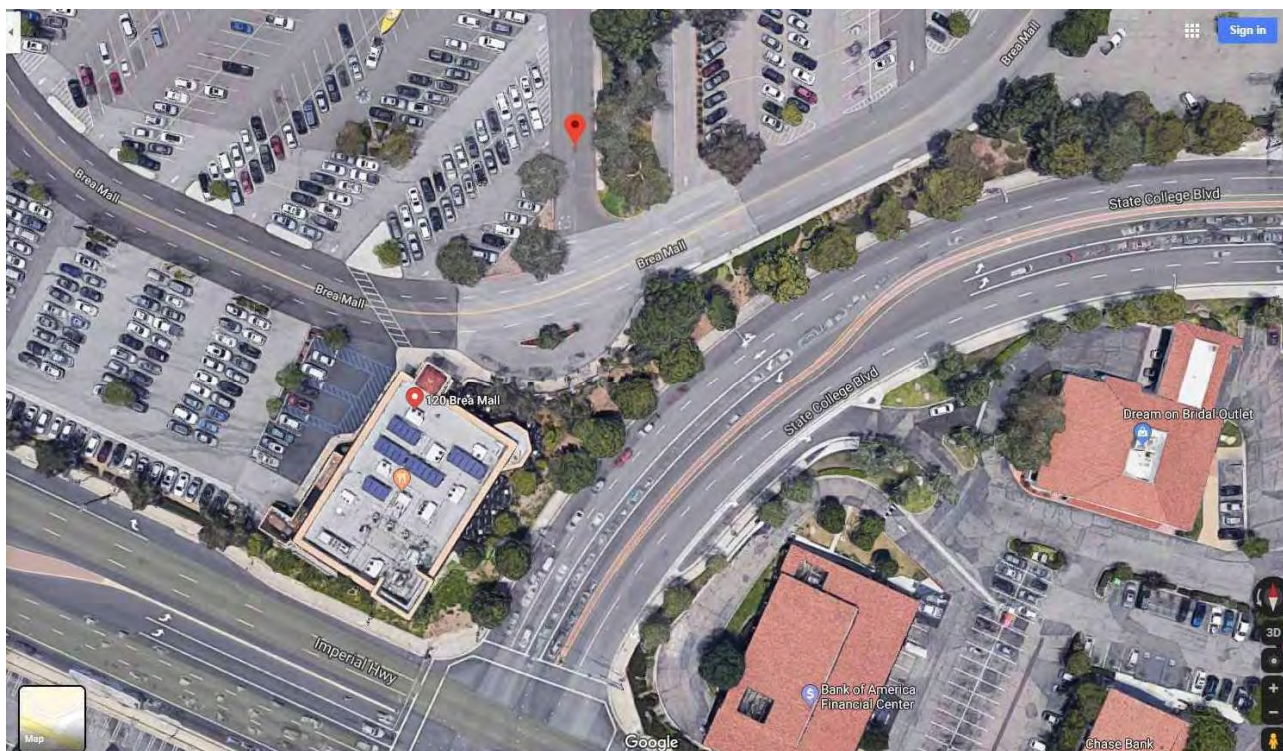


Figure below: The map shows the Brea Mall and the proposed project, which is outlined with a dashed line and identified as “D”. The project proposes to change the current land use from strictly commercial to a mixed use of commercial and residential.



1.4 Summary of Sites

Figures below: The left photo shows the Nordstrom MH in the left-hand northbound lane at ~1048 Brea Mall. This was a commercial access road with a low speed limit, so the field team used cones, signs and an arrow board in accordance with CA WATCH Diagram 15 during installation and removal of the monitoring equipment. Surface conditions were dry. No issues were encountered during installation on 9/24/2019 or removal on 10/02/2019.

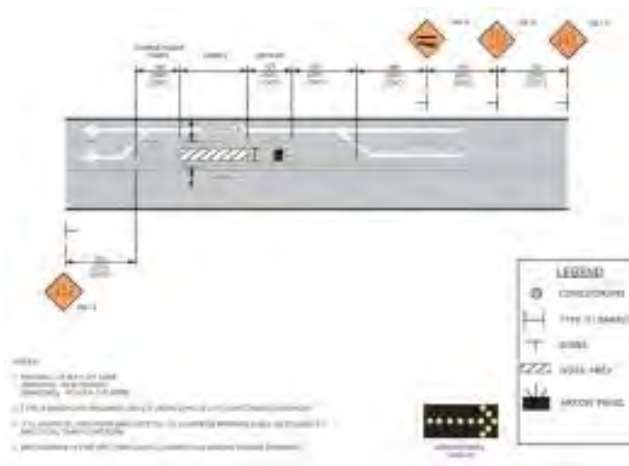


Figure at left: The Nordstrom MH provided access to an 8-inch (in) sewer line, which entered from the north and discharged to the southeast. Gas levels were good (well within OSHA acceptable limits: $O_2=20.9\%$; LEL, H_2S & $CO=0$). The flow monitoring equipment was set to monitor the downstream pipe as it provided the best hydraulics. Follow up on this installation confirmed equipment calibration.

Figures below: The left photo shows the Site 1 MH on the sidewalk at ~120 Brea Mall. This was adjacent to commercial access road with a low speed limit, so the field team used cones, signs and an arrow board in accordance with CA WATCH Diagram 2 during installation and removal of the monitoring equipment. Surface conditions were dry. No issues were encountered during installation on 9/24/2019 or removal on 10/02/2019.

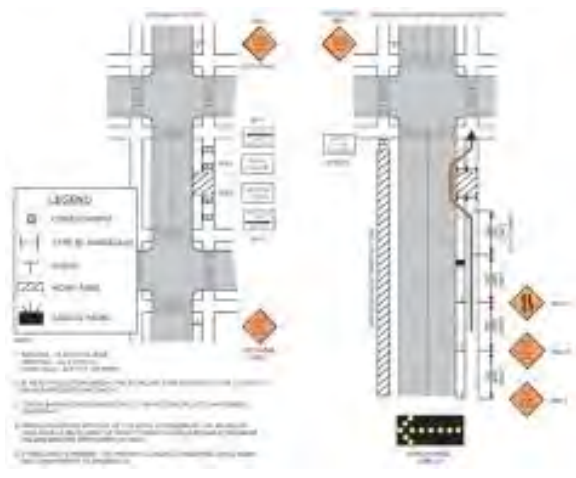


Figure above: The Site 1 MH provided access to an 8-in sewer line, which entered from the northeast and discharged to the southwest. Two laterals entered from the northwest and southeast, but according to the sewer maps, there should only be one upstream line entering from the northwest. Gas levels were good. The flow monitoring equipment was set to monitor the downstream line to get the total flow. Follow up on this installation confirmed equipment calibration.

Figures below: The left photo shows the Site 2 MH on the sidewalk at ~405 S. State College Blvd. This was a commercial area, so the field team used cones and signs in accordance with CA WATCH Diagram 2 during installation and removal of the monitoring equipment, but no arrow board was needed because the parking lane was used. Surface conditions were dry. No issues were encountered during installation on 9/24/2019 or removal on 10/02/2019.

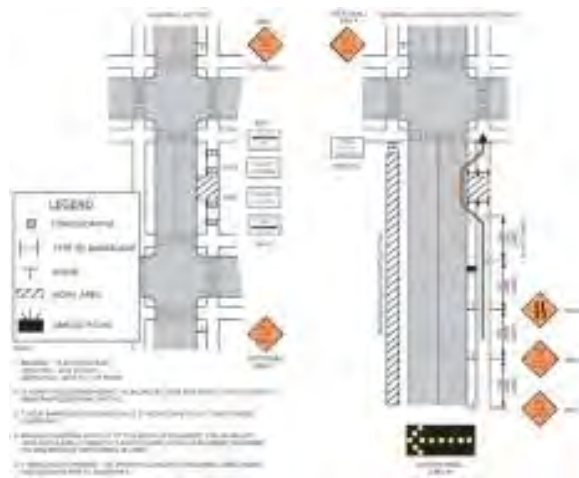


Figure at left: The Site 2 MH provided access to an 8-in sewer line, which entered from the northeast and discharged to the southwest. Gas levels were good. The flow monitoring equipment was set to monitor in the downstream direction in a position within the trough that provided the best hydraulics. Follow up on this installation confirmed equipment calibration.

Figures below: The left photo shows the Site 3A MH in the left-hand southbound lane at ~454 S. State College Blvd. This was a commercial area, so the field team used cones, signs and an arrow board in accordance with CA WATCH Diagram 15 during installation and removal of the monitoring equipment. Surface conditions were dry. No issues were encountered during installation on 9/24/2019 or removal on 10/02/2019.

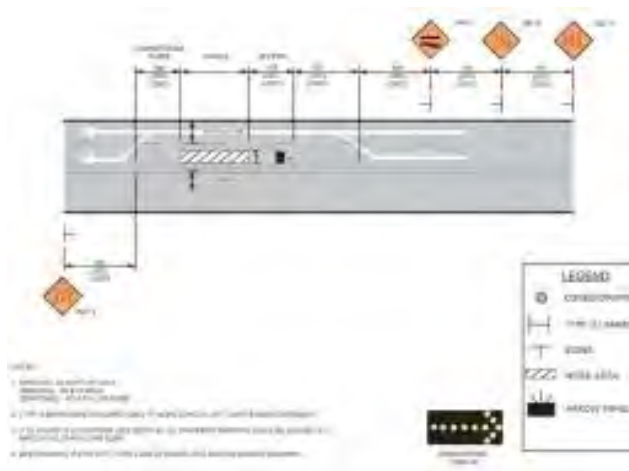


Figure above: This site was originally believed to be the Site 3 MH, but was most likely a brine line since the manhole provided access to a 6-in line, which entered from the southeast and discharged to the northwest. Follow up on this installation determined that the equipment was in the wrong manhole. The next available field crew was dispatched on 10/02/2019 to find the correct manhole in the park.

Figures below: The left photo shows the Site 3 MH in the center of the painted median at ~454 S. State College Blvd. This was a commercial area, so the field team used cones and signs in accordance with CA WATCH Diagram 20 during installation and removal of the monitoring equipment. Surface conditions were dry. No issues were encountered during installation on 9/24/2019 or removal on 10/02/2019.



Figure above: This site was originally believed to be the Site 4 MH, but was actually the Site 3 MH. The manhole provided access to an 18-in line, which entered from the northwest and discharged to the southeast. Two laterals entered from the north; one was a drop inlet, but no flow was observed. Follow up on this installation confirmed equipment calibration.

Figures below: The photo shows the Site 4 MH in the park, east of ~471 S. State College Blvd. This was open green space, so the field team used cones to delineate their work zone during installation and removal of the monitoring equipment. Surface conditions were dry. No issues were encountered during installation on 10/02/2019 or removal on 10/10/2019.



Figure above: The manhole provided access to an 18-in sewer line, which entered from the northwest and discharged to the southeast. One lateral entered from the north. Gas levels were good. The flow monitoring equipment was set to monitor the downstream line to get the total flow. Follow up on this installation confirmed equipment calibration.

Figures below: The photo shows the Site 1 US MH on the centerline at ~120 Brea Mall. This was a commercial access road with a low speed limit, so the field team used cones and signs in accordance with CA WATCH Diagram 7 during installation and removal of the monitoring equipment. Surface conditions were dry. No issues were encountered during installation on 10/04/2019 or removal on 10/10/2019.



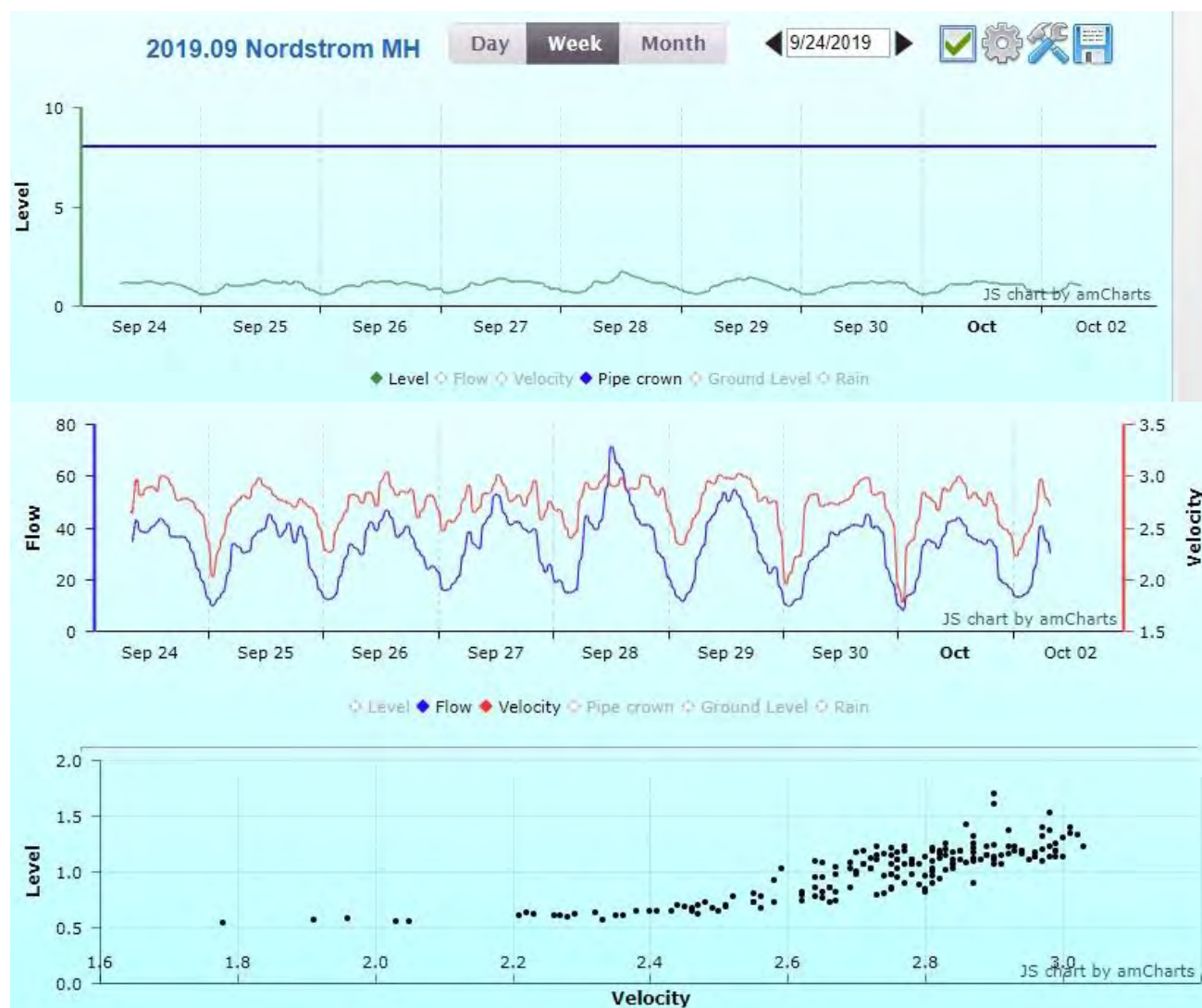
Figure above: The manhole provided access to an 8-in sewer line with two inlets, one from the northwest and one from the southwest, discharging to the southeast, but according to the sewer maps, there should only be one upstream line entering from the north. This site was selected for monitoring with the Site 4 MH because it was between the Nordstrom MH and the Site 1 MH. Gas levels were good. The flow monitoring equipment was set to monitor the downstream line to get the total flow. Follow up on this installation confirmed equipment calibration.

1.5 Existing Capacity Analysis

The capacity evaluation method conformed to the following process:

1. Collect 15-minute interval depth and velocity data points at each site over the entire monitoring period and determine the depth versus (vs) velocity relationship or pipe curve based on Manning's equation.
2. Determine statistically the minimum, maximum and average depths and flow rates at each site during the monitoring period.
3. Calculate the maximum theoretical unobstructed flow rate at each site.
4. Determine remaining capacity under peak flow conditions at each site, using the ratios of actual daily flow depths to pipe diameter.

Figures below: Nordstrom MH graphs of level, flow & velocity, and scatter plot of level in relation to velocity from US³ Flow Monitoring Website (<http://us3.uscubed.com/>)



The scatter plot on the previous page shows the depth vs velocity data points for the monitored pipe. The pattern of velocity and depth data points for a sewer operating in free-flow conditions over an extended period of time should conform to the depth-velocity relationship of Manning's Equation, which is the basis for evaluating flow monitoring data. This equation (shown below) defines a commonly used theoretical relationship between depth and velocity in pipes operating under free flow conditions:

$$v = 1.486/n \times R^{2/3} \times S^{1/2}$$

Where,

v = velocity (fps)

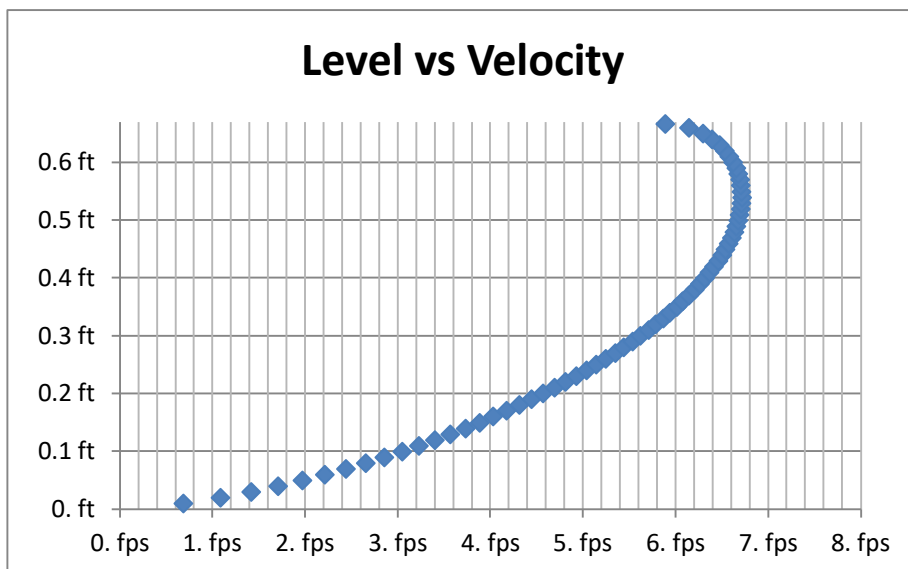
n = pipe roughness, defined as the Manning's Roughness Coefficient

R = hydraulic radius,
defined as wetted area (ft²) divided by wetted perimeter (ft)

S = hydraulic slope

The scatter plot from the Nordstrom MH shows the depth vs velocity data points for the 8-in downstream pipe, which should resemble a theoretical hydraulic operating curve based on the site-specific characteristics of the pipe. Using velocities from this study in conjunction with the associated cross-sectional areas depicted by the monitored levels, the flow was calculated using the Continuity Equation, and then the slope was derived using Manning's Equation. Therefore, the calculated slope is based on the average flow data observed during the study. Velocity and level readings were compared to theoretical hydraulic operating curves at different slopes, correlating with an operating curve with a slope of ~6.39% ($S=0.06389617$). According to the raSmith utility plan (UP-02A), the slope of the line downstream from the Nordstrom MH should be 1.7%.

Figure at right: This theoretical pipe curve was generated for an 8-in (0.67-ft) pipe with a slope of ~6.39%.



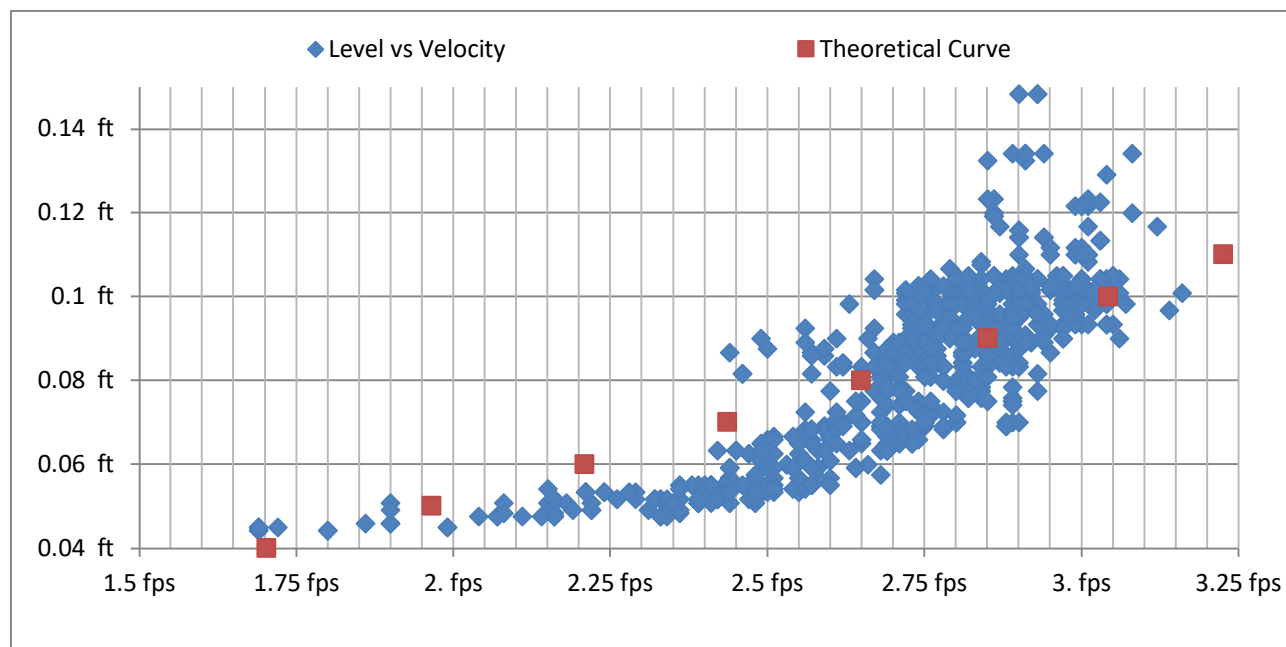


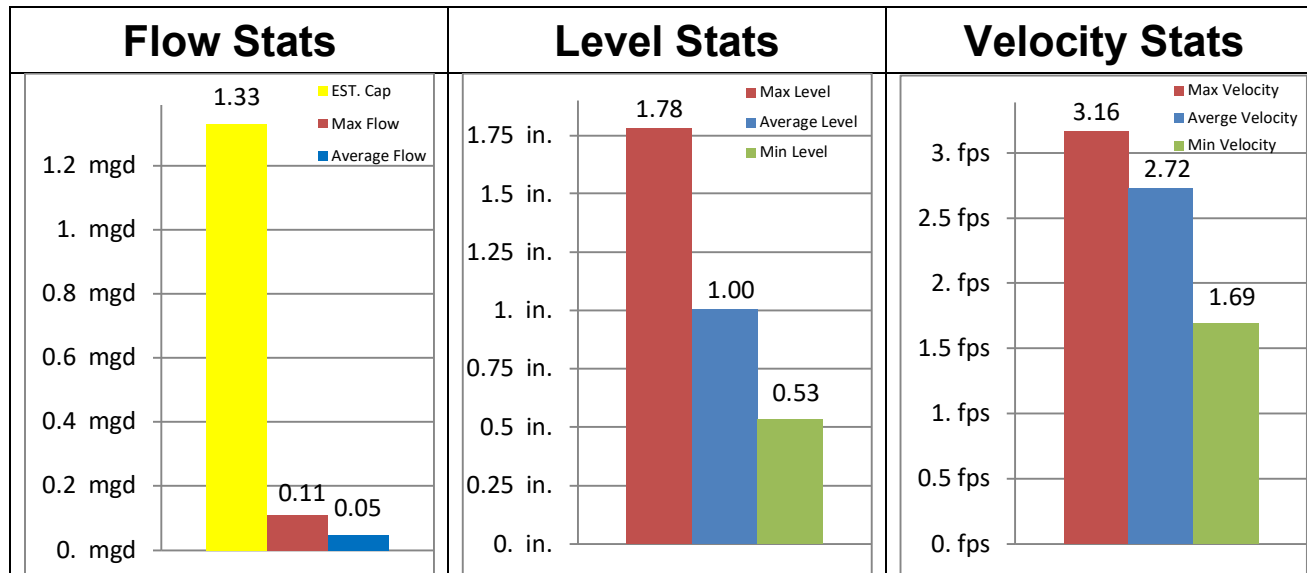
Figure above: Since the flows at the Nordstrom MH utilized ~7% to ~22% of the pipe depth during the study, that portion of its theoretical curve has been overlaid onto its scatter plot.

As shown in the scatter plot above, while a majority of the data falls into an acceptable area along the theoretical curve, there is a curvature to the data that is inconsistent with the theoretical curve. However, the curvature suggests that the data is trending toward higher velocities than expected as the levels increase.

To summarize the site statistics from the data analysis at the Nordstrom MH:

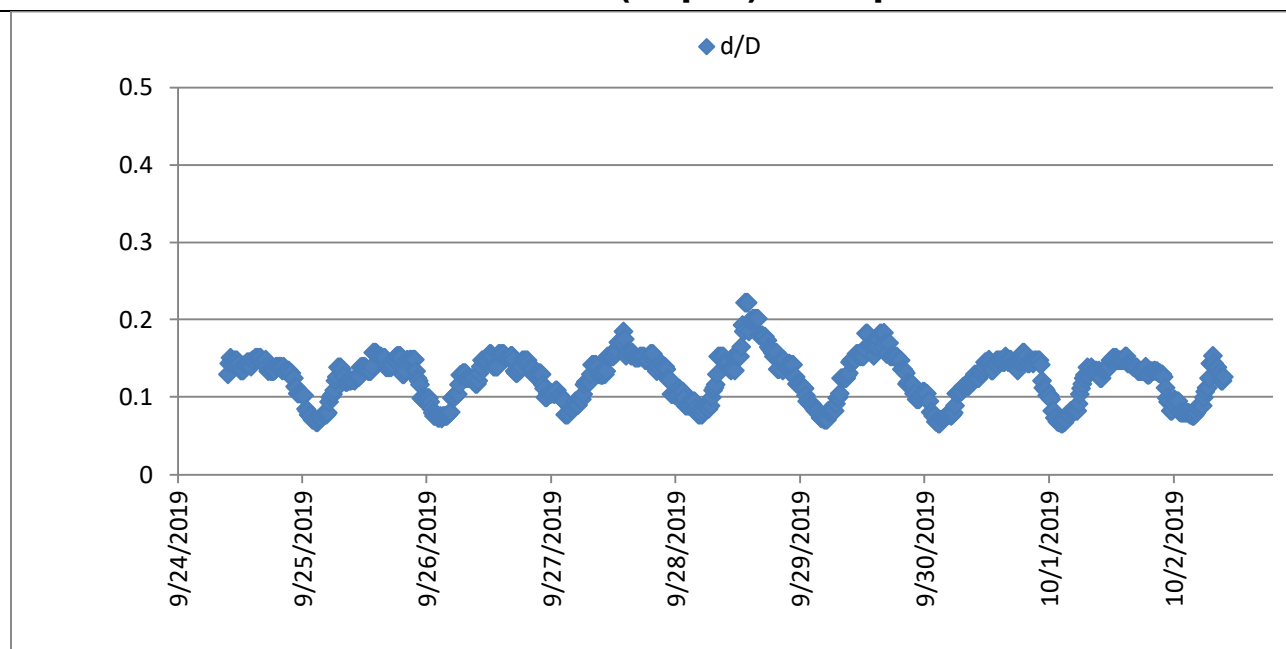
- During peak flows, 0.1090 million gallons per day (mgd) or ~76 gallons per minute (gpm) utilized ~8% of the pipe's capacity.
- During average flows, 0.1173 mgd or ~32 gpm utilized ~3.5% of the pipe's capacity.
- According to common practice in sewer system design, velocities need to exceed 2.0 fps a minimum (min) of once per day to provide sufficient scouring action for self-cleaning. The maximum velocity at the Nordstrom MH was 3.16 fps with an average velocity of 2.72 fps. Therefore, this site should have no issues with regard to settlement of normal system solids.
- According to the Brea Sewer System Management Plan, the depth versus diameter (d/D) ratio for existing collection system pipes of 15 inches in diameter or less should be no more than 0.50 during dry weather peak flow conditions. The average d/D ratio from the Nordstrom MH during this study was ~0.13 and the maximum (max) was ~0.22. Therefore, this 8-in pipe had capacity available during the observed dry weather peak flow.

The following is a graphical representation of site statistics (stats) from the data analysis:

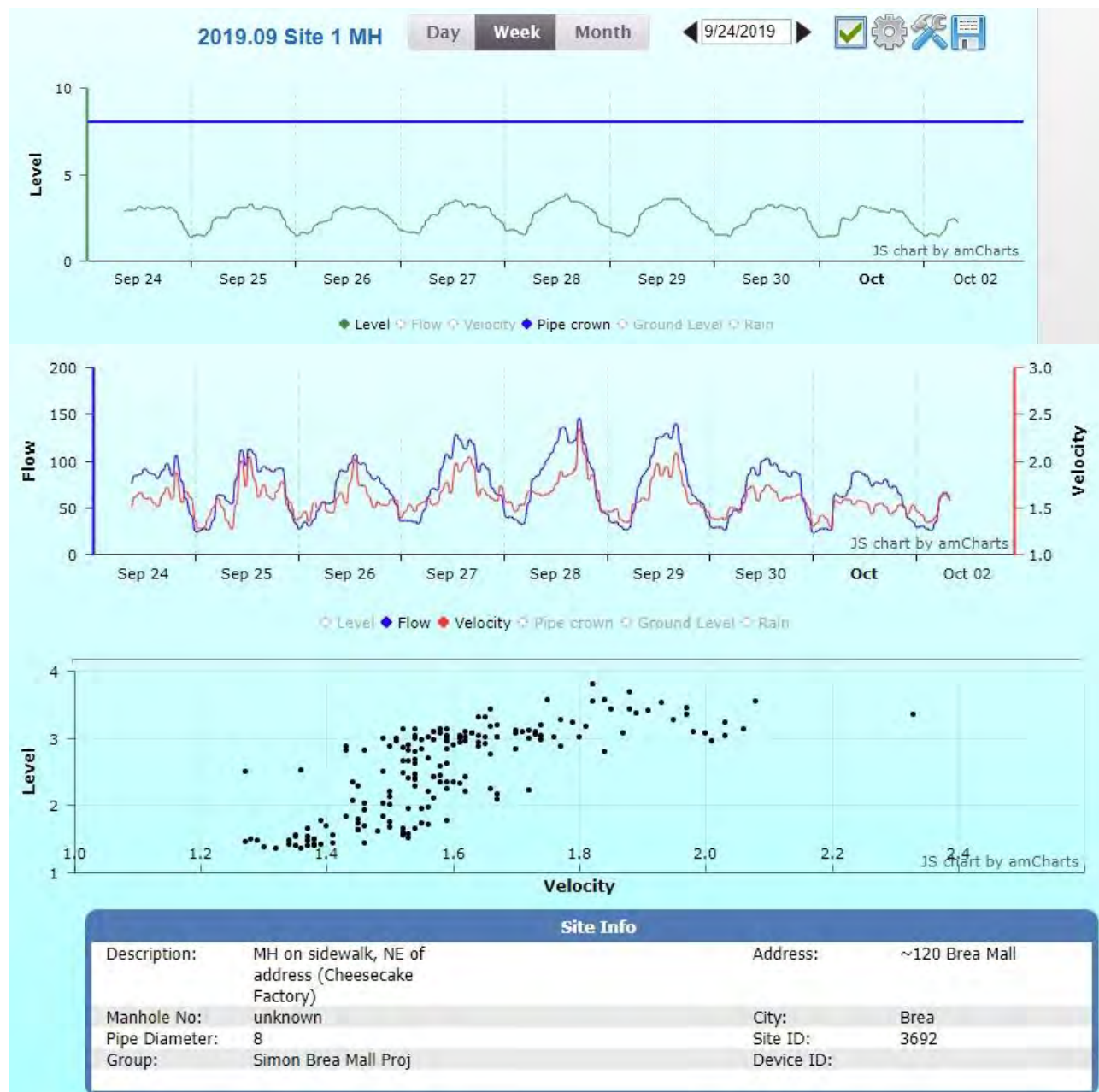


The pipe capacity was estimated using a Manning's Circular Pipe Flow Capacity chart, where $n=0.013$ (in accordance with the minimum value for a vitrified clay sewer pipe (VCP) with manholes, inlets, etc., Chow 1959). From the theoretical hydraulic operating curve for an 8-in pipe with a slope of $\sim 6.39\%$ ($S=0.06389617$), with the pipe completely full, the velocity is expected to be ~ 5.8890 fps. When this velocity is input into the FloWare program from the Nordstrom MH, a maximum capacity of ~ 1.3286 mgd is produced. This is a reasonable assumption based on the average levels and velocities observed during the monitoring study.

Nordstrom MH Level (depth) vs Pipe Diameter



Figures below: Site 1 MH graphs of level, flow & velocity, and scatter plot of level in relation to velocity from US³ Flow Monitoring Website (<http://us3.uscubed.com/>)



The scatter plot above shows the depth vs velocity data points for the 8-in downstream pipe, which should resemble a theoretical hydraulic operating curve based on the site-specific characteristics of the pipe. Actual velocities and levels were compared to theoretical hydraulic operating curves at different slopes, which led to the conclusion that the data best resembles a curve with the slope of ~0.74% ($S=0.0073879$) at the Site 1 MH. According to the raSmith utility plan (UP-02A), the slope of the line downstream from the Site 1 MH should be 1.3%.

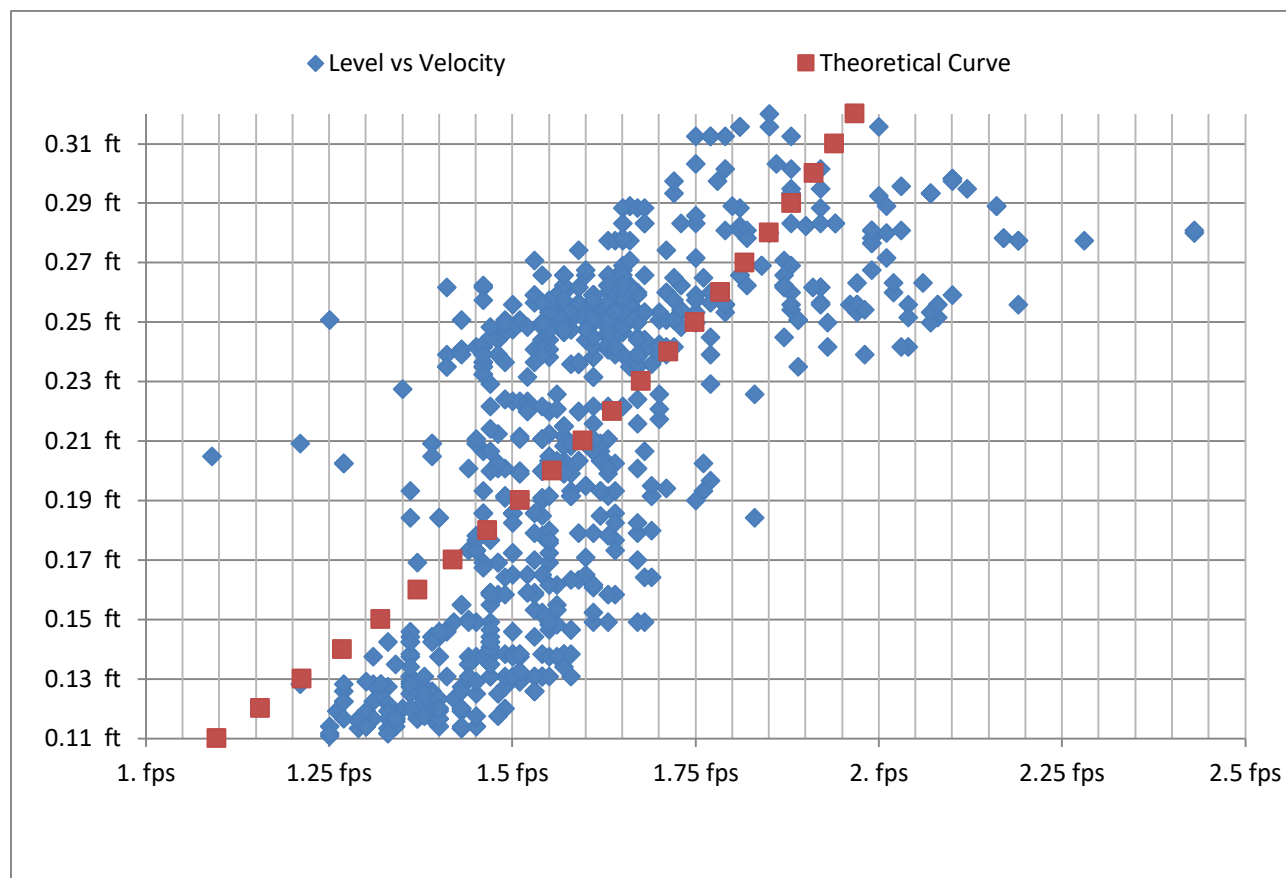


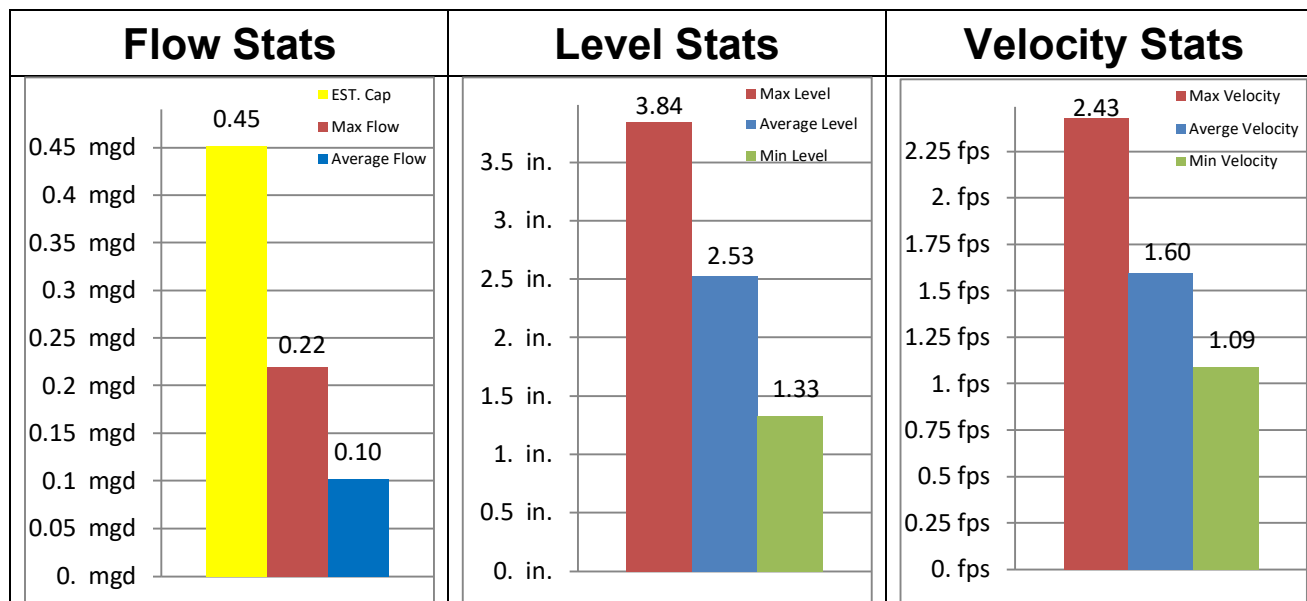
Figure above: Since the flows at the Site 1 MH utilized ~17% to ~48% of the pipe depth during the study, that portion of its theoretical curve has been overlaid onto its scatter plot.

As shown in the scatter plot above, a majority of the data falls into an acceptable area along the theoretical curve, but the distribution of the data is probably due to the hydraulics within the manhole. From the photos, it appears that inflow from the northwest line is causing turbulence, perhaps even a backwater effect in the two other upstream lines.

To summarize the site statistics from the data analysis at the Site 1 MH:

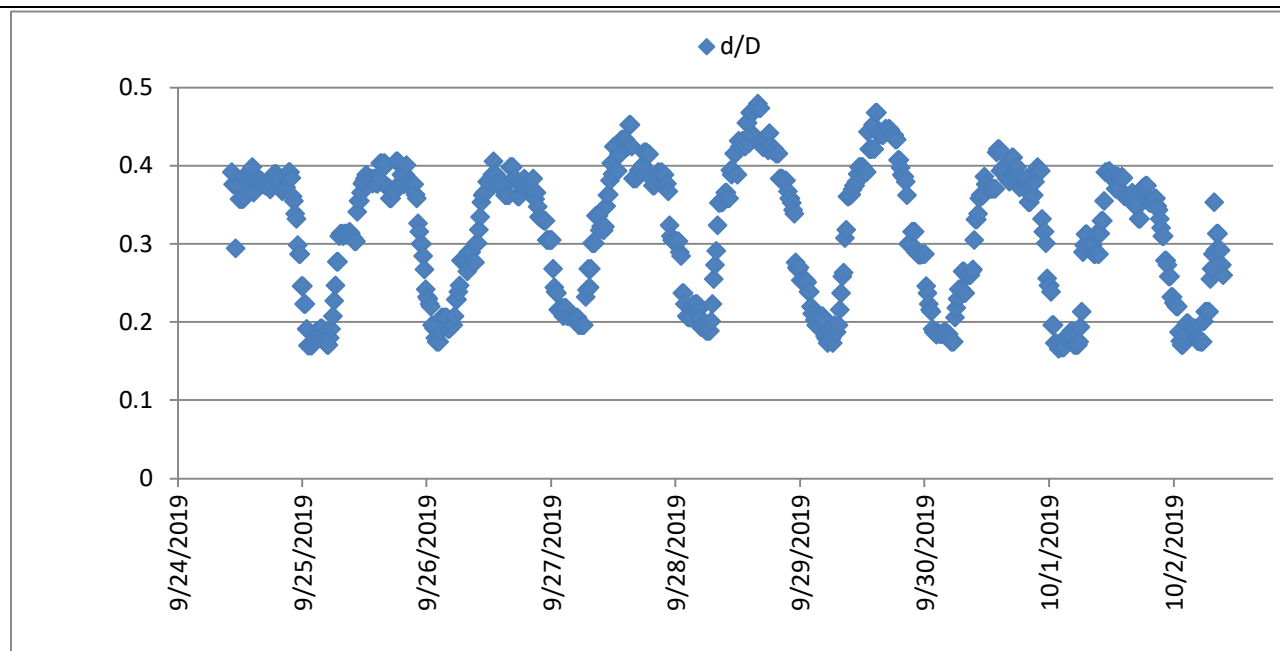
- During peak flows, 0.2194 mgd or ~152 gpm utilized ~48.5% of the pipe's capacity.
- During average flows, 0.1021 mgd or ~71 gpm utilized ~23% of the pipe's capacity.
- The maximum velocity at the Site 1 MH was 2.43 fps with an average velocity of 1.60 fps. Since velocities only exceeded 2 fps on five days during this 9-day study, over time, this site is likely to have issues due to settlement of normal system solids.
- The average d/D ratio from the Site 1 MH during this study was ~0.32 and the maximum was ~0.48. Therefore, this 8-in pipe had some capacity available during the observed dry weather peak flow.

The following is a graphical representation of the site statistics from the data analysis:

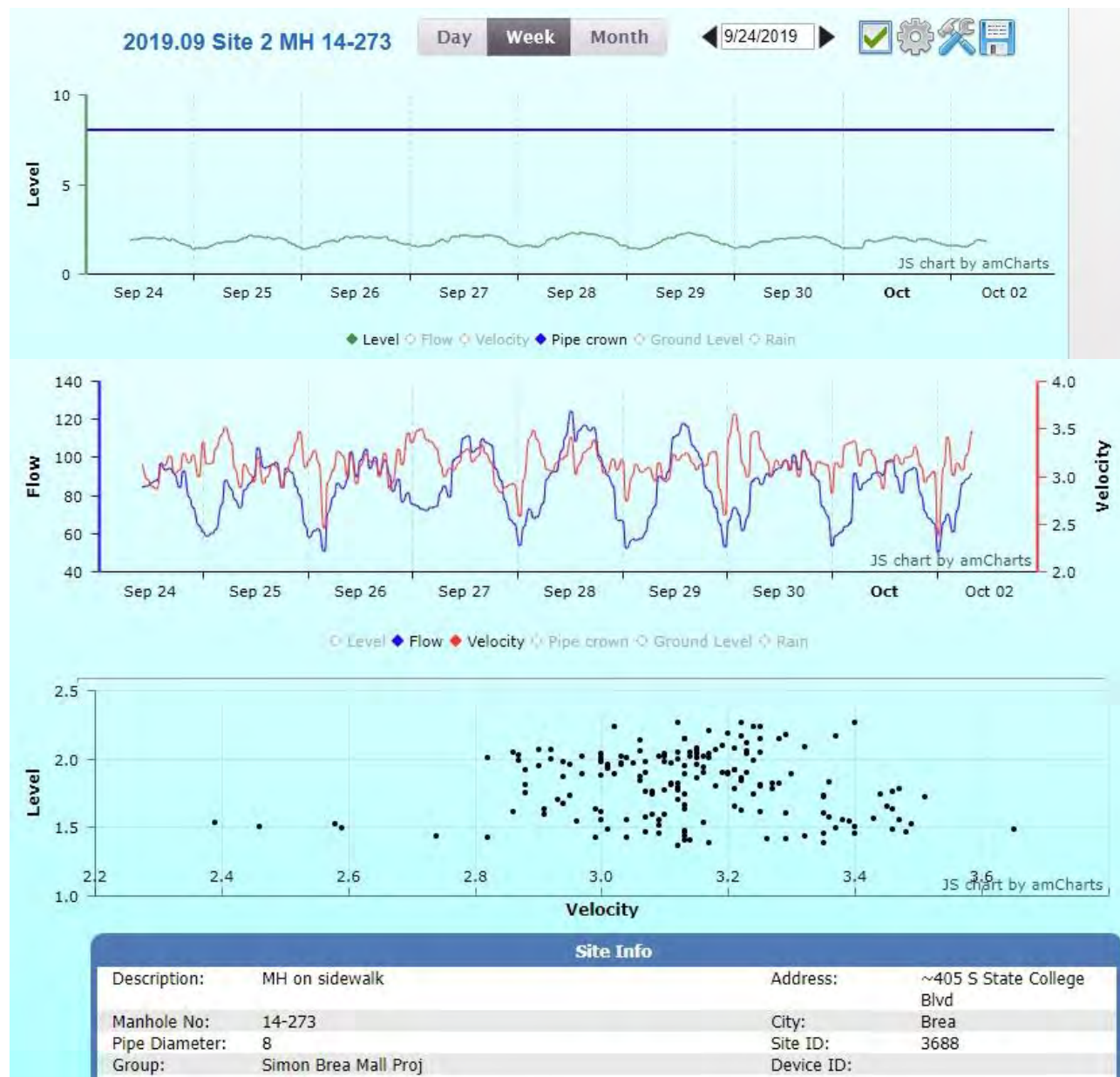


The pipe capacity was estimated using a Manning's Circular Pipe Flow Capacity chart, where $n=0.013$ (in accordance with the minimum value for a VCP with manholes, inlets, etc., Chow 1959). From the theoretical hydraulic operating curve for an 8-in pipe with a slope of $\sim 0.74\%$ ($S=0.0073879$), with the pipe completely full, the velocity should be ~ 2.0025 fps, which when input into the Flo-Ware program from the Site 1 MH produced a maximum capacity of ~ 0.4518 mgd. This is a slightly conservative assumption based on the average levels and velocities observed during the monitoring study.

Site 1 MH Level (depth) vs Pipe Diameter



Figures below: Site 2 MH graphs of level, flow & velocity, and scatter plot of level in relation to velocity from US³ Flow Monitoring Website (<http://us3.uscubed.com/>)



The scatter plot above shows the depth vs velocity data points for the 8-in downstream pipe, which should resemble a theoretical hydraulic operating curve based on the site-specific characteristics of the pipe. Actual velocities and levels were compared to theoretical hydraulic operating curves at different slopes, which led to the conclusion that the data best resembles a curve with the slope of ~4.13% ($S=0.04133756$) at the Site 2 MH. According to the raSmith utility plan (UP-02B), the slope of the line upstream from the Site 2 MH should be 3.0%, while the slope of the line downstream from the Site 2 MH should be 2.16%.

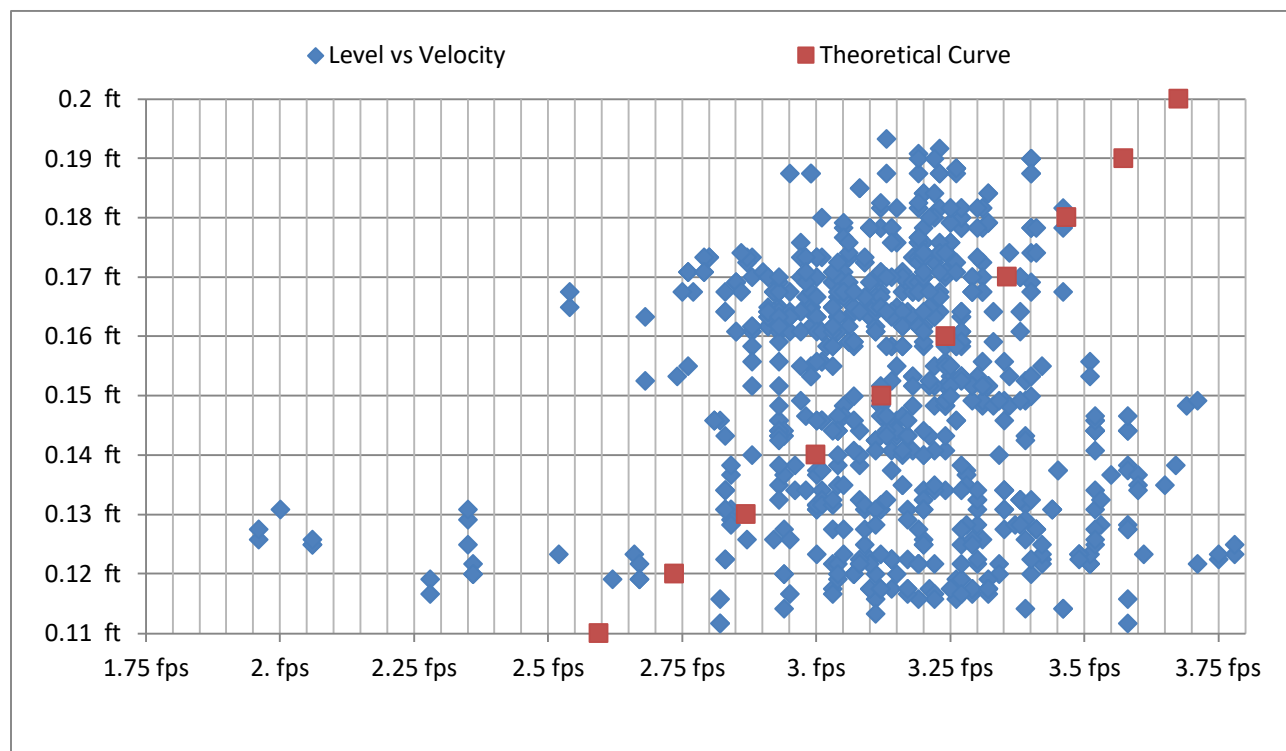


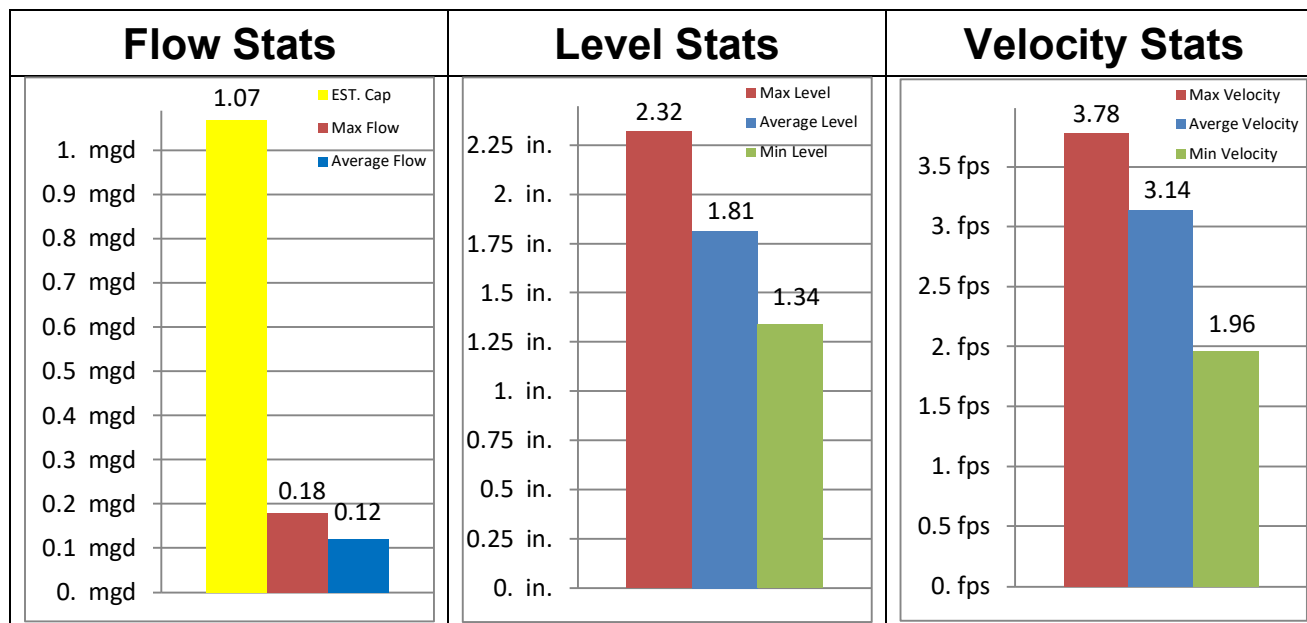
Figure above: Since the flows at the Site 2 MH utilized ~17% to ~29% of the pipe depth during the study, that portion of its theoretical curve has been overlaid onto its scatter plot.

As shown in the scatter plot above, the expected relationship between level and velocity is not prevalent. While some of the data points fall into an acceptable area along the theoretical curve, this data set is more of a cloud formation, which is indicative of processed or non-conforming flow. This is flow that does not conform to the theoretical level-velocity relationship expected under free-flow conditions, such as what occurs during dumping, jetting, pumping, etc. This type of flow is more common in commercial and industrial areas because they are more likely to generate processed flows.

To summarize the site statistics from the data analysis at the Site 2 MH:

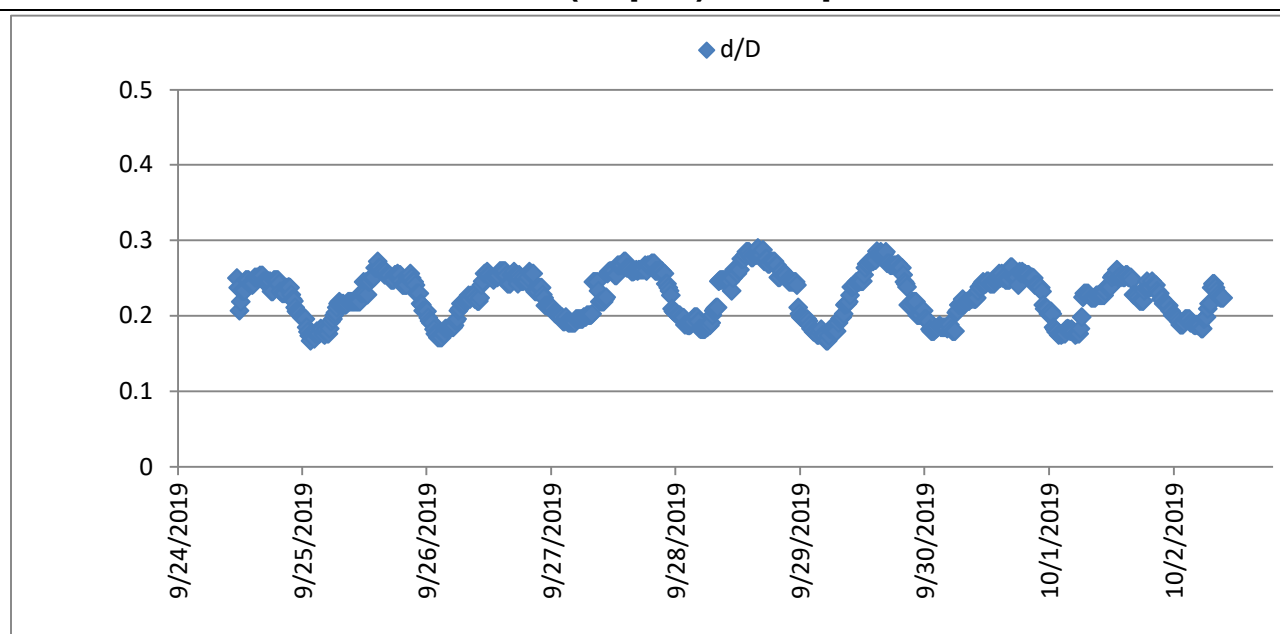
- During peak flows, 0.1798 mgd or ~125 gpm utilized ~17% of the pipe's capacity.
- During average flows, 0.1211 mgd or ~84 gpm utilized ~11% of the pipe's capacity.
- The maximum velocity at the Site 2 MH was 3.78 fps with an average velocity of 3.14 fps. Therefore, this site should have no issues with regard to blockage due to settlement of normal system solids.
- The average d/D ratio from the Site 2 MH during this study was ~0.23 and the maximum was ~0.29. Therefore, this 8-in pipe had capacity available during the observed dry weather peak flow.

The following is a graphical representation of the site statistics from the data analysis:

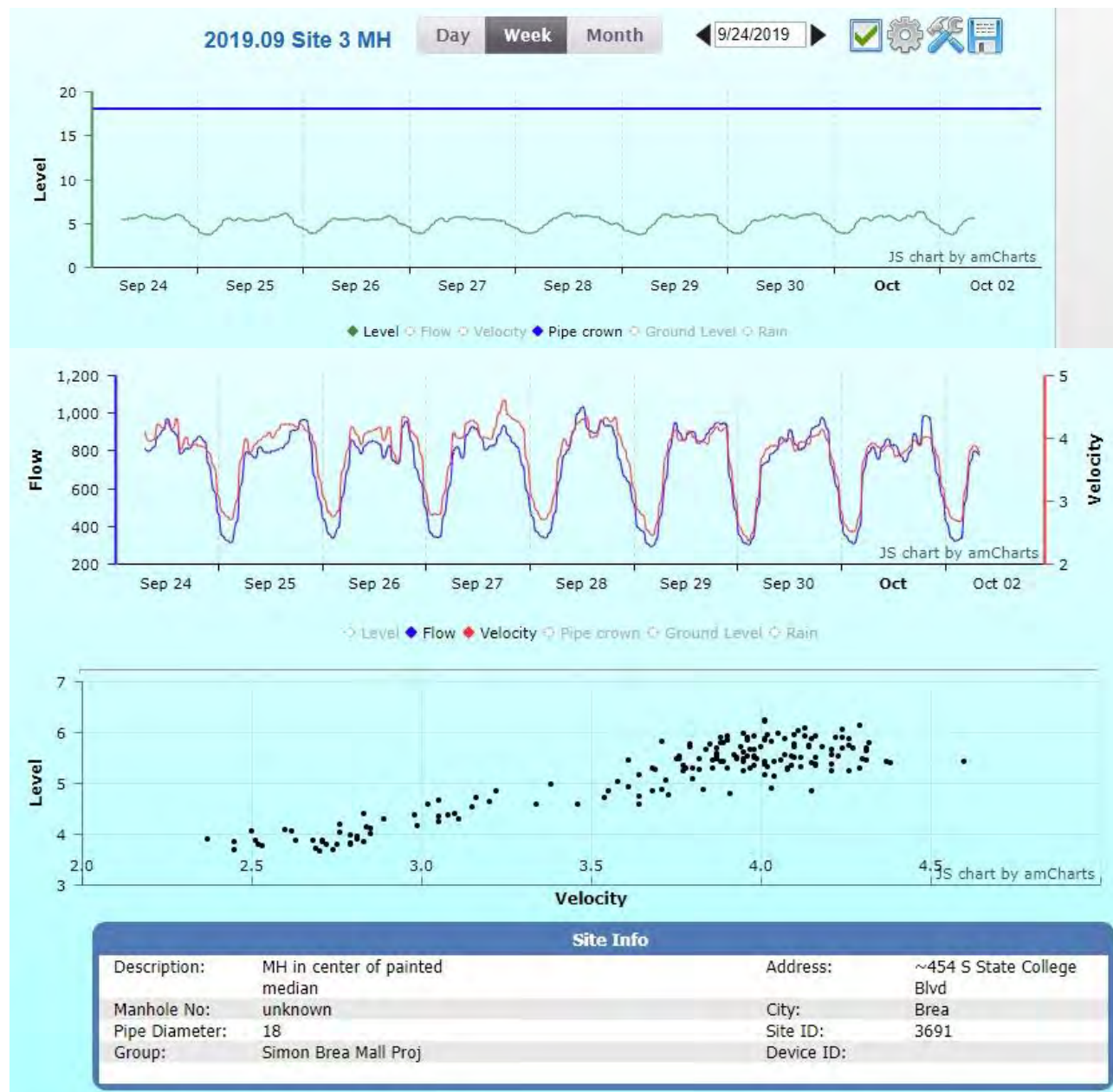


The pipe capacity was estimated using a Manning's Circular Pipe Flow Capacity chart, where $n=0.013$ (in accordance with the minimum value for a VCP with manholes, inlets, etc., Chow 1959). From the theoretical hydraulic operating curve for an 8-in pipe with a slope of $\sim 4.13\%$ ($S=0.04133756$), with the pipe completely full, the velocity should be ~ 4.7367 fps, which when input into the Flo-Ware program from the Site 2 MH produced a maximum capacity of ~ 1.0686 mgd. This is a conservative assumption based on the average levels and velocities observed during the monitoring study.

Site 2 MH Level (depth) vs Pipe Diameter



Figures below: Site 3 MH graphs of level, flow & velocity, and scatter plot of level in relation to velocity from US³ Flow Monitoring Website (<http://us3.uscubed.com/>)



The scatter plot above shows the depth vs velocity data points for the 18-in downstream pipe, which should resemble a theoretical hydraulic operating curve based on the site-specific characteristics of the pipe. Actual velocities and levels were compared to theoretical hydraulic operating curves at different slopes, which led to the conclusion that the data best resembles a curve with the slope of ~1.49% ($S=0.014924692$) at the Site 3 MH. According to the raSmith utility plan (UP-02B), the slope of the line upstream from the Site 3 MH should be 2.16%.

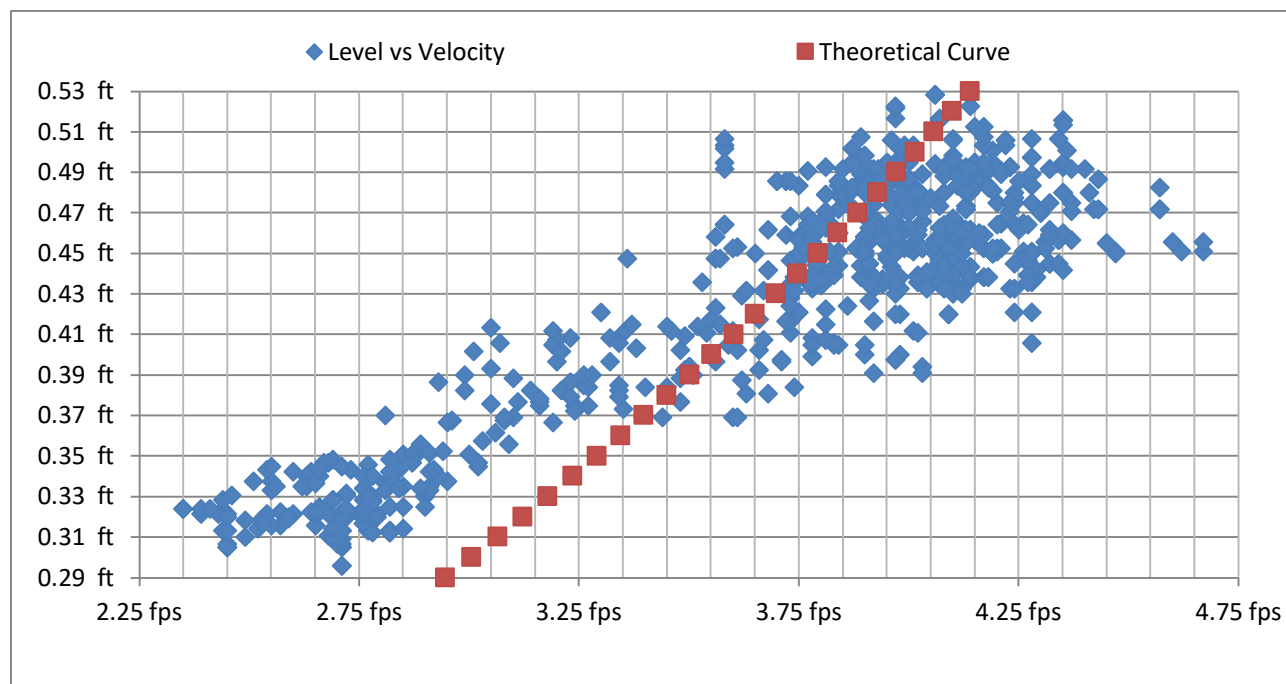


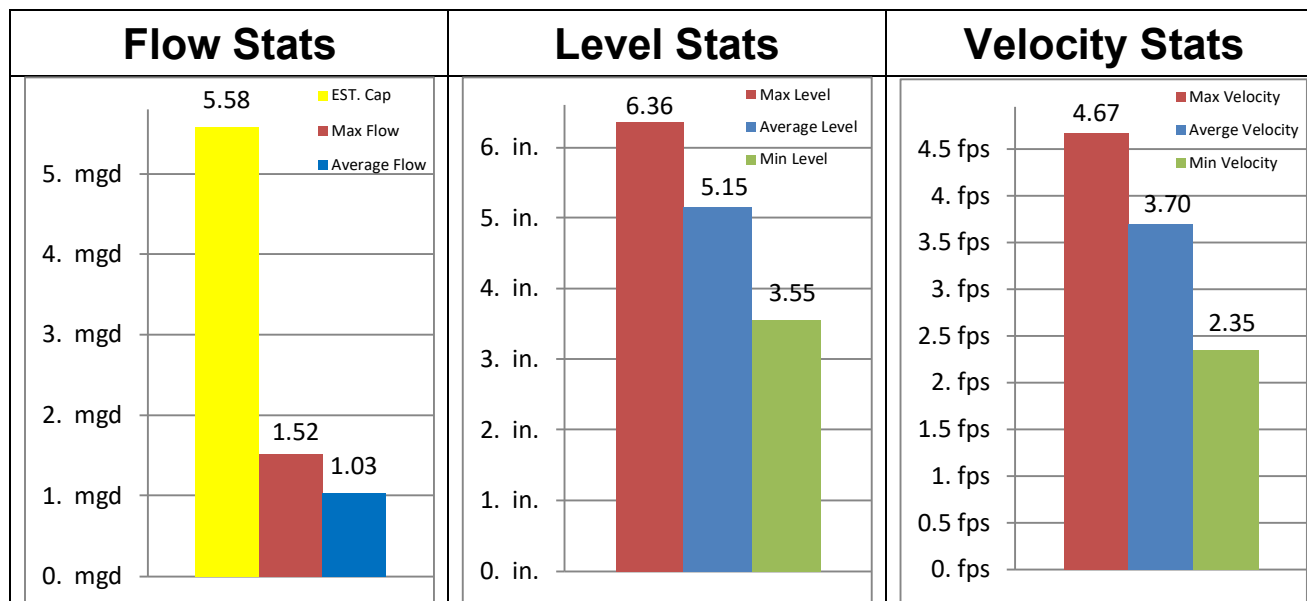
Figure above: Since the flows at the Site 3 MH utilized ~20% to ~36% of the pipe depth during the study, that portion of its theoretical curve has been overlaid onto its scatter plot.

As shown in the scatter plot above, while a majority of the data falls into an acceptable area along the theoretical curve, the level to velocity relationship is slightly skewed at lower levels. This could indicate that some form of blockage is slowing velocities at lower levels, which does not hinder the higher levels. This crossover is between ~4.4 and 5 inches of depth.

To summarize the site statistics from the data analysis at the Site 3 MH:

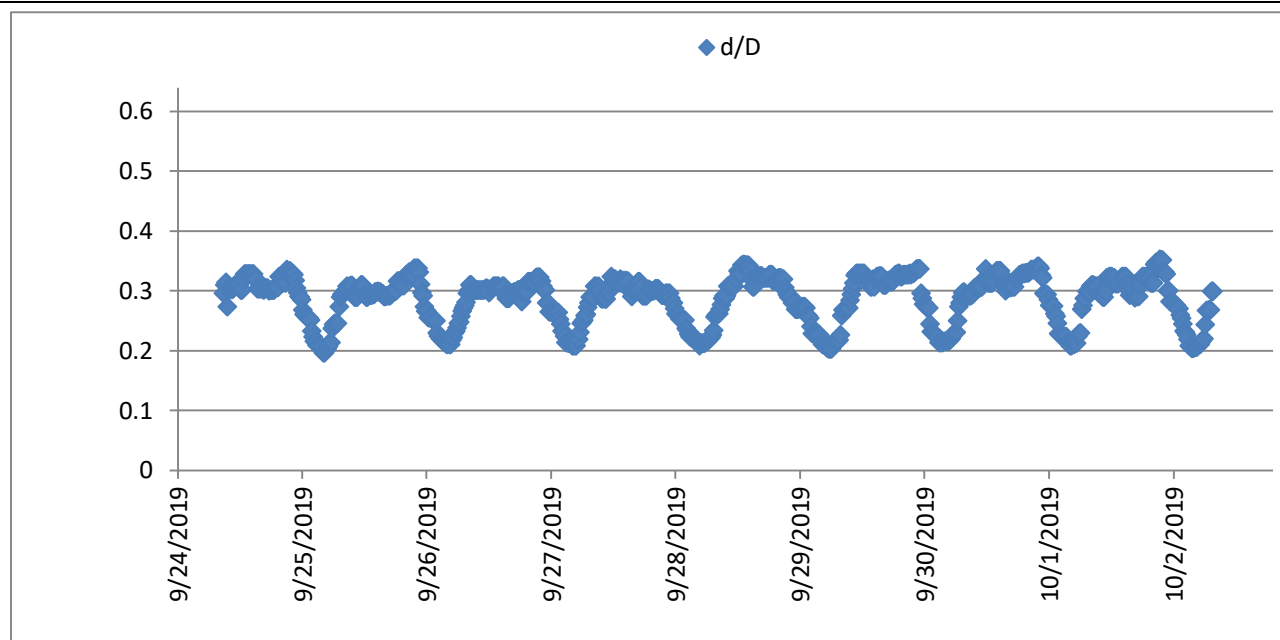
- During peak flows, 1.5150 mgd or ~1052 gpm utilized ~27% of the pipe's capacity.
- During average flows, 1.0278 mgd or ~714 gpm utilized ~18% of the pipe's capacity.
- The maximum velocity at the Site 3 MH was 4.67 fps with an average velocity of 3.70 fps. Therefore, this site should have no issues with regard to blockage due to settlement of normal system solids.
- According to the Brea Sewer System Management Plan, the depth versus diameter (d/D) ratio for existing collection system pipes of greater than 15 inches in diameter should be no more than 0.64 during dry weather peak flow conditions. The average d/D ratio from the Site 3 MH during this study was ~0.29 and the maximum was ~0.35. Therefore, this 18-in pipe had capacity available during the observed dry weather peak flow.

The following is a graphical representation of the site statistics from the data analysis:

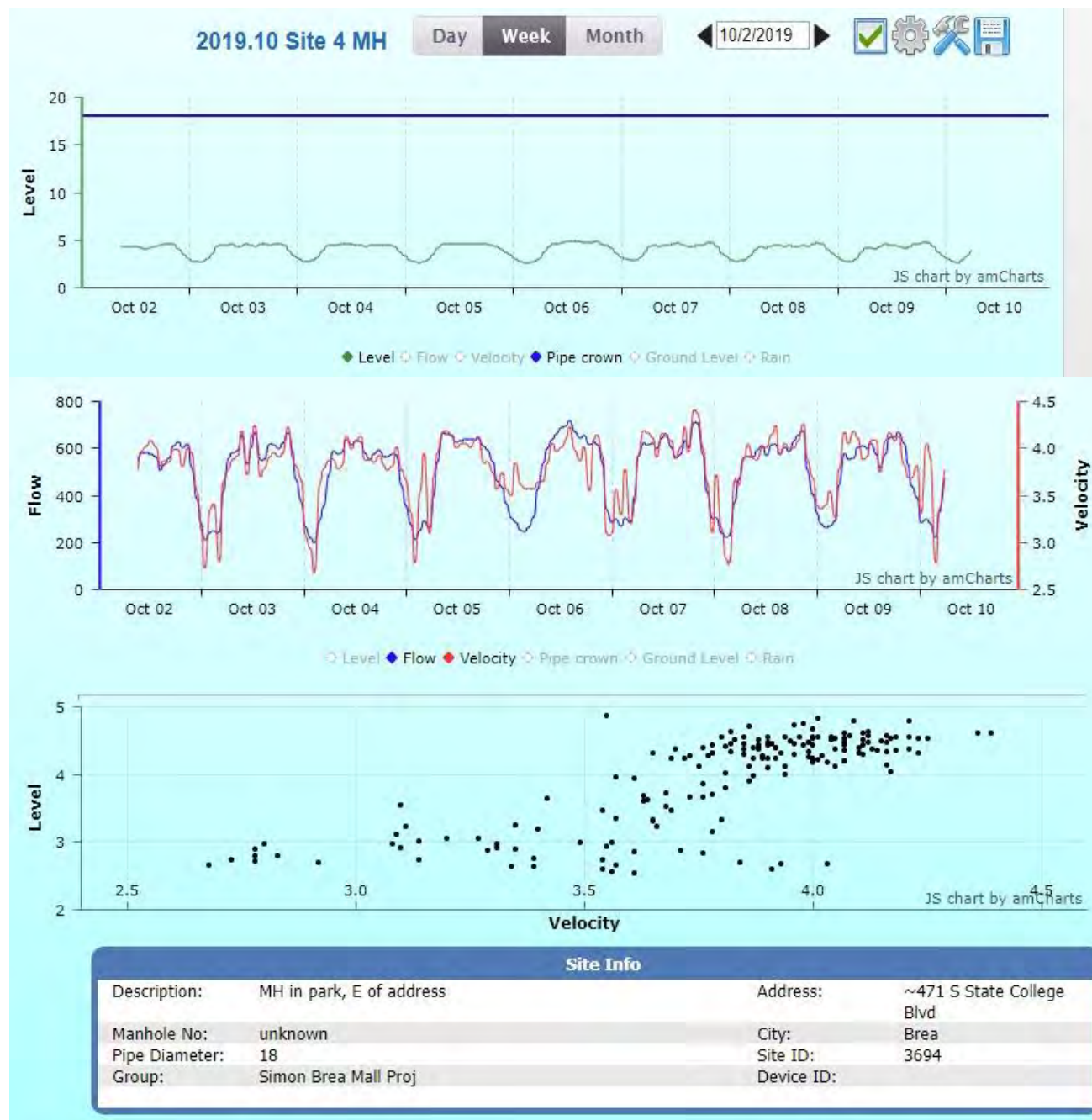


The pipe capacity was estimated using a Manning's Circular Pipe Flow Capacity chart, where $n=0.013$ (in accordance with the minimum value for a VCP with manholes, inlets, etc., Chow 1959). From the theoretical hydraulic operating curve for an 18-in pipe with a slope of $\sim 1.49\%$ ($S=0.014924692$), with the pipe completely full, the velocity should be ~ 4.8869 fps, which when input into the Flo-Ware program from the Site 3 MH produced a maximum capacity of ~ 5.5815 mgd. This is a conservative assumption based on the average levels and velocities observed during the monitoring study.

Site 3 MH Level (depth) vs Pipe Diameter



Figures below: Site 4 MH graphs of level, flow & velocity, and scatter plot of level in relation to velocity from US³ Flow Monitoring Website (<http://us3.uscubed.com/>)



The scatter plot above shows the depth vs velocity data points for the 18-in downstream pipe, which should resemble a theoretical hydraulic operating curve based on the site-specific characteristics of the pipe. Actual velocities and levels were compared to theoretical hydraulic operating curves at different slopes, which led to the conclusion that the data best resembles a curve with the slope of ~2.14% ($S=0.02136942$) at the Site 4 MH.

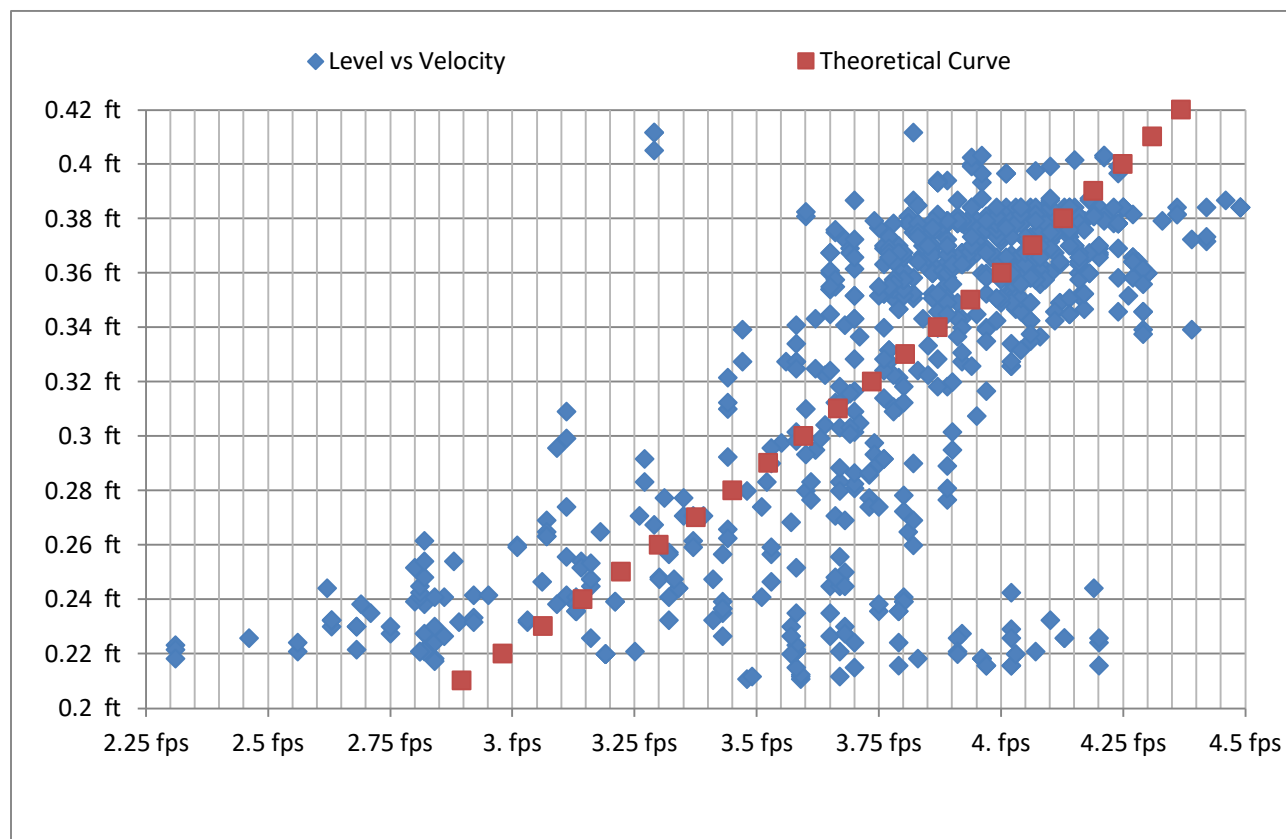


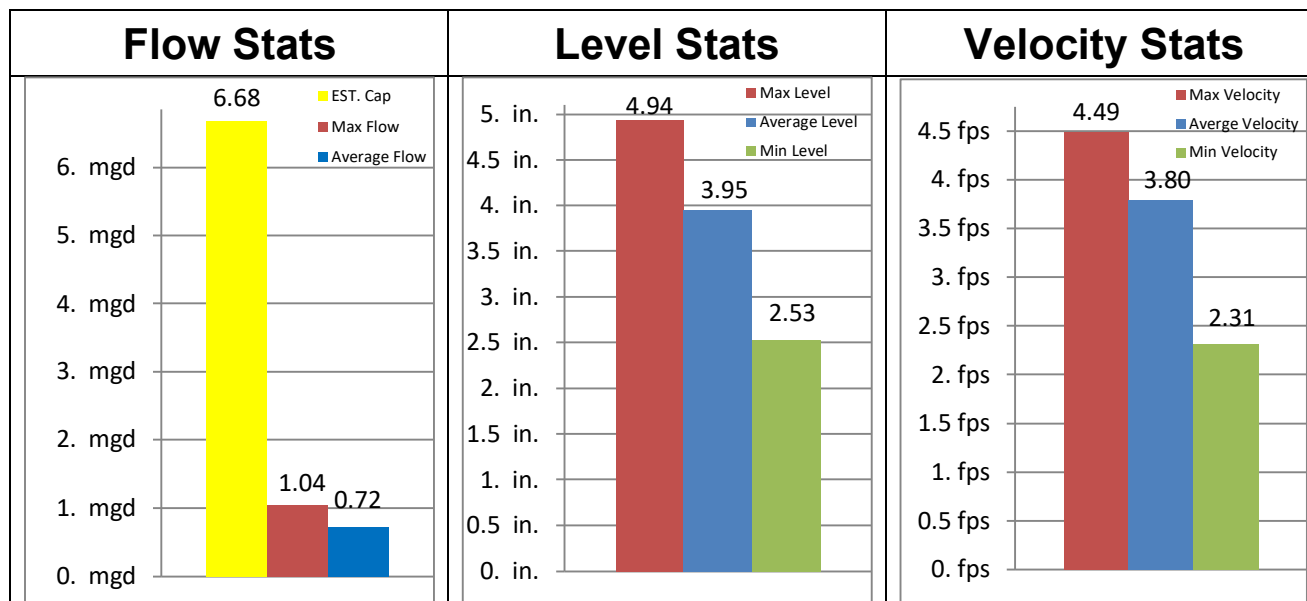
Figure above: Since the flows at the Site 4 MH utilized ~14% to ~27% of the pipe depth during the study, that portion of its theoretical curve has been overlaid onto its scatter plot.

As shown in the scatter plot above, while a majority of the data falls into an acceptable area along the theoretical curve, there are quite a few outliers. In addition, there appears to be a secondary flow pattern at lower levels, which could be flow from the lateral when the mainline flow slows.

To summarize the site statistics from the data analysis at the Site 4 MH:

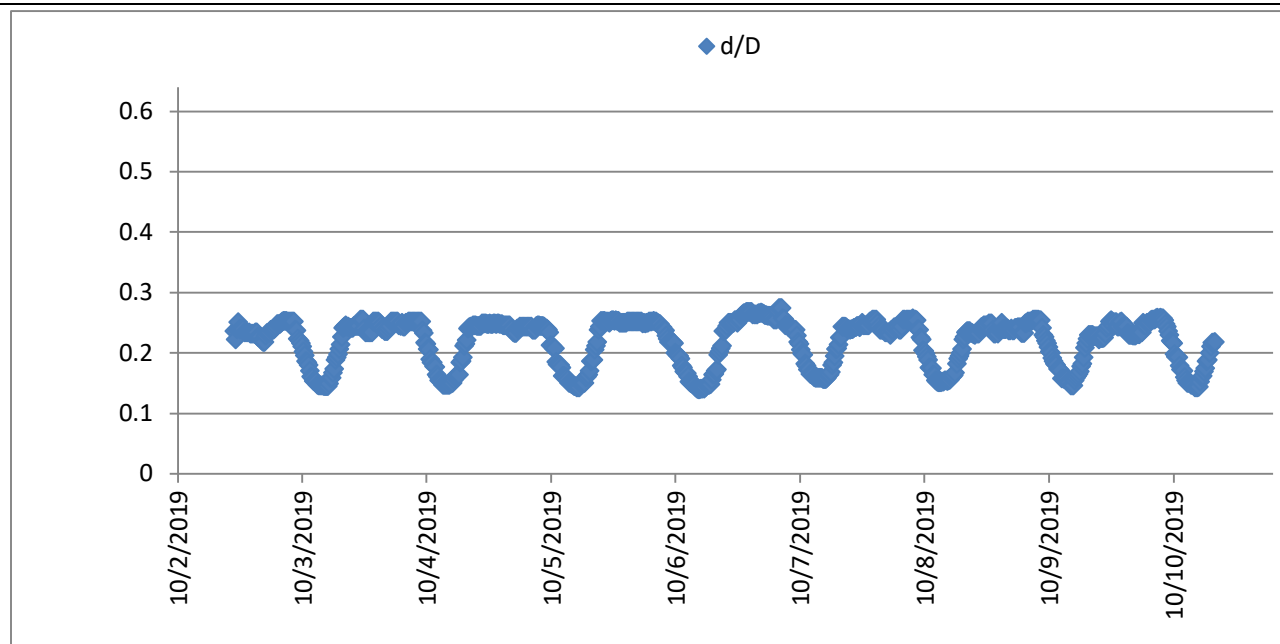
- During peak flows, 1.0417 mgd or ~723 gpm utilized ~16% of the pipe's capacity.
- During average flows, 0.7221 mgd or ~501 gpm utilized ~11% of the pipe's capacity.
- The maximum velocity at the Site 4 MH was 4.49 fps with an average velocity of 3.80 fps. Therefore, this site should have no issues with regard to blockage due to settlement of normal system solids.
- The average d/D ratio from the Site 4 MH during this study was ~0.22 and the maximum (max) was ~0.27. Therefore, this 18-in pipe had capacity available during the observed dry weather peak flow.

The following is a graphical representation of the site statistics from the data analysis:

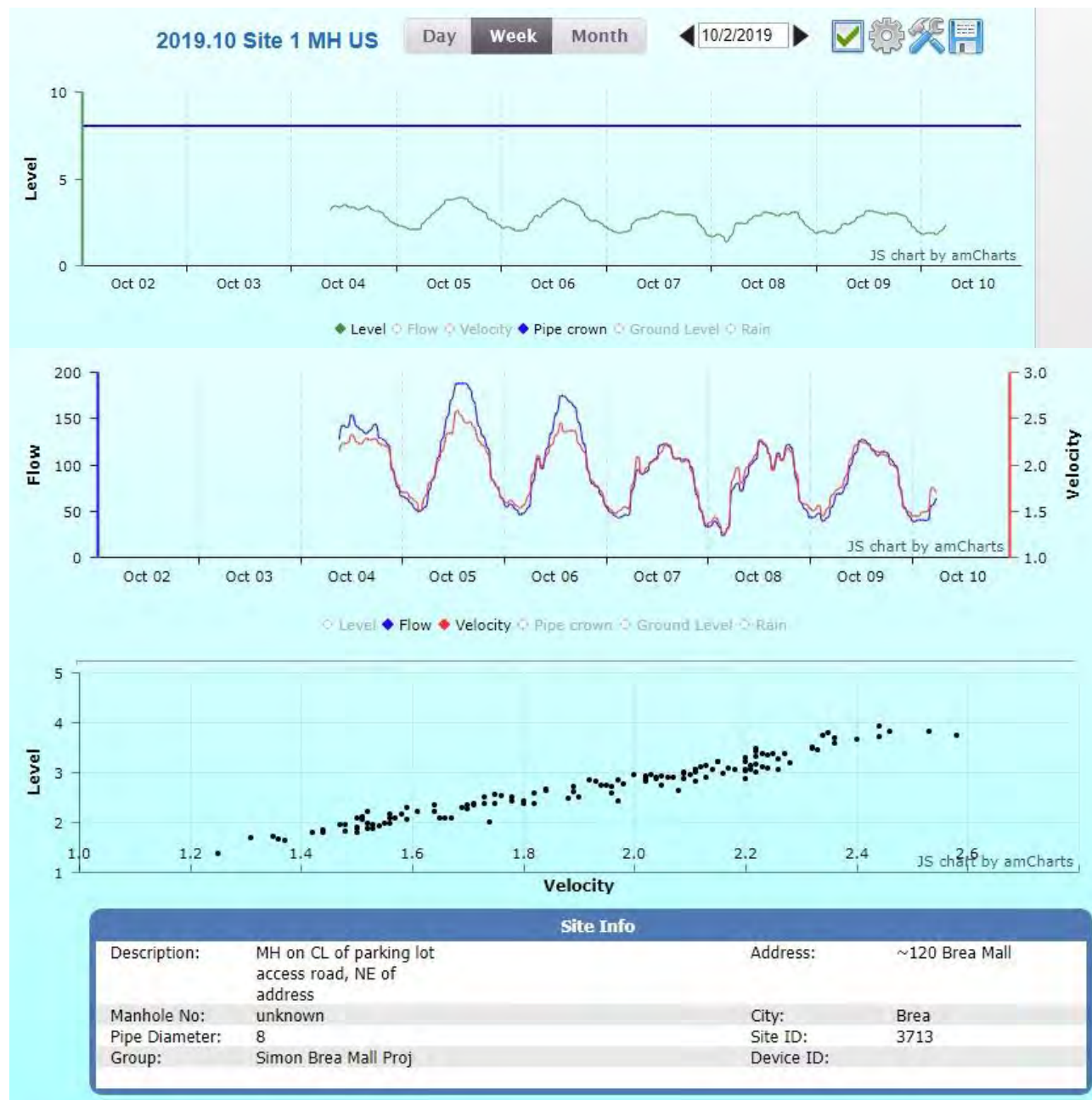


The pipe capacity was estimated using a Manning's Circular Pipe Flow Capacity chart, where $n=0.013$ (in accordance with the minimum value for a VCP with manholes, inlets, etc., Chow 1959). From the theoretical hydraulic operating curve for an 18-in pipe with a slope of $\sim 2.14\%$ ($S=0.02136942$), with the pipe completely full, the velocity should be ~ 5.8475 fps, which when input into the Flo-Ware program from the Site 4 MH produced a maximum capacity of ~ 6.6787 mgd. This is a conservative assumption based on the average levels and velocities observed during the monitoring study.

Site 4 MH Level (depth) vs Pipe Diameter



Figures below: Site 1 US MH graphs of level, flow & velocity, and scatter plot of level in relation to velocity from US³ Flow Monitoring Website (<http://us3.uscubed.com/>)



The scatter plot above shows the depth vs velocity data points for the 8-in downstream pipe, which should resemble a theoretical hydraulic operating curve based on the site-specific characteristics of the pipe. Actual velocities and levels were compared to theoretical hydraulic operating curves at different slopes, which led to the conclusion that the data best resembles a curve with the slope of ~1.00% ($S=0.01001235$) at the Site 1 US MH. According to the raSmith utility plan (UP-02A), the slope of the line downstream from the Site 1 US MH should be 1.1%.

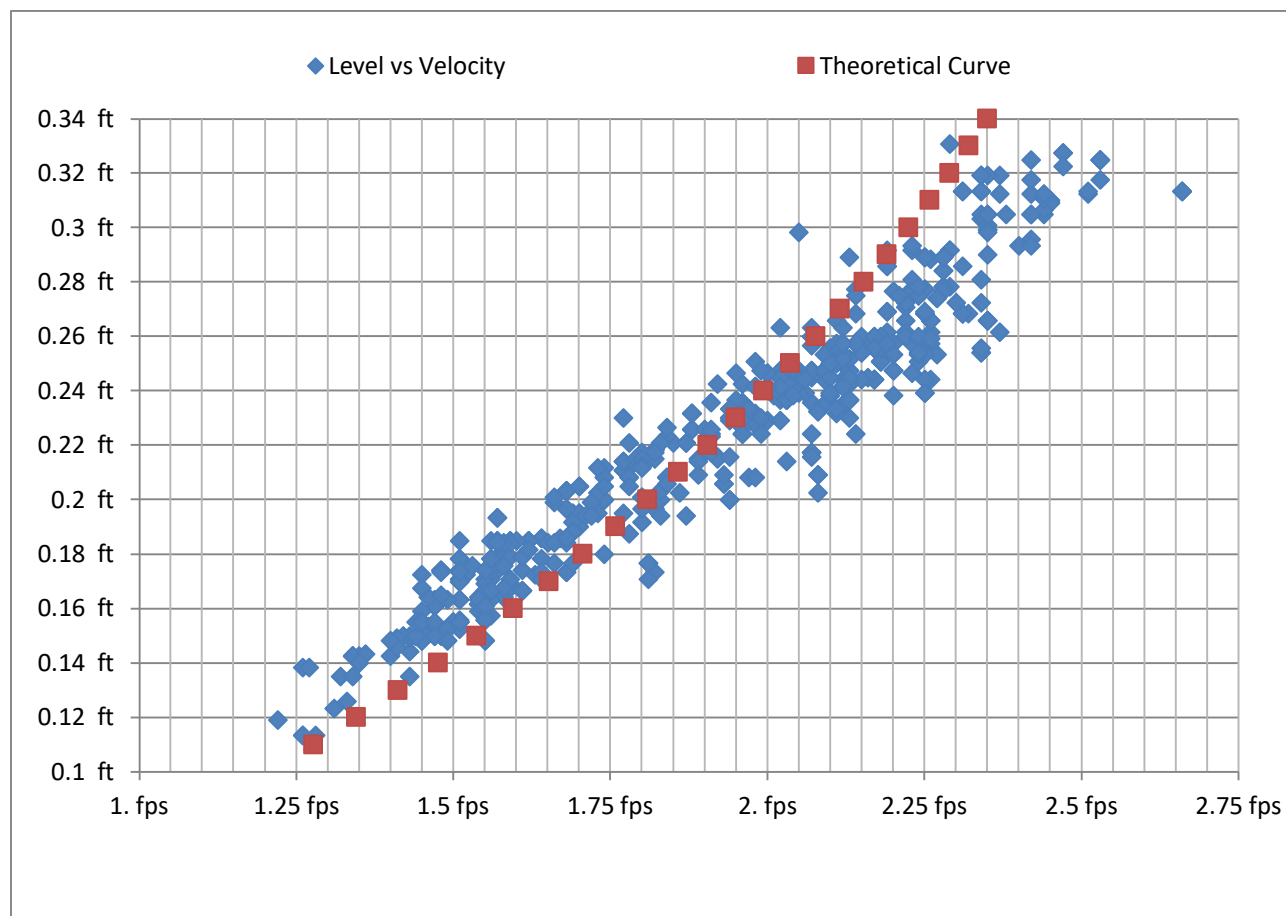


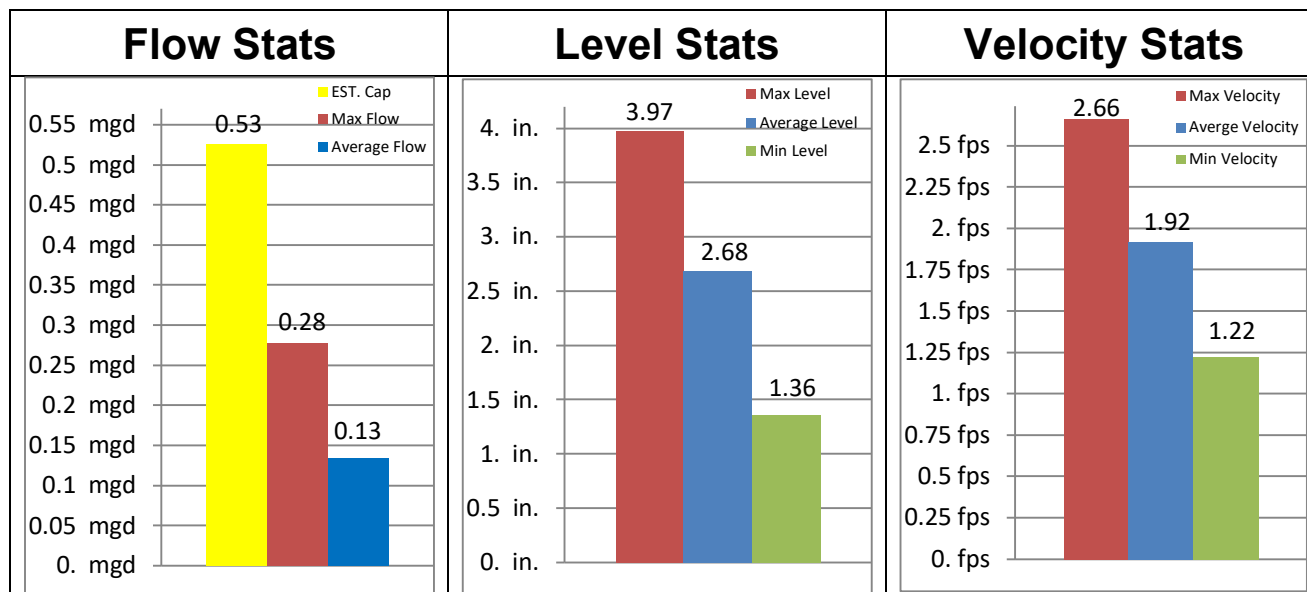
Figure above: Since the flows at the Site 1 US MH utilized ~17% to ~50% of the pipe depth during the study, that portion of its theoretical curve has been overlaid onto its scatter plot.

As shown in the scatter plot above, the data follows the expected level to velocity relationship, although the level to velocity relationship is slightly skewed at higher levels.

To summarize the site statistics from the data analysis at the Site 1 US MH:

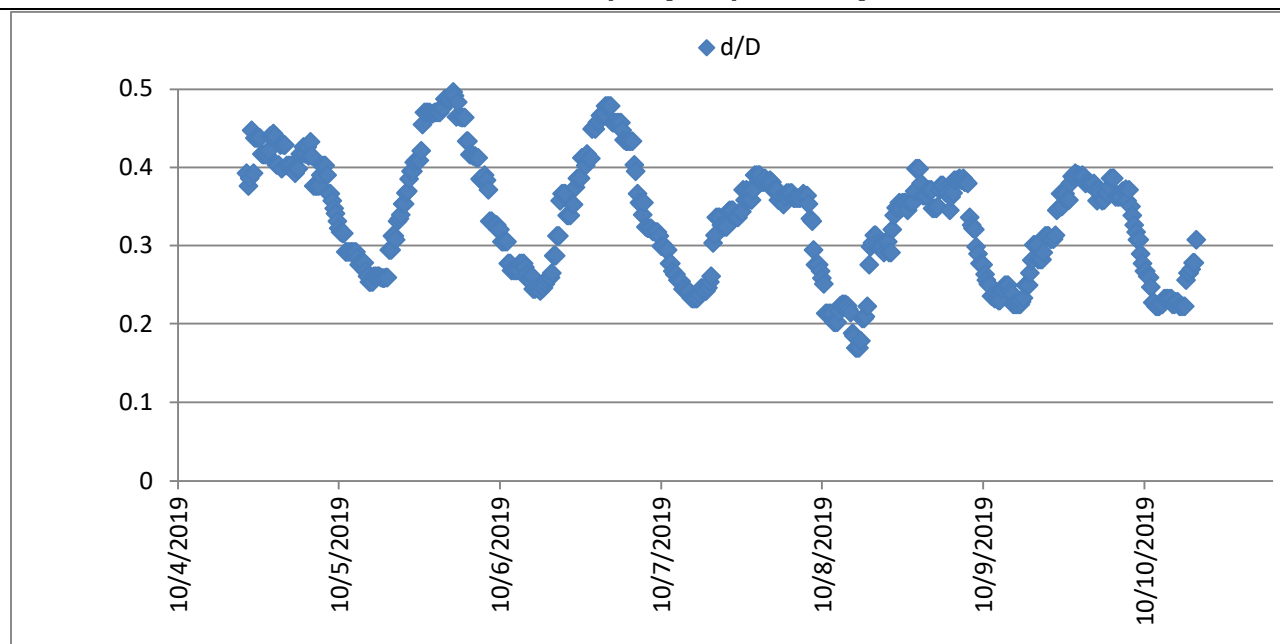
- During peak flows, 0.2770 mgd or ~192 gpm utilized ~53% of the pipe's capacity.
- During average flows, 0.1344 mgd or ~93 gpm utilized ~26% of the pipe's capacity.
- The maximum velocity at the Site 1 US MH was 2.66 fps with an average velocity of 1.92 fps. Since velocities exceeded 2 fps every day during this study except for the day of removal, this site should have no issues with regard to blockage due to settlement of normal system solids.
- The average d/D ratio from the Site 1 US MH during this study was ~0.33 and the maximum was ~0.50. Therefore, this 8-in pipe reached its maximum capacity during this dry weather flow monitoring study.

The following is a graphical representation of the site statistics from the data analysis:



The pipe capacity was estimated using a Manning's Circular Pipe Flow Capacity chart, where $n=0.013$ (in accordance with the minimum value for a VCP with manholes, inlets, etc., Chow 1959). From the theoretical hydraulic operating curve for an 8-in pipe with a slope of $\sim 1.00\%$ ($S=0.01001235$), with the pipe completely full, the velocity should be ~ 2.3312 fps, which when input into the Flo-Ware program from the Site 1 US MH produced a maximum capacity of ~ 0.5259 mgd. This is a slightly conservative assumption based on the average levels and velocities observed during the monitoring study.

Site 1 US MH Level (depth) vs Pipe Diameter



1.6 Proposed Flow Generation

The Brea Mall currently encompasses approximately 1,291,433 square feet (sf) and consists of a central retail core of major department stores (“anchors”). Sears, which was the anchor on the southwest side of the mall, closed in April 2018. Therefore, the Simon Property Group is proposing redevelopment of the 17.5-acre Sears parcel, which includes the adjoining transition areas adjacent to Nordstrom and Macy’s. The proposed project involves demolishing the Sears department store and associated auto center (161,990 sf) and 12 acres of surface parking in order to allow a mix of uses: retail, for-rent residential apartments, a resort-type fitness center, and a large green space with plaza.

Table 1 Brea Mall Mixed Use Project Land Use Summary

Tenant	Existing GLA (sq. ft.)	Demolition (sq. ft.)	New Construction GLA (sq. ft.)	Total Mall GLA (sq. ft.)
Major Department Stores				
Sears	161,990	-161,990	—	0
Macy’s ¹	182,360	—	—	182,360
Nordstrom	176,540	—	—	176,540
JC Penny	135,800	—	—	135,800
Macy’s Men & Home	192,060	—	—	192,060
Major Department Stores	646,750	-161,990	0	686,760
Small Shops				
Sporting Goods	—	—	50,019	50,019
Fitness Center	—	—	128,000	128,000
Level 1 Mall	224,522	—	123,053	347,575
Level 2 Mall	207,992	—	10,543	218,535
Total Small Shops	432,514	0	311,615	744,129
Outlots¹				
Cheesecake Factory Outlot	10,169	—	—	10,169
Total Mall	1,291,433	-161,990	311,615	1,441,058
Residential				
Medium Density Residential (7-story)	—	—	312 units	312 units
Residential Square Feet	—	—	380,947	
Net Change from Existing	—	—	312	149,625

GLA = gross leasable area

¹ Macy’s owns the buildings occupied by Red Lobster and Olive Garden; therefore, the GLA for Macy’s includes these restaurants. BJ’s is not owned by Simon properties; therefore, the square footage for this outlot facility is not included in this table.

Figure above: Shows a project land use summary dated 08/15/2019.

The project would result in a net increase of 149,625 sf of commercial space (small shops and a fitness center) and 312 residential dwelling units.

The proposed flow generation was provided on the raSmith utility plan (UP-02C):

- 12,800 gallons per day (gpd) from the Fitness Center = 0.0128 mgd
- 131,306 gpd from the Mall Shops = 0.131306 mgd
- 41,850 gpd from the Residential Units = 0.04185 mgd

In accordance with the Brea Sewer System Management Plan, peak dry weather flow (PDWF) was calculated using the following equation.

$$\text{PDWF (mgd)} = 1.777 \times \text{Average Dry Weather Flow (ADWF)}^{0.92}$$

User Category	Proposed ADWF (gpd)	Proposed ADWF (mgd)	Proposed PDWF (mgd)
Fitness Center	12,800	0.0128	0.03223
Brea Mall Shops	131,306	0.131306	0.27448
Residential Units	41,850	0.04185	0.09586
Total			0.40257

Monitored Sites	Actual ADWF (mgd)	Calculated PDWF (mgd)	Actual PDWF (mgd)
Nordstrom MH	0.0464	0.1054	0.1090
Site 1 MH	0.1021	0.2178	0.2194
Site 2 MH	0.1211	0.2548	0.1798
Site 3 MH	1.0278	1.8224	1.5150
Site 1 US MH	0.1344	0.2804	0.2770
Site 4 MH	0.7221	1.3170	1.0417

The higher PDWF will be used in the final calculations in the conclusions.

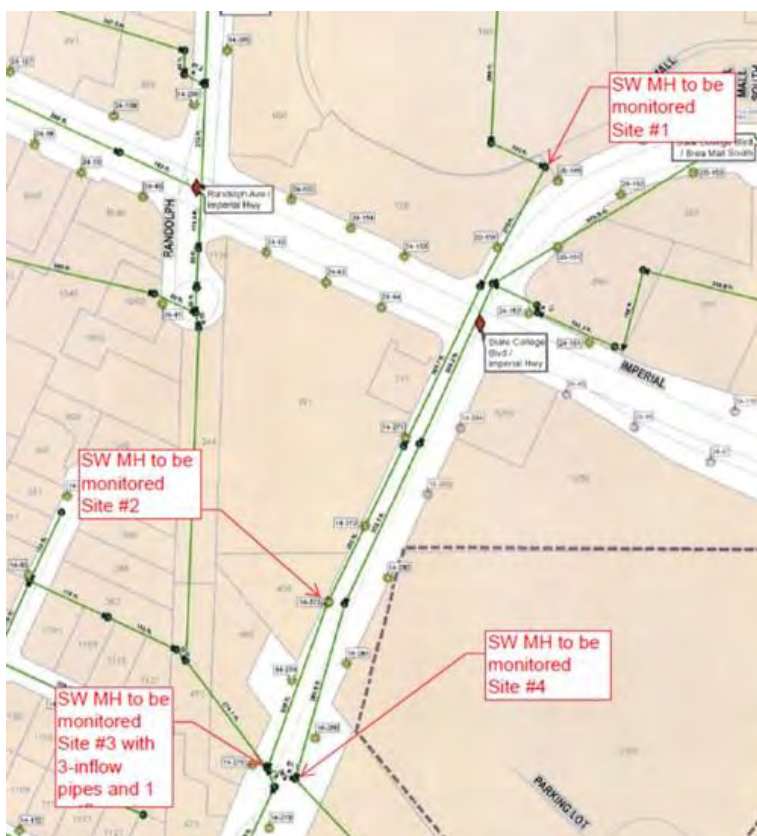
1.7 Summary of Results

Calculations in this report are based on steady uniform flow with steady flow defined as the discharge being constant with time, and uniform flow defined as the slope of the water surface and cross-sectional flow area being constant in the length of pipe analyzed. Using velocities from this study in conjunction with the associated cross-sectional areas depicted by the monitored levels, the flow was calculated using the Continuity Equation, and the slope was derived using Manning's Equation.

The flow monitoring equipment at each site was calibrated with regard to site-specific characteristics and manual level and velocity readings for adjustment and verification. Follow-up on the installations confirmed equipment was reading properly at the sites. In addition, all of the equipment went through diagnostic testing before and after the study with less than a 1% deviation between manual and meter level readings and less than a 5% deviation between manual and meter velocity readings. Therefore, equipment calibration was verified in accordance with manufacturer specifications.

Initial flow monitoring for this project began on 09/24/2019 in accord with the supplied sewer map at right. This is also referred to as the first week of monitoring. The Nordstrom MH is not shown but was included in the first week of monitoring.

When the field installation forms and photos were reviewed, it was determined that Site 3 was actually the small line coming up from the southwest and Site 4 was actually Site 3. Therefore, on 10/02/2019, the US³ field team searched the area and found Site 4 in the park, ~50 ft east of the road. Therefore, flow monitoring began at Site 4 at the same time that monitoring was completed at Sites 1, 2 and 3 and at the Nordstrom MH.



2019.09 Nordstrom MH: The graphs for this 8-in sewer line showed a fairly consistent daily flow pattern. In addition, velocities exceeded the minimum requirements to provide sufficient scouring action for self-cleaning as well as providing good capacity within the line. As previously stated, the utility plans showed the downstream slope for this section of

sewer line to be 1.7% and the calculated slope based on the average flow data observed during the study was ~6.39%. It is unusual for the as-built slope to match field conditions, but normally, there is not this much difference between them. There can be many reasons why the theoretical slope differs from the actual slope, such as backwater, blockages, drops within the manhole or subsidence along the line. At this site, no obvious reason was observed. The calculated slope was based on the average flow data observed during the study, and the scatter plot on page 18 of this report shows how the theoretical curve based on the calculated slope lines up with the actual flow data.

In order to determine the maximum allowable flow within the pipe segment downstream of the Nordstrom MH, the calculated slope (~6.39%) was used to generate a theoretical hydraulic operating curve for an 8-in pipe. At half pipe (4 inches), the velocity from the theoretical curve was ~5.8888 fps, which when input into the Flo-Ware program from the Nordstrom MH produced an expected capacity of ~0.6643 mgd. Since peak flow was 0.1090 mgd, there should be capacity available for an additional 0.5553 mgd before the pipe exceeds its d/D limit of 0.50 at peak flow. This is a reasonable assumption since the average maximum velocity from the study (3.06 fps) coincided with an average level of ~1.1988 inches, and according to the theoretical curve, the velocity at ~1.1988 inches should be ~3.0413 fps.

2019.09 Site 1 MH: The graphs for this site showed a fairly consistent daily flow pattern, but the level to velocity relationship could indicate a hydraulic issue within this confluence. In addition, velocities only met the minimum requirements to provide sufficient scouring action for self-cleaning on five days during this 9-day study. As previously stated, the utility plans showed the downstream slope for this section of sewer line to be 1.3% and the calculated slope based on the average flow data observed during the study was ~0.74%.

In order to determine the maximum allowable flow within the pipe segment downstream of the Site 1 MH, the calculated slope (~0.74%) was used to generate a theoretical hydraulic operating curve for an 8-in pipe. At half pipe (4 inches), the velocity from the theoretical curve was ~2.0024 fps, which when input into the Flo-Ware program from the Site 1 MH produced an expected capacity of ~0.2259 mgd. Since peak flow was 0.2194 mgd, there should be capacity available for an additional 0.0065 mgd before the pipe exceeds its d/D limit of 0.50 at peak flow. This is a slightly conservative assumption since the average maximum velocity from the study (2.00 fps) coincided with an average level of ~3.3933 inches, and according to the theoretical curve, the velocity at ~3.3933 inches should be ~1.8586 fps.

2019.09 Site 2 MH: The graphs for this site showed a fairly consistent daily level, but the velocities did not follow any observable pattern. This resulted in a data set resembling a cloud formation, which is indicative of processed or non-conforming flow. However, velocities did exceed the minimum requirements for self-cleaning as well as providing good

capacity within the line. As previously stated, the utility plans showed the upstream slope to be 3.0% and the downstream slope to be 2.16%, while the calculated slope based on the average flow data observed in the downstream line was ~4.13%.

In order to determine the maximum allowable flow within the pipe segment downstream of the Site 2 MH, the calculated slope (~4.13%) was used to generate a theoretical hydraulic operating curve for an 8-in pipe. At half pipe (4 inches), the velocity from the theoretical curve was ~4.7365 fps, which when input into the Flo-Ware program from the Site 2 MH produced an expected capacity of ~0.5343 mgd. Since peak flow was 0.1798 mgd, there should be capacity available for an additional 0.3545 mgd before the pipe exceeds its d/D limit of 0.50 at peak flow. This is a conservative assumption since the average maximum velocity from the study (3.58 fps) coincided with an average level of 1.586 inches, and according to the theoretical curve, the velocity at 1.586 inches should be ~2.8981 fps.

2019.09 Site 3 MH: This site was originally believed to be the Site 4 MH, but was actually the Site 3 MH. The graphs for this site showed a fairly consistent daily flow pattern. In addition, velocities exceeded the minimum requirements for self-cleaning as well as providing good capacity within the line. As previously stated, the utility plans showed the upstream slope for this section of sewer line to be 2.16% and the calculated slope based on the average flow data observed in the downstream line was ~1.49%.

In order to determine the maximum allowable flow within the pipe segment downstream of the Site 3 MH, the calculated slope (~1.49%) was used to generate a theoretical hydraulic operating curve for an 18-in pipe. At the d/D limit (11.52 inches), the velocity from the theoretical curve was ~5.3483 fps, which when input into the Flo-Ware program from the Site 3 MH produced an expected capacity of ~4.1287 mgd. Since peak flow was 1.5150 mgd, there should be capacity available for an additional 2.6137 mgd before the pipe exceeds its d/D limit of 0.64 at peak flow. This is a conservative assumption since the average maximum velocity from the study (4.33 fps) coincided with an average level of ~5.5908 inches, and according to the theoretical curve, the velocity at ~5.5908 inches should be ~3.8655 fps.

2019.09 Site 3A MH: This site was originally believed to be the Site 3 MH, but was actually determined to be a brine line. Since this was not one of the required monitoring sites, no data analysis was performed on the data.

2019.09 Site 4 MH: On 10/02/2019, the US³ field team searched the area and found this site in the park, ~50 ft east of the road. Therefore, flow monitoring began at the Site 4 MH at the same time that monitoring was completed at the other four sites.

The graphs for the Site 4 MH showed a fairly consistent daily level. The velocity readings were not as consistent as the level readings, but the overall level to velocity relationship

was not bad. In addition, velocities exceeded the minimum requirements for self-cleaning as well as providing good capacity within the line.

In order to determine the maximum allowable flow within the pipe segment downstream of the Site 4 MH, the calculated slope based on the average flow data observed during the study (~2.14%) was used to generate a theoretical hydraulic operating curve for an 18-in pipe. At the d/D limit (11.52 inches), the velocity from the theoretical curve was ~6.3997 fps, which when input into the Flo-Ware program from the Site 4 MH produced an expected capacity of ~4.9404 mgd. Since peak flow was 1.0417 mgd, there should be capacity available for an additional 3.8987 mgd before the pipe exceeds its d/D limit of 0.64 at peak flow. This is a conservative assumption since the average maximum velocity from the study (4.31 fps) coincided with an average level of 4.254 inches, and according to the theoretical curve, the velocity at 4.254 inches should be ~3.9667 fps.

It was determined on 10/04/2019 that upstream onsite monitoring should occur in conjunction with monitoring at the Site 4 MH. Therefore, the US³ field team installed equipment one manhole upstream of the Site 1 MH. This site was chosen because it had better hydraulics than the Site 1 MH and was between the two original manhole monitoring locations.

Second Week of Monitoring	
Site 4 MH location	Site 1 US MH location
	

2019.09 Site 1 US MH: The graphs for this site showed a fairly consistent daily flow pattern with a good level to velocity relationship. In addition, velocities exceeded the minimum requirements for self-cleaning every day during this study except for the day of removal. As previously stated, the utility plans showed the downstream slope for this section of sewer line to be 1.1% and the calculated slope based on the average flow data observed during the study was ~1.00%.

In order to determine the maximum allowable flow within the pipe segment downstream of the Site 1 US MH, the calculated slope (~1.00%) was used to generate a theoretical hydraulic operating curve for an 8-in pipe. At half pipe (4 inches), the velocity from the theoretical curve was ~2.3311 fps, which when input into the Flo-Ware program from the Site 1 US MH produced an expected capacity of ~0.2630 mgd. Since peak flow was 0.2770 mgd, the sewer line did not have any additional capacity available at peak flow. This is a slightly conservative assumption since the average maximum velocity from the study (2.41 fps) coincided with an average level of ~3.6713 inches, and according to the theoretical curve, the velocity at ~3.6713 inches should be ~2.2448 fps.

1.8 Conclusions

The first week of flow monitoring at the Nordstrom MH and the Site 1, 2 and 3 MHs was completed on 10/02/2019, which is when the second week of flow monitoring began at the Site 4 MH. Flow monitoring began at the Site 1 US MH on 10/04/2019 and was completed on 10/10/2019 at the Site 1 US MH and the Site 4 MH.

It was noted that the flows increased at the Site 1 US MH during the second week of monitoring when compared to Site 1 MH during the first week of monitoring and yet decreased at the Site 4 MH during the second week of monitoring when compared to the Site 3 MH during the first week of monitoring. It is not unusual for flows to change from week to week for many different reasons. Unfortunately, no additional information can be provided as to the causes.

According to conceptual sanitary sewer plan for the Brea Mall Mixed Use Project, the peak dry weather flow is projected to be 0.40257 mgd. This proposed flow will be added to the existing flows to identify capacity limitations. In addition, the City has requested that the proposed flow from the Birch & State College Mixed-Use Development be added to the flow at the Site 4 MH. This flow (1.03 mgd) will be entering the Site 4 MH from its northern lateral, so this flow will not affect any of the other monitored sites. Therefore, the total flow added to the Site 4 MH will be 1.43257 mgd, and as stated in the Proposed Flow Generation section of this report, the PDWF values used in the final calculations will be the greater value between the actual and the calculated PDWFs.

The table below is a summary of the flow data with regard to the d/D capacity limit.

Existing + Proposed Flow Information	Existing PDWF (mgd)	Proposed PDWF (mgd)	Total PDWF (mgd)	Estimated d/D Pipe Capacity (mgd)	Available Capacity (mgd)	Total PDWF d/D
Nordstrom MH	0.1090	0.40257	0.51157	0.6643	0.15273	0.43
Site 1 MH	0.2194		0.62197	0.2259	-0.39607	>1
Site 2 MH	0.2548		0.65737	0.5343	-0.12307	0.57
Site 3 MH	1.8224		2.22497	4.1287	1.90373	0.44
Site 1 US MH	0.2804		0.68297	0.2630	-0.41997	>1
Site 4 MH	1.3170	1.43257	2.74957	4.9404	2.19083	0.45

In order to determine the d/D of the total PDWF, the calculated slope from the Nordstrom MH (~6.39%) was used to generate a theoretical hydraulic operating curve for an 8-in pipe, at ~3.4445 inches, the velocity is expected to be ~5.5053 fps, which when input into the Flo-Ware program from the Nordstrom MH produced the estimated PDWF of 0.51157 mgd, and $d/D = 3.4445/8 = \sim 0.4306$.

The same method was used to calculate the d/D for remaining sites. Using the calculated slopes, respectively, from the Site 1 MH and the Site 1 US MH, the estimated PDWF exceeded the theoretical hydraulic operating curves for each 8-in pipe.

Using the calculated slope from the Site 2 MH (~4.13%) to generate a theoretical hydraulic operating curve for an 8-in pipe, at ~4.5366 inches, the velocity is expected to be ~4.9796 fps, which when input into the Flo-Ware program from the Site 2 MH produced the estimated PDWF of 0.65737 mgd, and $d/D = 4.5366/8 = \sim 0.5671$.

Using the calculated slope from the Site 3 MH (~1.49%) to generate a theoretical hydraulic operating curve for an 18-in pipe, at ~7.9020 inches, the velocity is expected to be ~4.6106 fps, which when input into the Flo-Ware program from the Site 3 MH produced the estimated PDWF of 2.22497 mgd, and $d/D = 4.902/18 = \sim 0.4390$.

Using the calculated slope from the Site 4 MH (~2.14%) to generate a theoretical hydraulic operating curve for an 18-in pipe, at ~8.0467 inches, the velocity is expected to be ~5.5637 fps, which when input into the Flo-Ware program from the Site 4 MH produced the estimated PDWF of 2.74957 mgd, and $d/D = 8.0467/18 = \sim 0.4470$.

Since the capacity of a system is contingent upon its most limited segment, the Site 1 MH and the Site 1 US MH are the limiting factors, but the Brea Mall Mixed Use Project proposes to replace the existing onsite sewer line, which would need to convey the existing flows measured during the monitoring in addition to the proposed flows.

Since the Site 1 US MH measured the highest flows during the monitoring study, the new pipe should convey a total estimated onsite PDWF of 0.68297 mgd without exceeding the d/D limit of 0.50. Using the proposed slope from the new sewer line ($\sim 0.40\%$) to generate a theoretical hydraulic operating curve for an 8-in pipe, the total estimated onsite PDWF does not fit within the pipe. The slope of an 8-in pipe would have to be at least 6.76% to convey 0.68297 mgd without exceeding the d/D limit of 0.50.

Using the proposed slope from the new sewer line ($\sim 0.40\%$) to generate a theoretical hydraulic operating curve for a 12-in pipe, at ~ 7.3758 inches, the velocity is expected to be ~ 2.0870 fps, which produced the estimated PDWF of 0.68297 mgd, and $d/D = 7.3758/12 = \sim 0.6146$.

Using the proposed slope from the new sewer line ($\sim 0.40\%$) to generate a theoretical hydraulic operating curve for a 15-in pipe, at ~ 6.2832 inches, the velocity is expected to be ~ 2.1680 fps, which produced the estimated PDWF of 0.68297 mgd, and $d/D = 6.2832/15 = \sim 0.4189$.

By changing the proposed slope to 0.77% and generating a theoretical hydraulic operating curve for a 12-in pipe, at 6.0 inches, the velocity is expected to be ~ 2.6909 fps, which produced the estimated PDWF of 0.68297 mgd, and $d/D = 6/12 = \sim 0.50$.

By changing the proposed slope to 2.06% and generating a theoretical hydraulic operating curve for a 10-in pipe, at ~ 4.9961 inches, the velocity is expected to be ~ 3.8787 fps, which produced the estimated PDWF of 0.68297 mgd, and $d/D = 4.9961/10 = \sim 0.4996$.

The downstream 8-in pipe at the Site 2 MH can convey the PDWF observed during this study plus the proposed PDWF from the project, but the d/D was calculated to be ~ 0.57 . This, however, is a conservative assumption based on the average levels and velocities observed during the monitoring study. The downstream 18-in pipes have adequate capacity for the proposed projects since the d/D for the PDWF observed during this study plus the proposed PDWF from the projects did not exceed the d/D limit of 0.64 at either site.

Tab 2: Calibration Site Sheets & Flo-Ware Graphs



raSmith

MH at ~1048 Brea Mall

Brea, CA 92821

2019.09 Nordstrom MH

MH # unknown

Access:

MH in left-hand NB lane, E of parking structure

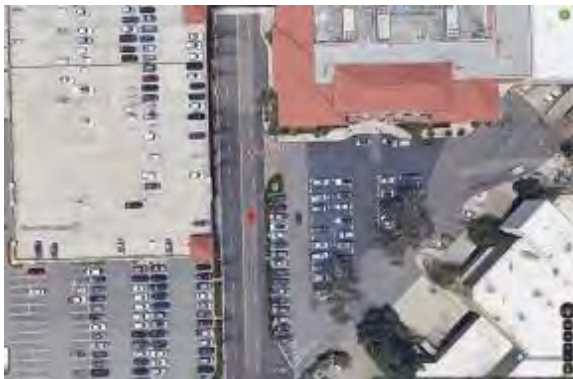
System Type:

Sanitary ☒

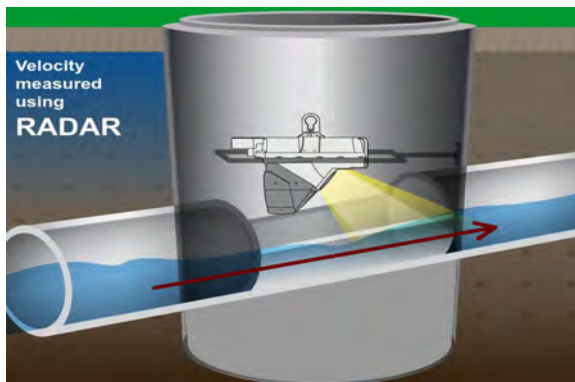
Storm ☐

Install Date: 9/24/2019

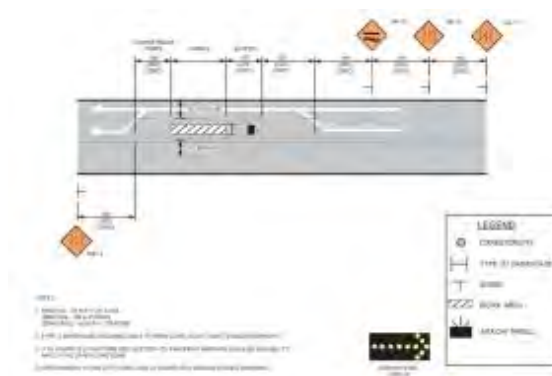
Map



Technology



Traffic Plan



Flow Meter

Meter Depth: 67"

MH Coordinates: 33.915117, -117.888619

Moderate open channel hydraulics

Avg Velocity	Avg Measured Level	Multiplier
2.75 fps	1.0"	1.0

Gas

O2	H2S	CO	LEL
20.9	0	0	0

Notes

No laterals; monitored the downstream line as it provided the best hydraulics.

Traffic Safety

No formal TCP required; used cones & signs per WATCH Diagram 15 requirements.

Land Use

Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	81"
Monitored Pipe Size	8"
Inner Pipe Size (In/Out)	8"/8"
Pipe Shape	Round
Pipe Condition	Fair
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	14.09"
Sensor Dist. to Crown	6.09"
Sensor Direction	Downstream
Flow Heading	South



Meter Site Document

2019.09 Nordstrom MH

MH at ~1048 Brea Mall

Brea, CA 92821

Site



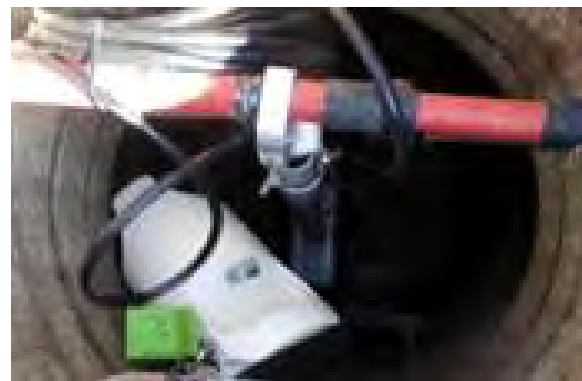
Manhole Before Install



Installation Process



Installed



Downstream Pipe Size



Downstream





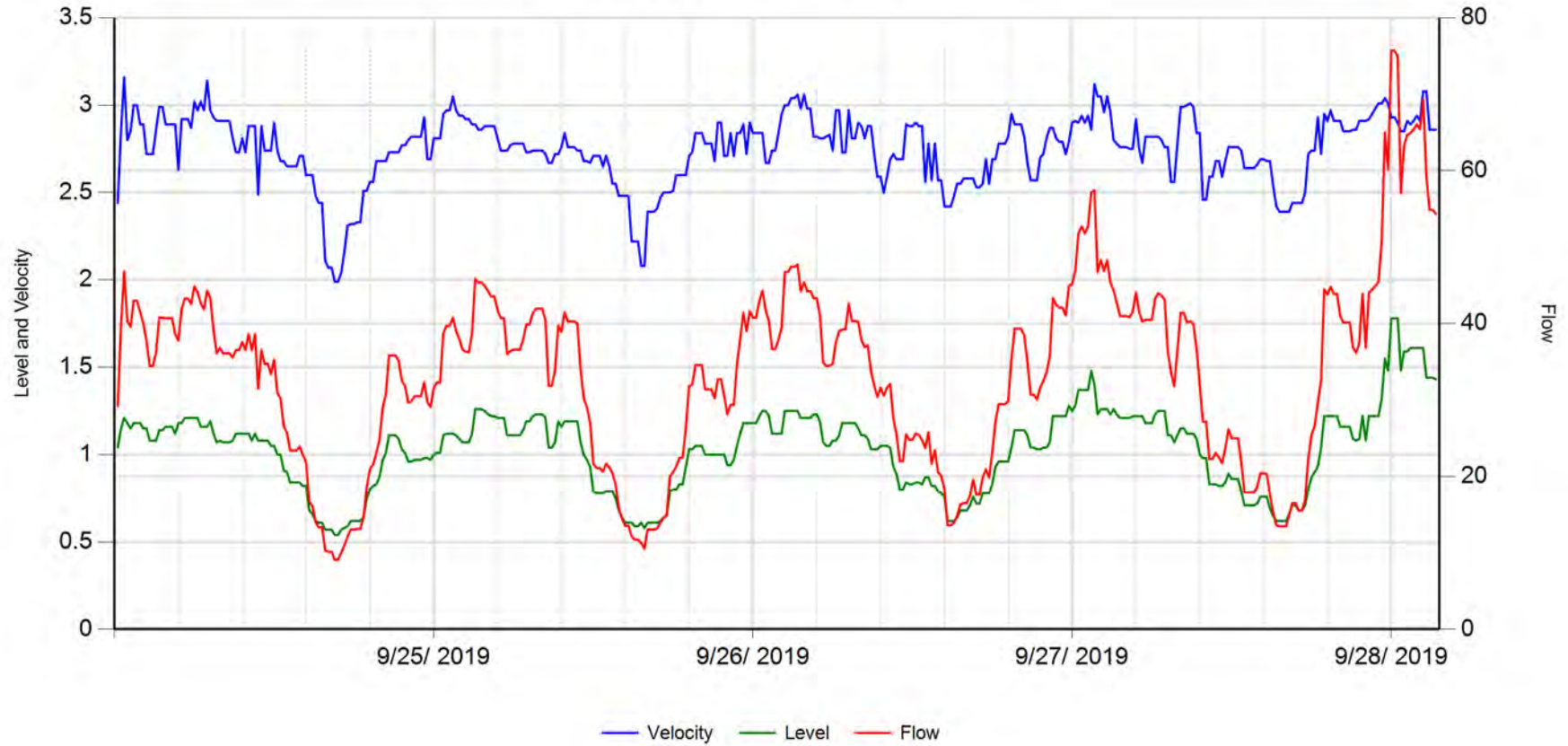
Utility Systems Science and Software

Report Date: 10/14/2019
 Customer: raSmith
 Group: Simon Brea Mall Proj
 Site: 2019.09 Nordstrom MH

Statistics for 2019.09 Nordstrom MH: 09/24/2019 thru 10/02/2019

	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)				
Date	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Total Gal	Rain
9/24/19	37.04	46.81	23.40	0.05	0.07	0.03	2.84	3.16	2.44	1.10	1.21	0.84	53,339	
9/25/19	30.35	45.83	9.10	0.04	0.07	0.01	2.68	3.05	1.99	0.98	1.26	0.54	43,698	
9/26/19	31.04	47.71	10.56	0.04	0.07	0.02	2.72	3.06	2.08	0.98	1.25	0.58	44,703	
9/27/19	33.99	57.43	13.61	0.05	0.08	0.02	2.75	3.12	2.42	1.04	1.48	0.62	48,948	
9/28/19	38.40	75.69	13.47	0.06	0.11	0.02	2.81	3.08	2.39	1.11	1.78	0.62	55,298	
9/29/19	33.35	59.79	11.46	0.05	0.09	0.02	2.78	3.03	2.33	1.01	1.47	0.57	48,024	
Week:	34.03	75.69	9.10	0.05	0.11	0.01	2.77	3.16	1.99	1.04	1.78	0.54	294,010	
9/30/19	30.13	47.01	7.92	0.04	0.07	0.01	2.66	3.07	1.80	0.97	1.26	0.53	43,384	
10/1/19	29.31	45.07	7.43	0.04	0.06	0.01	2.65	3.00	1.69	0.95	1.22	0.53	42,205	
10/2/19	22.45	45.83	12.78	0.03	0.07	0.02	2.56	2.99	2.21	0.82	1.23	0.61	32,323	
Week:	27.29	47.01	7.43	0.04	0.07	0.01	2.62	3.07	1.69	0.91	1.26	0.53	117,912	
Totals:	31.78	75.69	7.43	0.05	0.11	0.01	2.72	3.16	1.69	0.99	1.78	0.53	411,922	

2019.09 Nordstrom MH

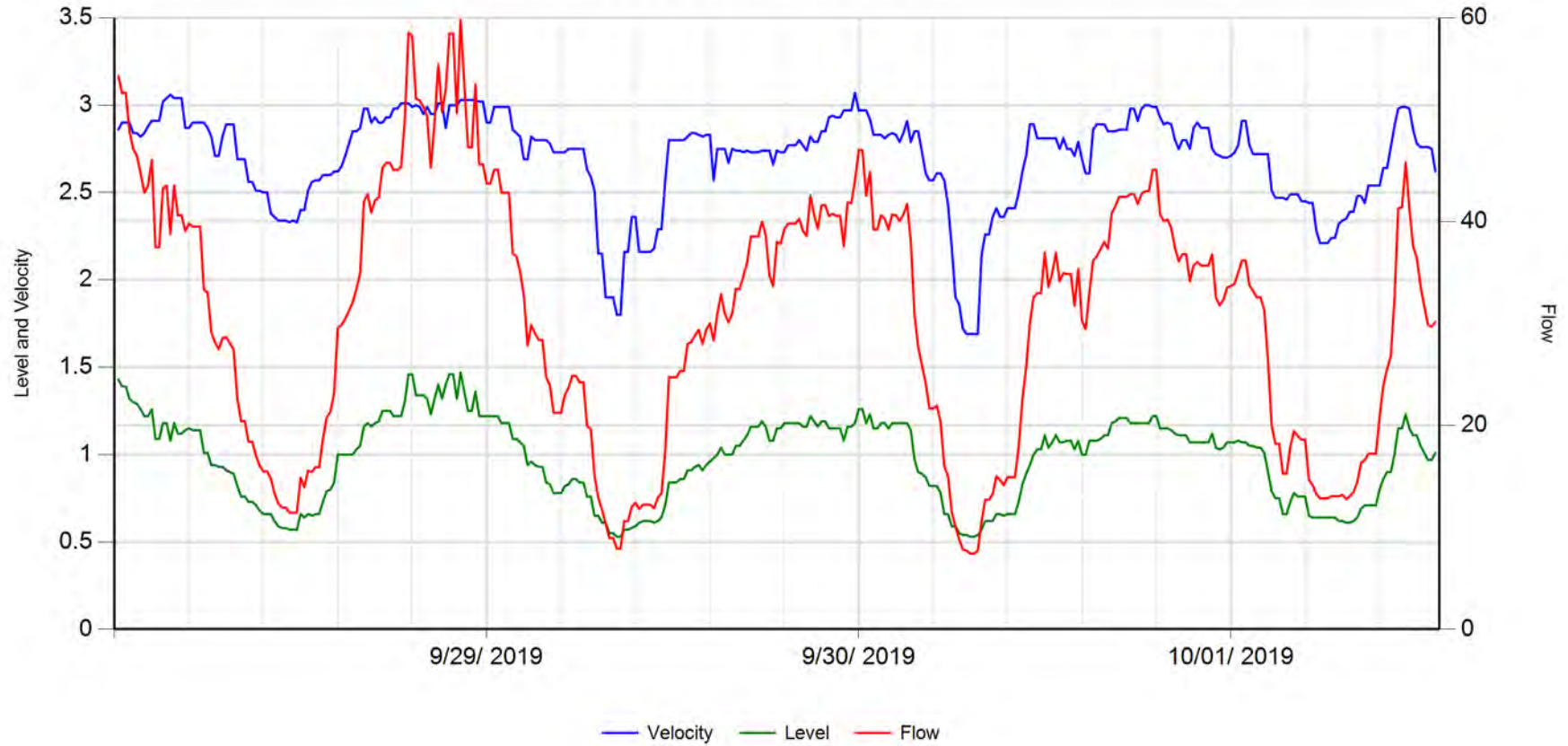


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.745	1.028	33.426	RainFall	Inches
Maximum	3.160	1.780	75.694		
Minimum	1.990	0.540	9.097		



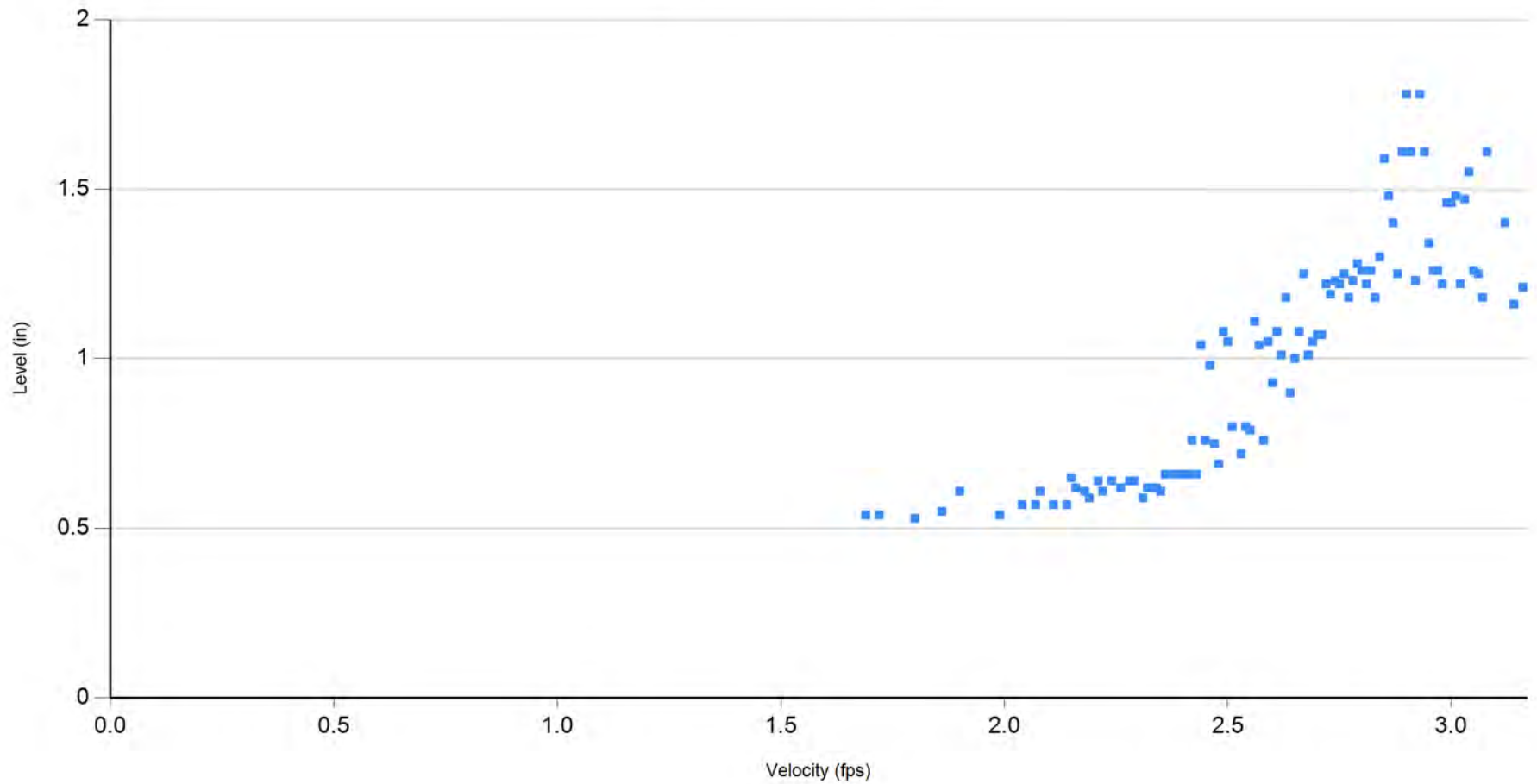
10/14/2019

2019.09 Nordstrom MH



	Velocity (fps)	Level (in)	Flow (gpm)			
Average	2.698	0.974	30.806	RainFall	Inches	
Maximum	3.070	1.470	59.791			
Minimum	1.690	0.530	7.431			
					10/14/2019	

2019.09 Nordstrom MH



09/24/2019 thru 10/02/2019



10/14/2019 11:06:49 AM



raSmith

MH at ~120 Brea Mall

Brea, CA 92821

2019.09 Site 1 MH

MH # unknown

Access:

MH on sidewalk, NE of Cheesecake Factory

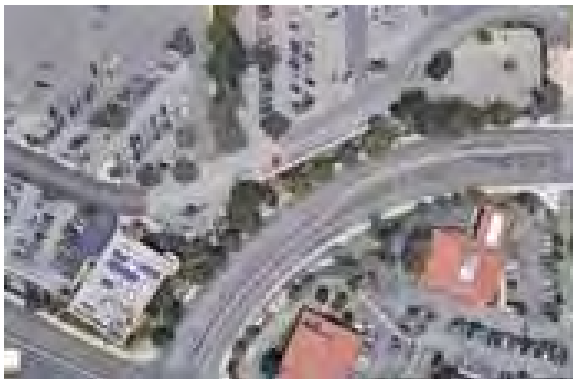
System Type:

Sanitary ☒

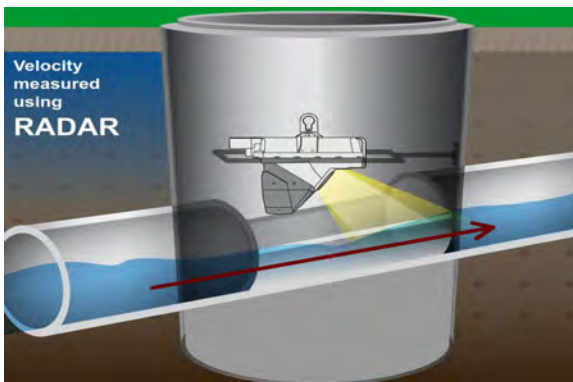
Storm ☐

Install Date: 9/24/2019

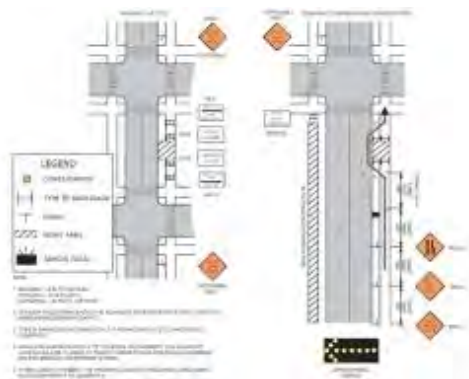
Map



Technology



Traffic Plan



Flow Meter

Meter Depth: 188"

MH Coordinates: 33.912802, -117.887424

Moderate open channel hydraulics with turbulence due to inflow from lateral

Avg Velocity	Avg Measured Level	Multiplier
1.66 fps	2.5"	1.0

Gas

O2	H2S	CO	LEL
20.9	0	0	0

Notes

Two inlets from west & north, eastern line plugged; monitored downstream line to get total flow.

Traffic Safety

No formal TCP required; used cones & signs per WATCH Diagram 2 requirements.

Land Use

Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	202"
Monitored Pipe Size	8"
Inner Pipe Size (In/Out)	8"/8"
Pipe Shape	Round
Pipe Condition	Fair
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	13.90"
Sensor Dist. to Crown	5.90"
Sensor Direction	Downstream
Flow Heading	South



Meter Site Document

2019.09 Site 1 MH

MH at ~120 Brea Mall

Brea, CA 92821

Site



Manhole Before Install



Installation Process



Line From East Plugged



Downstream Pipe Size



Downstream





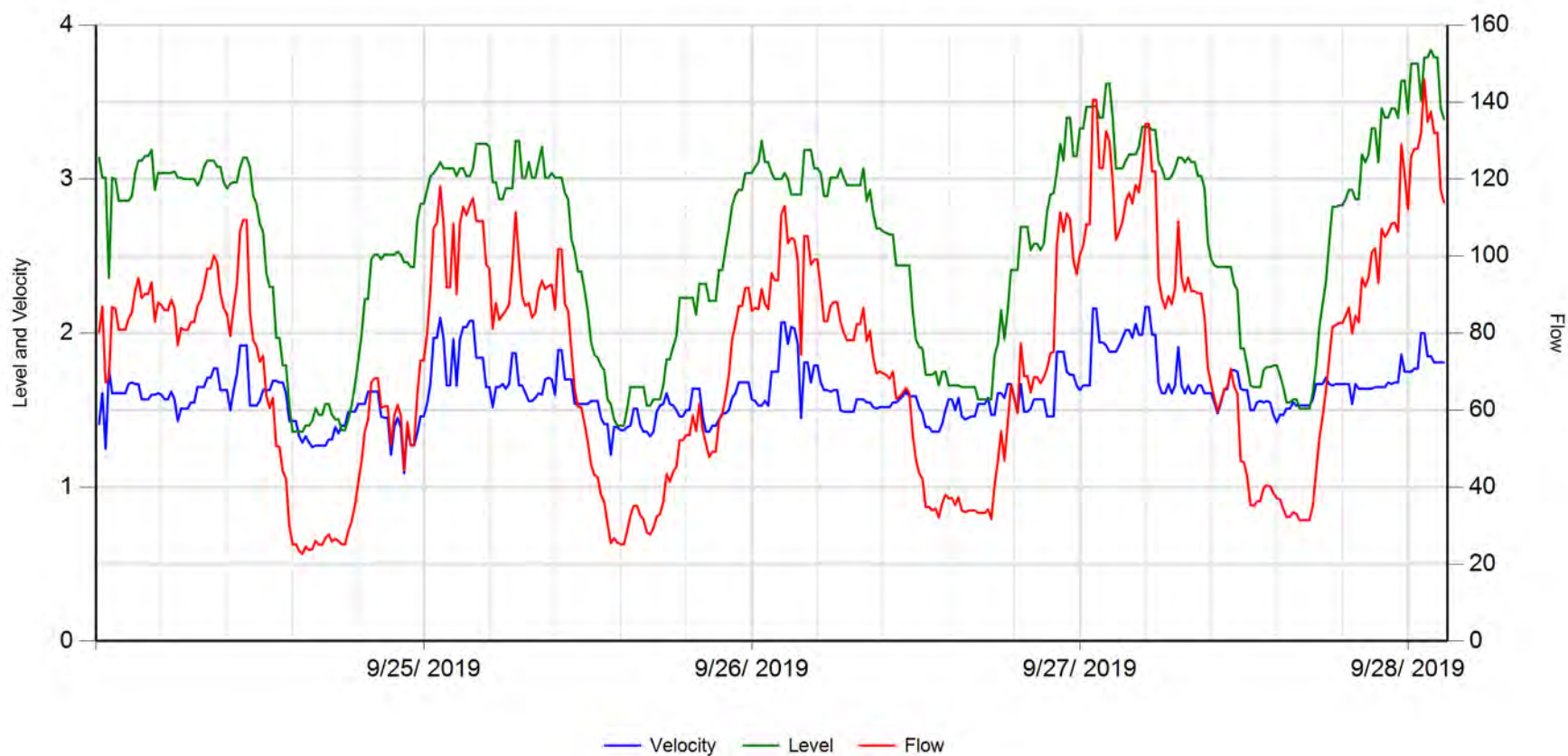
Utility Systems Science and Software

Report Date: 10/14/2019
 Customer: raSmith
 Group: Simon Brea Mall Proj
 Site: 2019.09 Site 1 MH

Statistics for 2019.09 Site 1 MH: 09/24/2019 thru 10/02/2019

	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)				
Date	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Total Gal	Rain
9/24/19	84.67	109.37	50.69	0.12	0.16	0.07	1.62	1.92	1.25	2.94	3.19	1.97	121,920	
9/25/19	68.63	118.19	22.71	0.10	0.17	0.03	1.58	2.10	1.09	2.48	3.25	1.36	98,828	
9/26/19	66.46	113.06	25.21	0.10	0.16	0.04	1.56	2.07	1.21	2.47	3.25	1.40	95,706	
9/27/19	77.93	140.56	31.81	0.11	0.20	0.05	1.67	2.17	1.36	2.63	3.62	1.57	112,215	
9/28/19	85.40	152.36	31.39	0.12	0.22	0.05	1.74	2.43	1.42	2.74	3.84	1.51	122,980	
9/29/19	76.35	142.36	23.47	0.11	0.21	0.03	1.63	2.12	1.29	2.59	3.75	1.39	109,941	
Week:	76.57	152.36	22.71	0.11	0.22	0.03	1.63	2.43	1.09	2.64	3.84	1.36	661,590	
9/30/19	67.24	114.10	24.17	0.10	0.16	0.03	1.56	1.82	1.31	2.48	3.37	1.40	96,823	
10/1/19	59.54	90.42	21.39	0.09	0.13	0.03	1.48	1.68	1.25	2.37	3.15	1.33	85,743	
10/2/19	39.28	83.61	24.58	0.06	0.12	0.04	1.48	1.69	1.32	1.77	2.83	1.37	56,561	
Week:	55.35	114.10	21.39	0.08	0.16	0.03	1.51	1.82	1.25	2.21	3.37	1.33	239,127	
Totals:	69.50	152.36	21.39	0.10	0.22	0.03	1.59	2.43	1.09	2.50	3.84	1.33	900,717	

2019.09 Site 1 MH

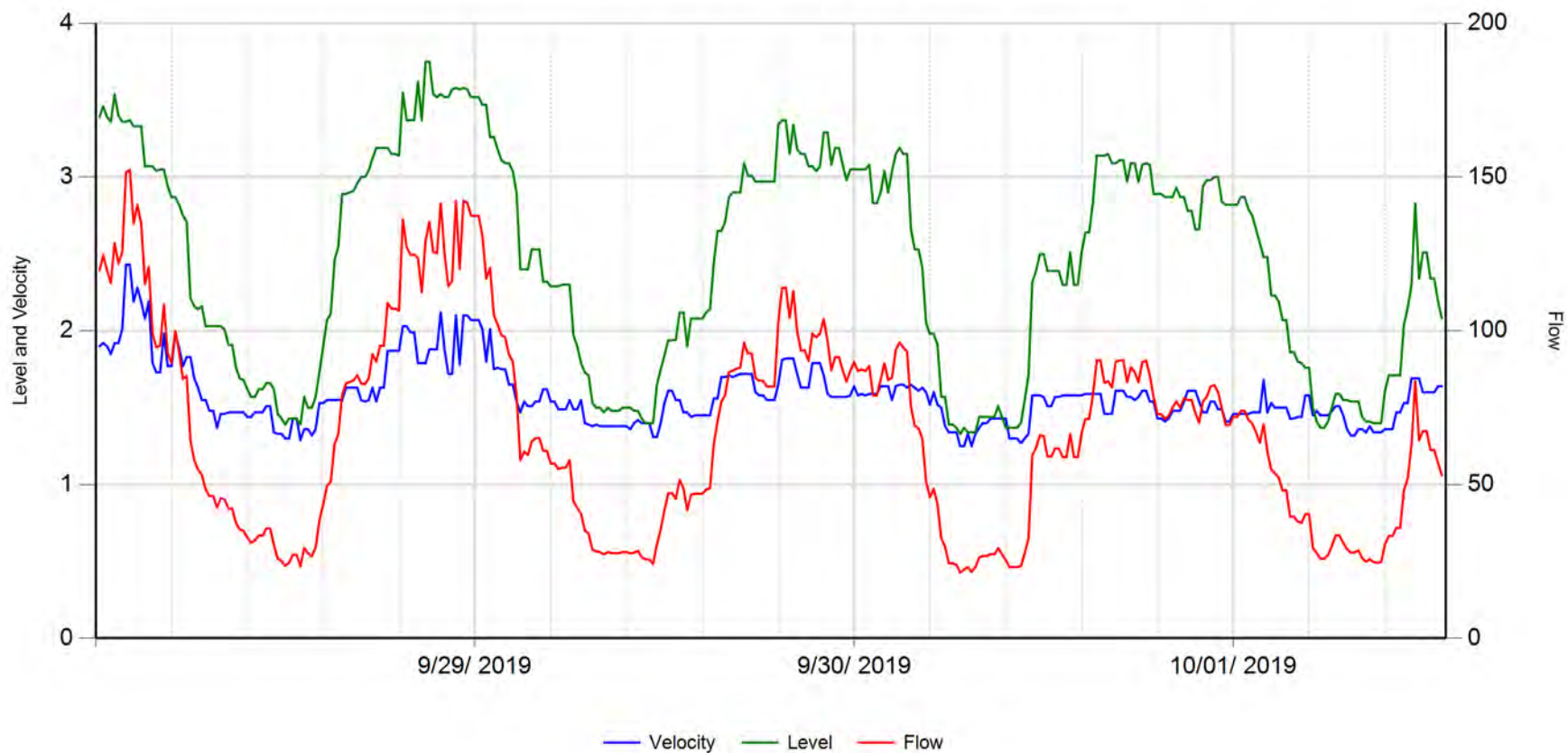


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.615	2.598	73.788	RainFall	Inches
Maximum	2.170	3.840	145.833		
Minimum	1.090	1.360	22.708		



10/14/2019

2019.09 Site 1 MH

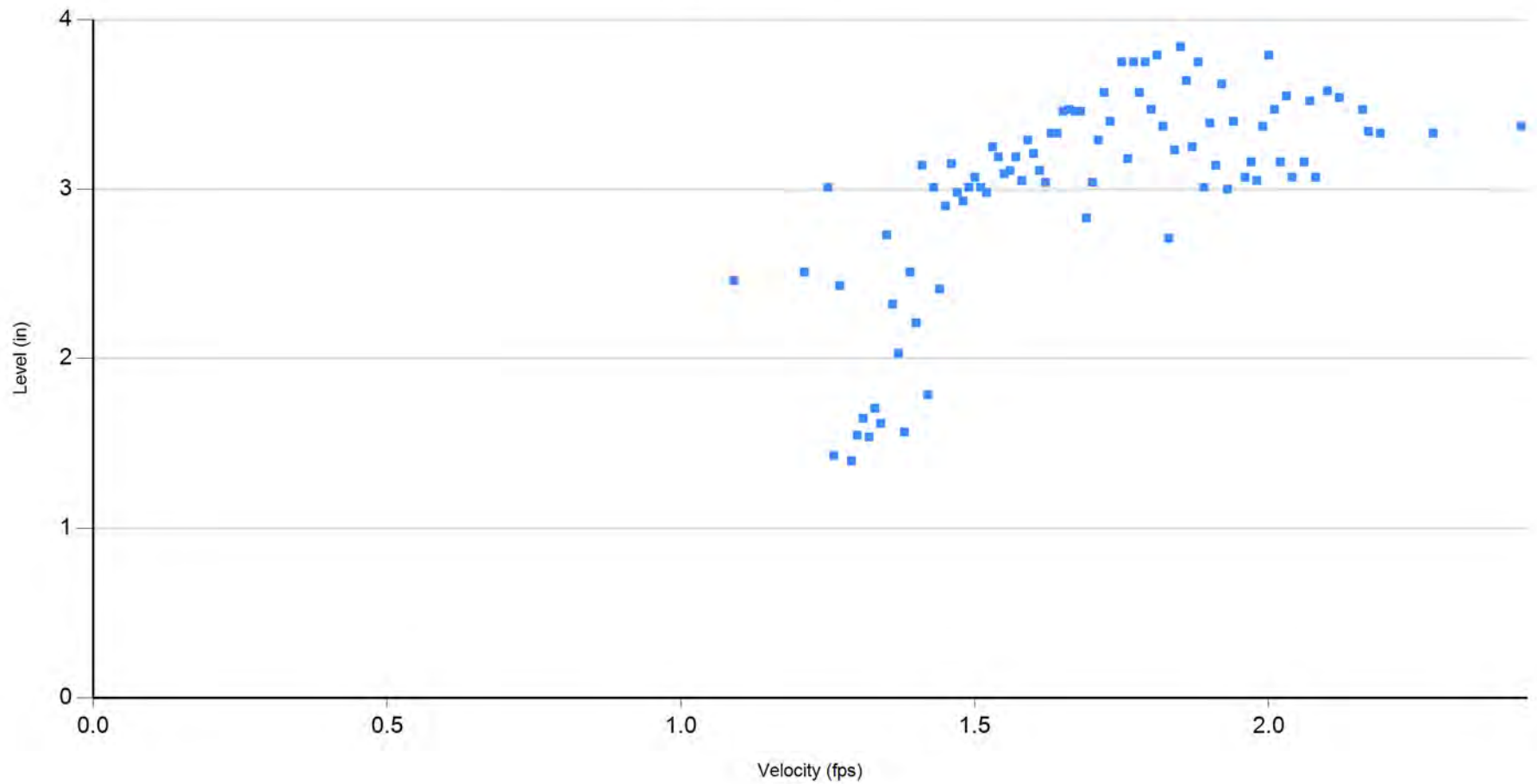


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.580	2.447	67.636	RainFall	Inches
Maximum	2.430	3.750	152.361		
Minimum	1.250	1.330	21.389		



10/14/2019

2019.09 Site 1 MH



09/24/2019 thru 10/02/2019



10/14/2019 11:08:05 AM



raSmith

MH at ~405 S State College Blvd

Brea, CA 92821

2019.09 Site 2 MH 14-273

MH # 14-273

Access:

MH on sidewalk

System Type:

Sanitary ☒

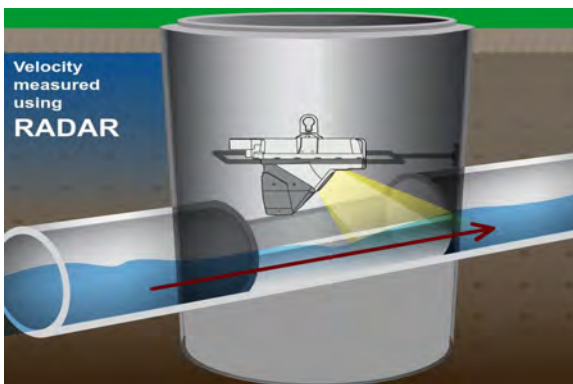
Storm ☐

Install Date: 9/24/2019

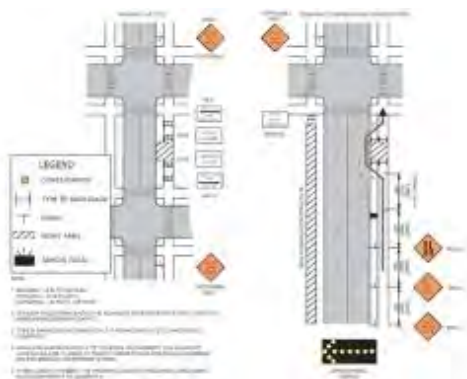
Map



Technology



Traffic Plan



Flow Meter

Meter Depth: 95"

MH Coordinates: 33.910330, -117.888919

Moderate open channel hydraulics

Avg Velocity	Avg Measured Level	Multiplier
3.25 fps	1.75"	1.75

Gas

O2	H2S	CO	LEL
20.9	0	0	0

Notes

No laterals; monitored the downstream line as it provided the best hydraulics.

Traffic Safety

No formal TCP required; used cones & signs per WATCH Diagram 2 requirements.

Land Use

Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth 110"

Monitored Pipe Size 8"

Inner Pipe Size (In/Out) 8"/8"

Pipe Shape Round

Pipe Condition Fair

Manhole Material Concrete

Silt 0

Velocity Profile Data *

Velocity Profile Taken 0.4 2-D

Sensor Offset 14.53"

Sensor Dist. to Crown 6.53"

Sensor Direction Downstream

Flow Heading South



Meter Site Document

2019.09 Site 2 MH 14-273

MH at ~405 S State College Blvd

Brea, CA 92821

Site



Manhole Before Install



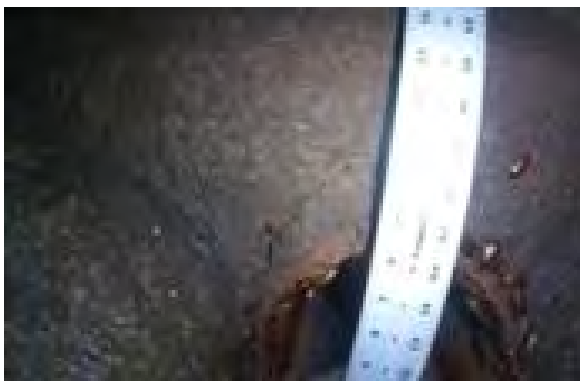
Installation Process



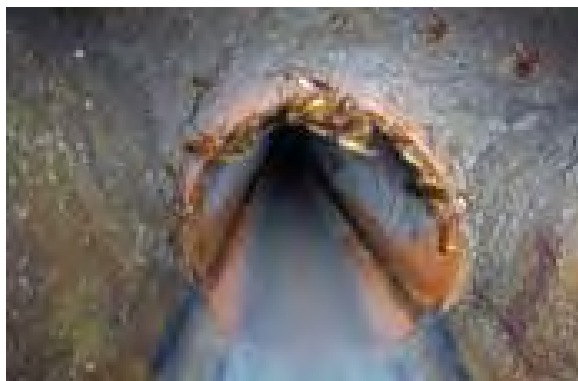
Installed



Downstream Pipe Size



Downstream





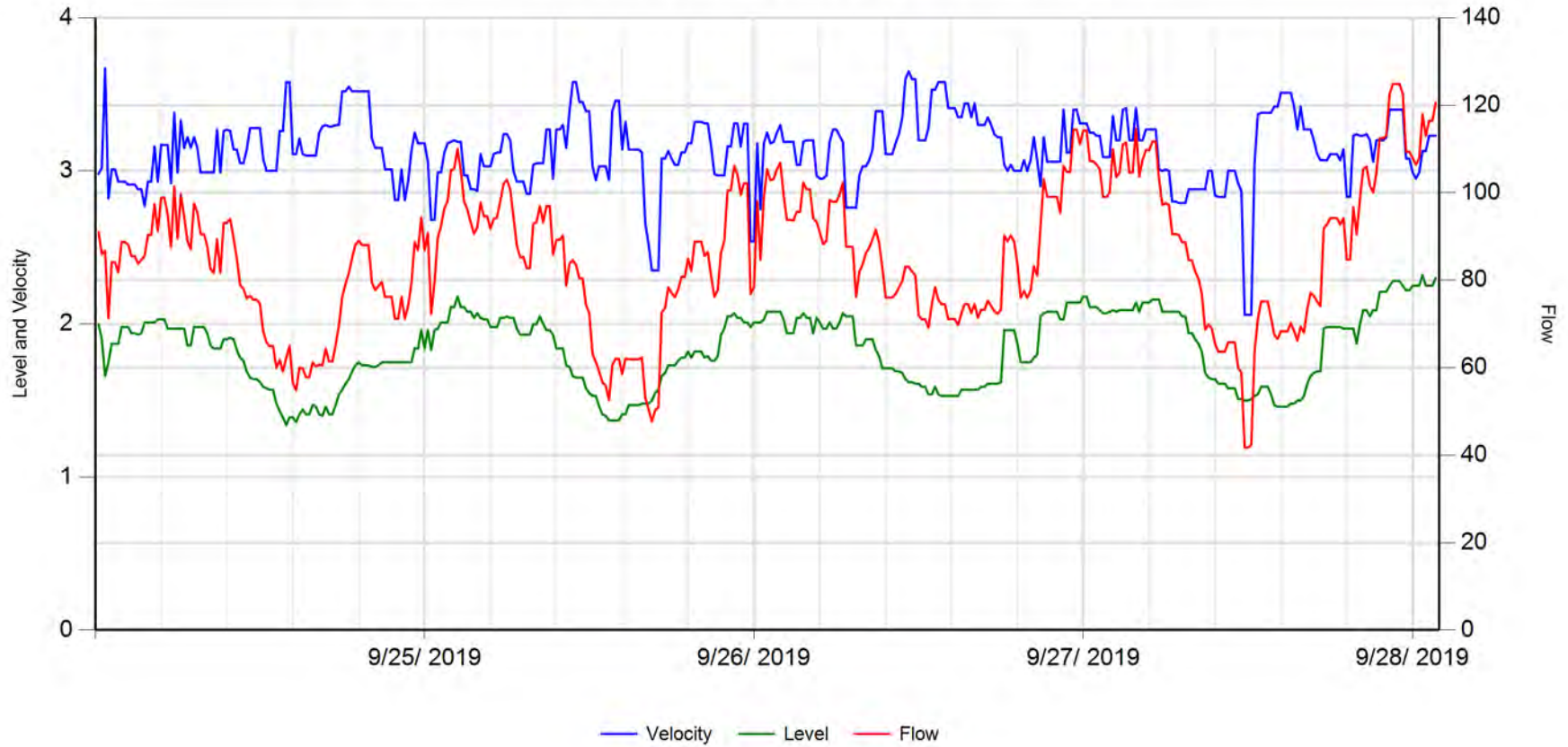
Utility Systems Science and Software

Report Date: 10/14/2019
 Customer: raSmith
 Group: Simon Brea Mall Proj
 Site: 2019.09 Site 2 MH 14-273

Statistics for 2019.09 Site 2 MH 14-273: 09/24/2019 thru 10/02/2019

	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)				
Date	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Total Gal	Rain
9/24/19	87.10	101.39	68.33	0.13	0.15	0.10	3.08	3.67	2.77	1.89	2.03	1.59	125,425	
9/25/19	81.91	110.00	54.86	0.12	0.16	0.08	3.15	3.58	2.68	1.78	2.18	1.34	117,953	
9/26/19	82.46	106.87	47.71	0.12	0.15	0.07	3.10	3.46	2.35	1.81	2.08	1.37	118,745	
9/27/19	89.30	114.58	68.68	0.13	0.17	0.10	3.20	3.65	2.79	1.87	2.18	1.53	128,592	
9/28/19	90.88	124.86	41.74	0.13	0.18	0.06	3.15	3.51	2.06	1.91	2.32	1.46	130,861	
9/29/19	83.02	118.61	41.94	0.12	0.17	0.06	3.10	3.35	2.28	1.81	2.29	1.34	119,555	
Week:	85.78	124.86	41.74	0.12	0.18	0.06	3.13	3.67	2.06	1.84	2.32	1.34	741,132	
9/30/19	83.98	106.25	45.28	0.12	0.15	0.07	3.17	3.78	2.36	1.80	2.12	1.44	120,932	
10/1/19	80.81	103.61	50.56	0.12	0.15	0.07	3.15	3.51	2.67	1.76	2.09	1.40	116,369	
10/2/19	70.66	97.15	40.28	0.10	0.14	0.06	3.06	3.71	1.96	1.63	1.94	1.47	101,746	
Week:	78.48	106.25	40.28	0.11	0.15	0.06	3.13	3.78	1.96	1.73	2.12	1.40	339,047	
Totals:	83.35	124.86	40.28	0.12	0.18	0.06	3.13	3.78	1.96	1.81	2.32	1.34	1,080,179	

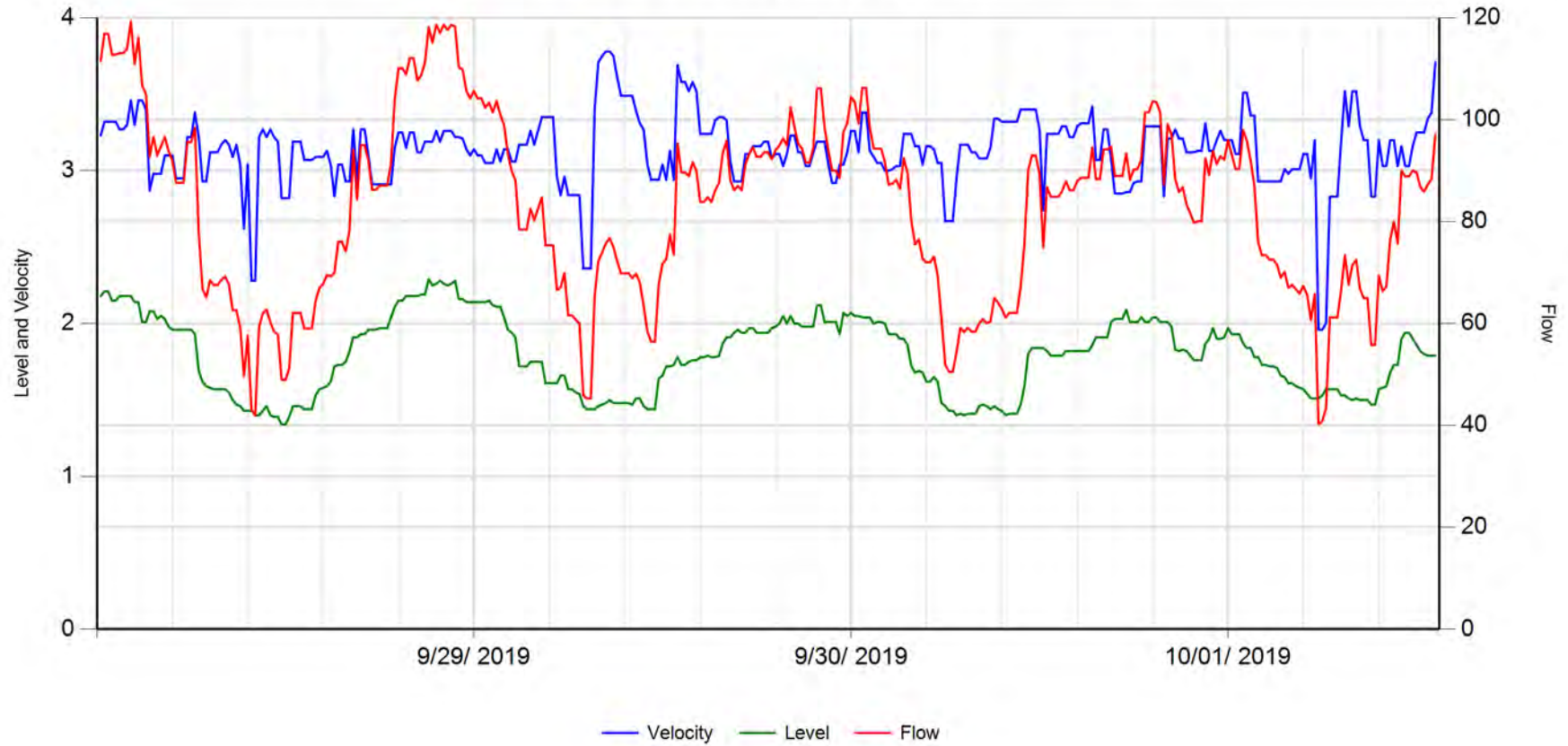
2019.09 Site 2 MH 14-273



	Velocity (fps)	Level (in)	Flow (gpm)	RainFall	Inches	
Average	3.139	1.834	85.241			
Maximum	3.670	2.320	124.861			
Minimum	2.060	1.340	41.736			

10/14/2019

2019.09 Site 2 MH 14-273

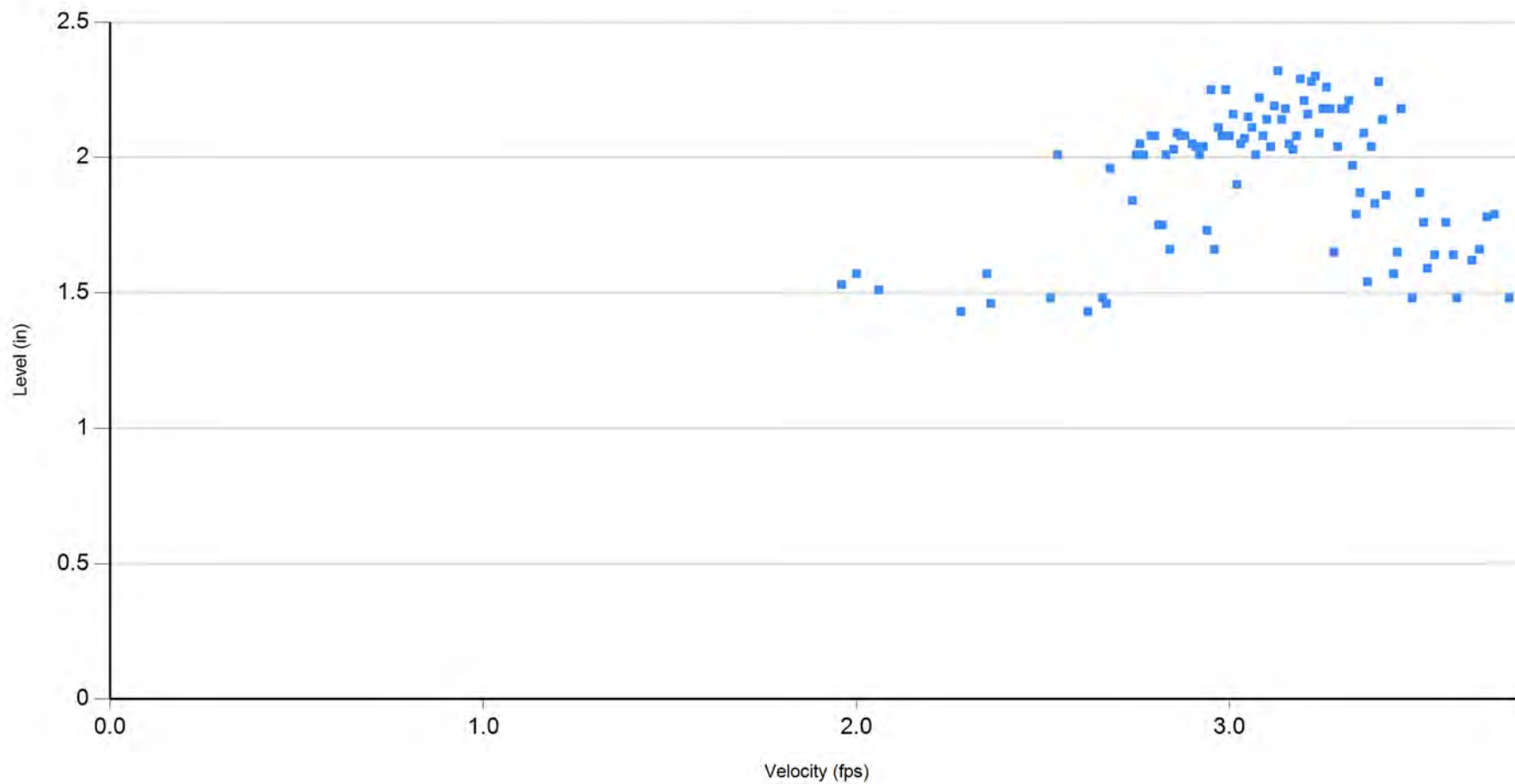


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	3.135	1.792	82.738	RainFall	Inches
Maximum	3.780	2.290	119.305		
Minimum	1.960	1.340	40.278		



10/14/2019

2019.09 Site 2 MH 14-273



09/24/2019 thru 10/02/2019



10/14/2019 11:08:46 AM



raSmith

MH at ~454 S State College Blvd

Brea, CA 92821

2019.09 Site 3 MH

MH # unknown

Access:

MH in center of painted median

System Type:

Sanitary ☒

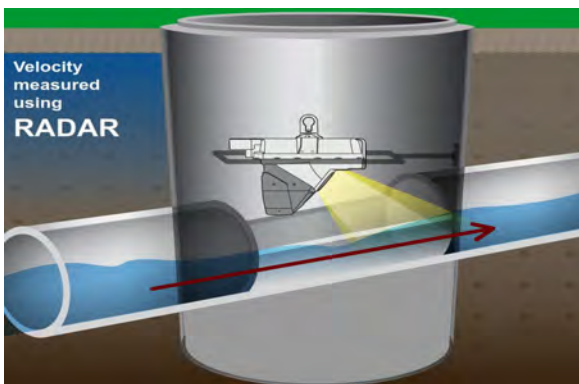
Storm ☐

Install Date: 9/24/2019

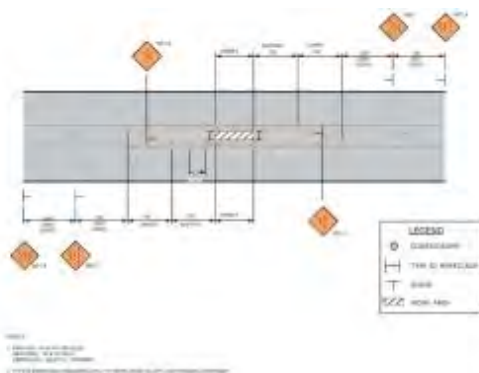
Map



Technology



Traffic Plan



Flow Meter

Meter Depth: 281"

MH Coordinates: 33.909322, -117.889302

Poor open channel hydraulics due to inflow from multiple drop inlets

Avg Velocity	Avg Measured Level	Multiplier
3.75 fps	5.25"	1.0

Gas

O2	H2S	CO	LEL
20.9	0	0	0

Notes

Three inlets, one from west & two from north; monitored downstream line to get total flow.

Traffic Safety

No formal TCP required; used cones & signs per WATCH Diagram 20 requirements.

Land Use

Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth 306"

Monitored Pipe Size 18"

Inner Pipe Size (In/Out) 12"/18"

Pipe Shape Round

Pipe Condition Fair

Manhole Material Lined

Silt 0

Velocity Profile Data *

Velocity Profile Taken 0.4 2-D

Sensor Offset 24.73"

Sensor Dist. to Crown 6.73"

Sensor Direction Downstream

Flow Heading East



Meter Site Document

2019.09 Site 3 MH

MH at ~454 S State College Blvd

Brea, CA 92821

Site



Manhole Before Install



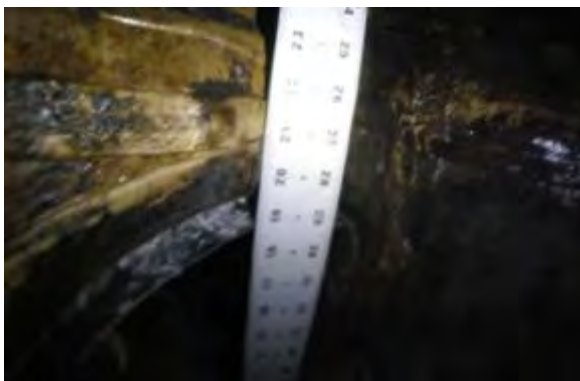
Installation Process



Upstream



Downstream Pipe Size



Downstream





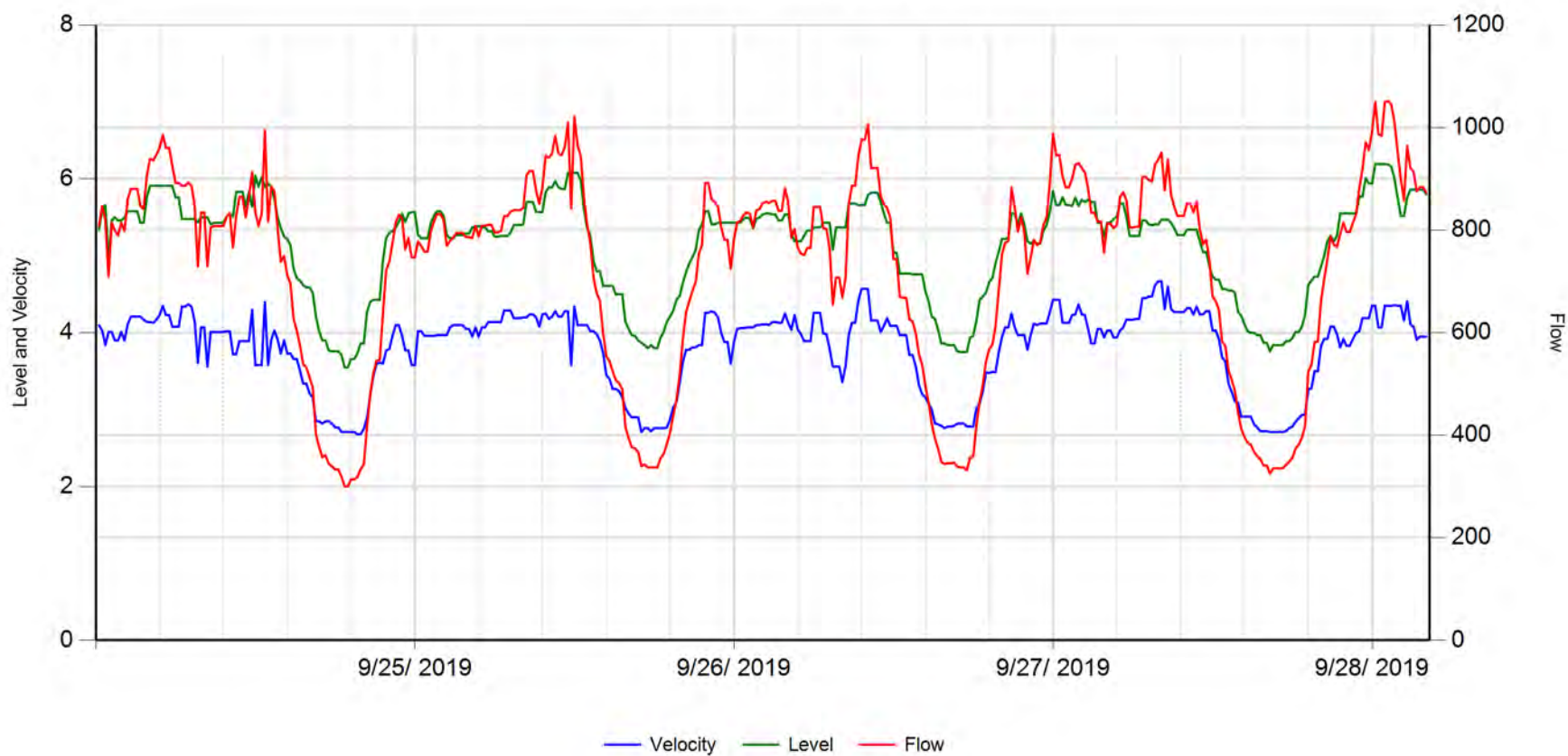
Utility Systems Science and Software

Report Date: 10/14/2019
 Customer: raSmith
 Group: Simon Brea Mall Proj
 Site: 2019.09 Site 3 MH

Statistics for 2019.09 Site 3 MH: 09/24/2019 thru 10/02/2019

	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)				
Date	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Total Gal	Rain
9/24/19	845.91	994.79	696.32	1.22	1.43	1.00	4.01	4.40	3.56	5.61	6.04	4.94	1,218,118	
9/25/19	709.73	1022.01	300.49	1.02	1.47	0.43	3.76	4.34	2.68	5.07	6.08	3.55	1,022,010	
9/26/19	706.71	1006.39	337.43	1.02	1.45	0.49	3.77	4.57	2.71	5.07	5.82	3.80	1,017,664	
9/27/19	726.74	988.40	331.87	1.05	1.42	0.48	3.87	4.67	2.76	5.07	5.84	3.75	1,046,502	
9/28/19	721.10	1052.08	325.42	1.04	1.52	0.47	3.76	4.41	2.71	5.12	6.20	3.76	1,038,385	
9/29/19	705.81	992.29	284.17	1.02	1.43	0.41	3.60	4.28	2.45	5.17	6.07	3.66	1,016,368	
Week:	736.00	1052.08	284.17	1.06	1.52	0.41	3.79	4.67	2.45	5.19	6.20	3.55	6,359,046	
9/30/19	711.71	998.19	296.32	1.03	1.44	0.43	3.57	4.17	2.35	5.26	6.15	3.86	1,024,869	
10/1/19	705.50	1036.18	292.92	1.02	1.49	0.42	3.56	4.14	2.44	5.25	6.36	3.76	1,015,916	
10/2/19	537.75	817.22	314.10	0.77	1.18	0.45	3.22	3.97	2.65	4.63	5.54	3.68	774,354	
Week:	651.65	1036.18	292.92	0.94	1.49	0.42	3.45	4.17	2.35	5.04	6.36	3.68	2,815,138	
Totals:	707.88	1052.08	284.17	1.02	1.52	0.41	3.68	4.67	2.35	5.14	6.36	3.55	9,174,184	

2019.09 Site 3 MH

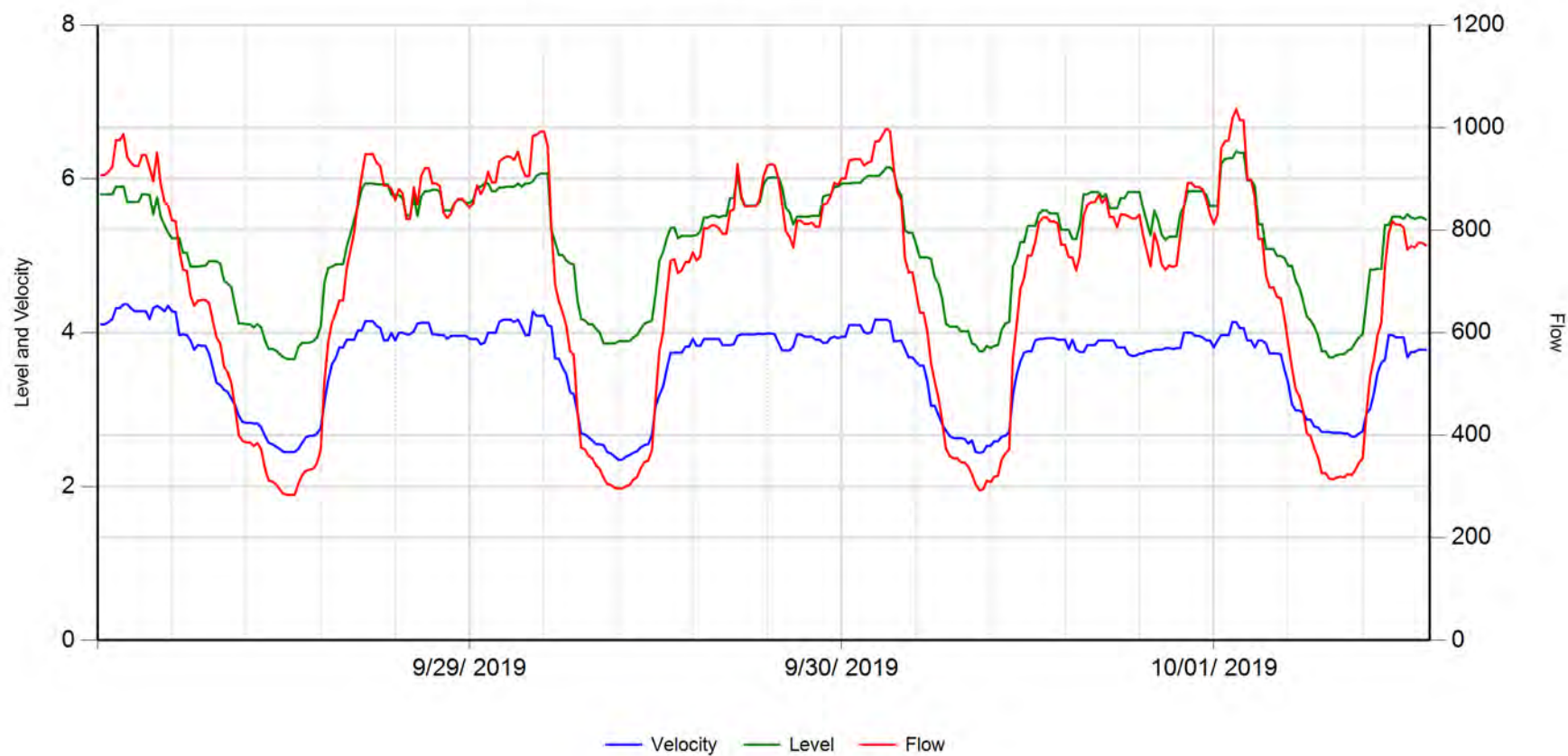


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	3.793	5.134	725.440	RainFall	Inches
Maximum	4.670	6.200	1052.080		
Minimum	2.680	3.550	300.485		



10/14/2019

2019.09 Site 3 MH

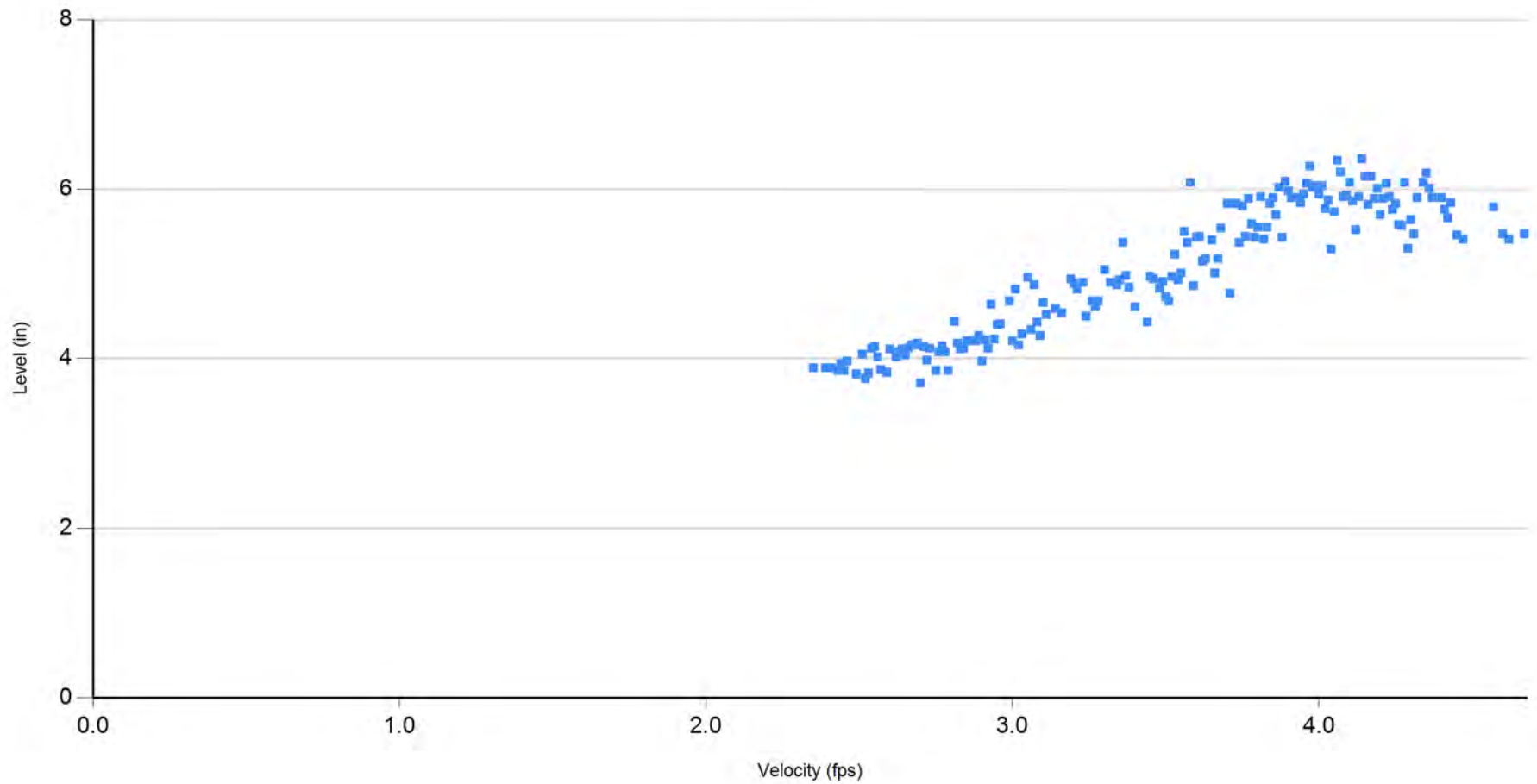


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	3.584	5.177	700.058	RainFall	Inches
Maximum	4.370	6.360	1036.177		
Minimum	2.350	3.660	284.166		



10/14/2019

2019.09 Site 3 MH



09/24/2019 thru 10/02/2019



10/14/2019 11:09:15 AM



raSmith

MH at ~471 S State College Blvd

Brea, CA 92821

2019.10 Site 4 MH

MH # unknown

Access:

MH in park, E of address

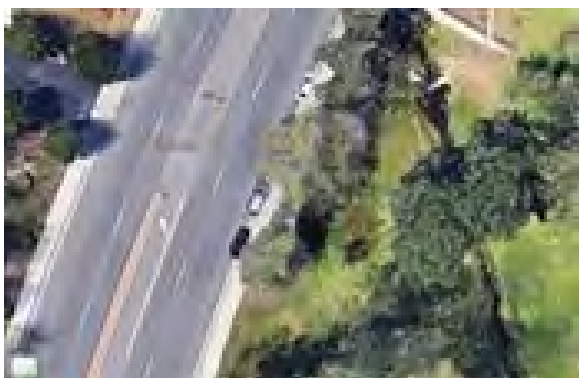
System Type:

Sanitary ☒

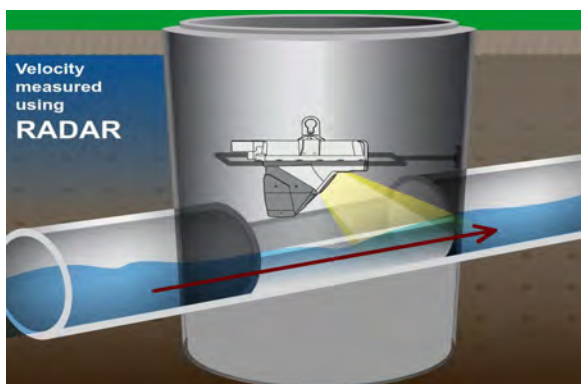
Storm ☐

Install Date: 10/02/2018

Map



Technology



MH In Park



Flow Meter

Meter Depth: 85"

MH Coordinates: 33.909049, -117.889105

Moderate open channel hydraulics

Avg Velocity	Avg Measured Level	Multiplier
3.75 fps	4.0"	1.4

Gas

O2	H2S	CO	LEL
20.9	0	0	0

Notes

Three inlets, one from west, one from north & one from south; monitored downstream line to get total flow.

Traffic Safety

MH in open space, no traffic control required.

Land Use

Residential	Commercial	Industrial	Trunk
X	X		X

Manhole Depth	110"
Monitored Pipe Size	18"
Inner Pipe Size (In/Out)	18"/18"
Pipe Shape	Round
Pipe Condition	Poor
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	24.87"
Sensor Dist. to Crown	6.87"
Sensor Direction	Downstream
Flow Heading	East



Meter Site Document

2019.10 Site 4 MH

MH at ~471 S State College Blvd

Brea, CA 92821

Site



Manhole Before Install



Installation Process



Installed



Upstream



Downstream





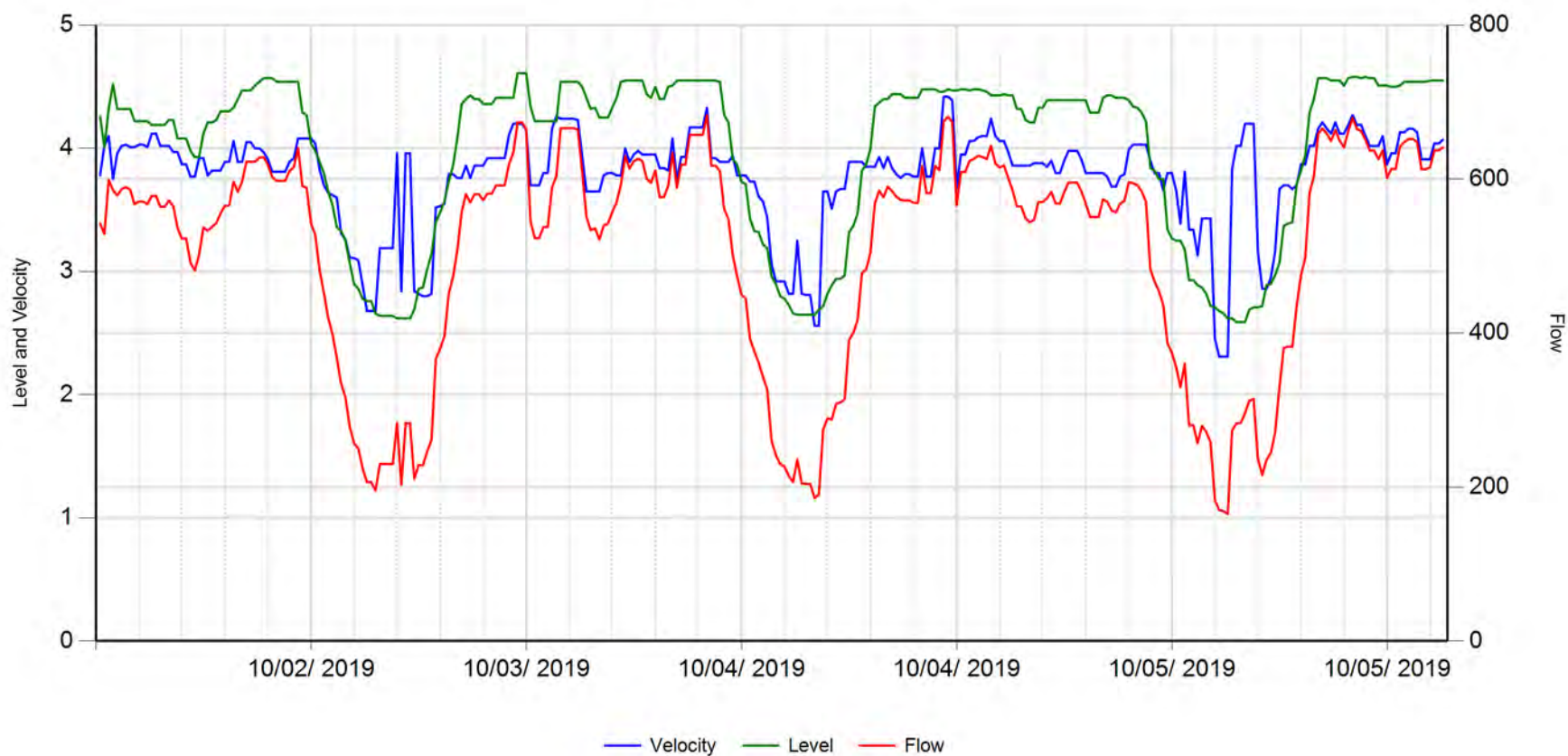
Utility Systems Science and Software

Report Date: 10/14/2019
 Customer: US3
 Group: Simon Brea Mall Proj
 Site: 2019.10 Site 4 MH

Statistics for 2019.10 Site 4 MH: 10/02/2019 thru 10/10/2019

	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)				
Date	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Total Gal	Rain
10/2/19	569.03	640.35	452.36	0.82	0.92	0.65	3.94	4.12	3.70	4.28	4.57	3.80	819,407	
10/3/19	499.41	683.19	195.83	0.72	0.98	0.28	3.72	4.33	2.68	3.98	4.61	2.62	719,146	
10/4/19	499.45	681.04	186.11	0.72	0.98	0.27	3.75	4.42	2.56	3.97	4.48	2.65	719,208	
10/5/19	495.97	679.23	165.14	0.71	0.98	0.24	3.78	4.27	2.31	3.92	4.58	2.59	714,196	
10/6/19	512.46	723.40	235.83	0.74	1.04	0.34	3.83	4.25	3.14	3.99	4.94	2.53	737,948	
Week:	515.26	723.40	165.14	0.74	1.04	0.24	3.81	4.42	2.31	4.03	4.94	2.53	3,709,904	
10/7/19	517.15	721.94	253.26	0.75	1.04	0.36	3.86	4.49	3.01	3.99	4.64	2.83	744,694	
10/8/19	498.44	699.72	202.85	0.72	1.01	0.29	3.77	4.36	2.63	3.94	4.61	2.73	717,759	
10/9/19	505.47	678.47	217.57	0.73	0.98	0.31	3.84	4.39	2.69	3.95	4.65	2.64	727,870	
10/10/19	335.23	513.82	201.60	0.48	0.74	0.29	3.63	4.13	2.62	3.11	3.93	2.59	482,733	
Week:	464.07	721.94	201.60	0.67	1.04	0.29	3.78	4.49	2.62	3.75	4.65	2.59	2,673,055	
Totals:	492.51	723.40	165.14	0.71	1.04	0.24	3.79	4.49	2.31	3.90	4.94	2.53	6,382,959	

2019.10 Site 4 MH

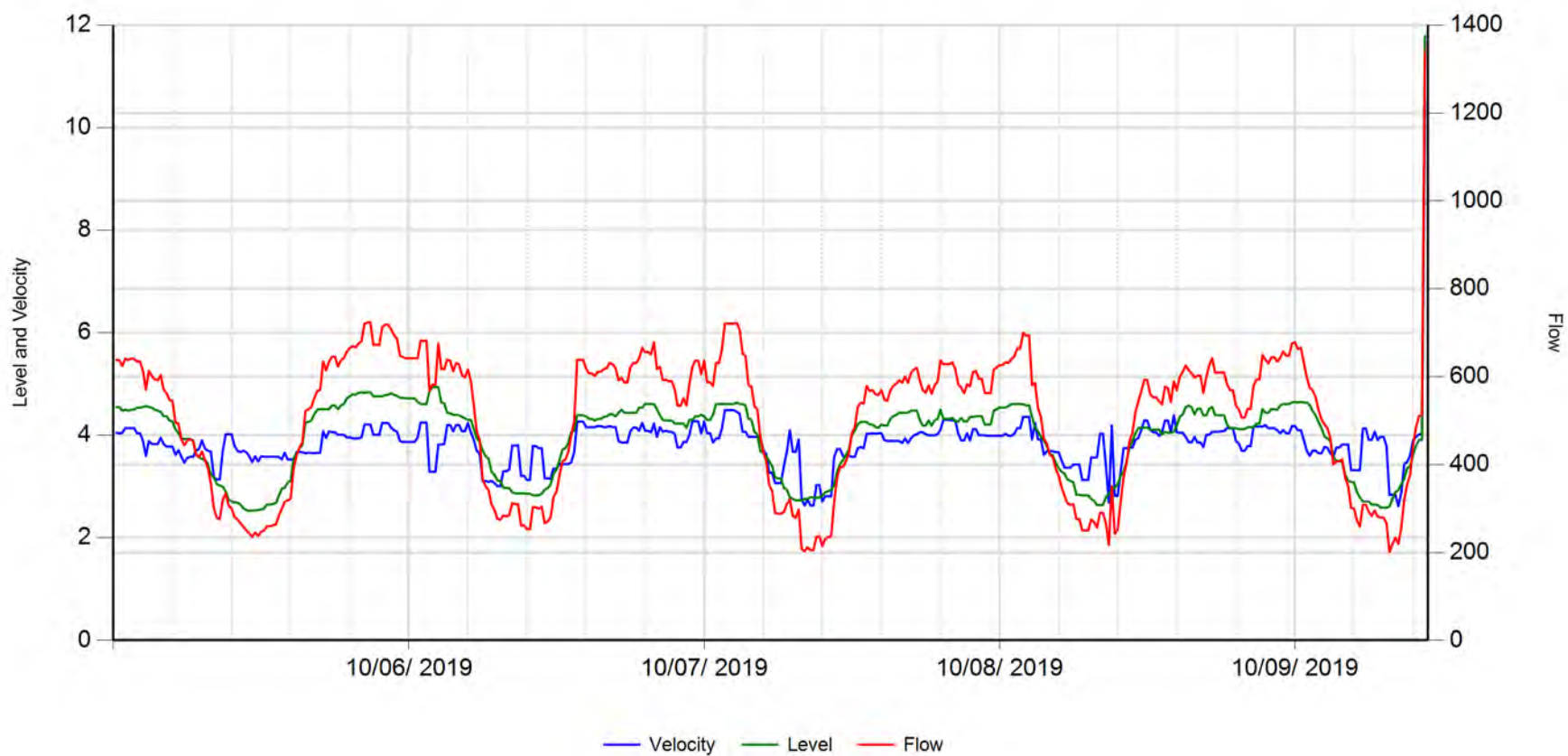


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	3.776	3.977	504.282	RainFall	Inches
Maximum	4.420	4.610	683.192		
Minimum	2.310	2.590	165.138		



10/14/2019

2019.10 Site 4 MH

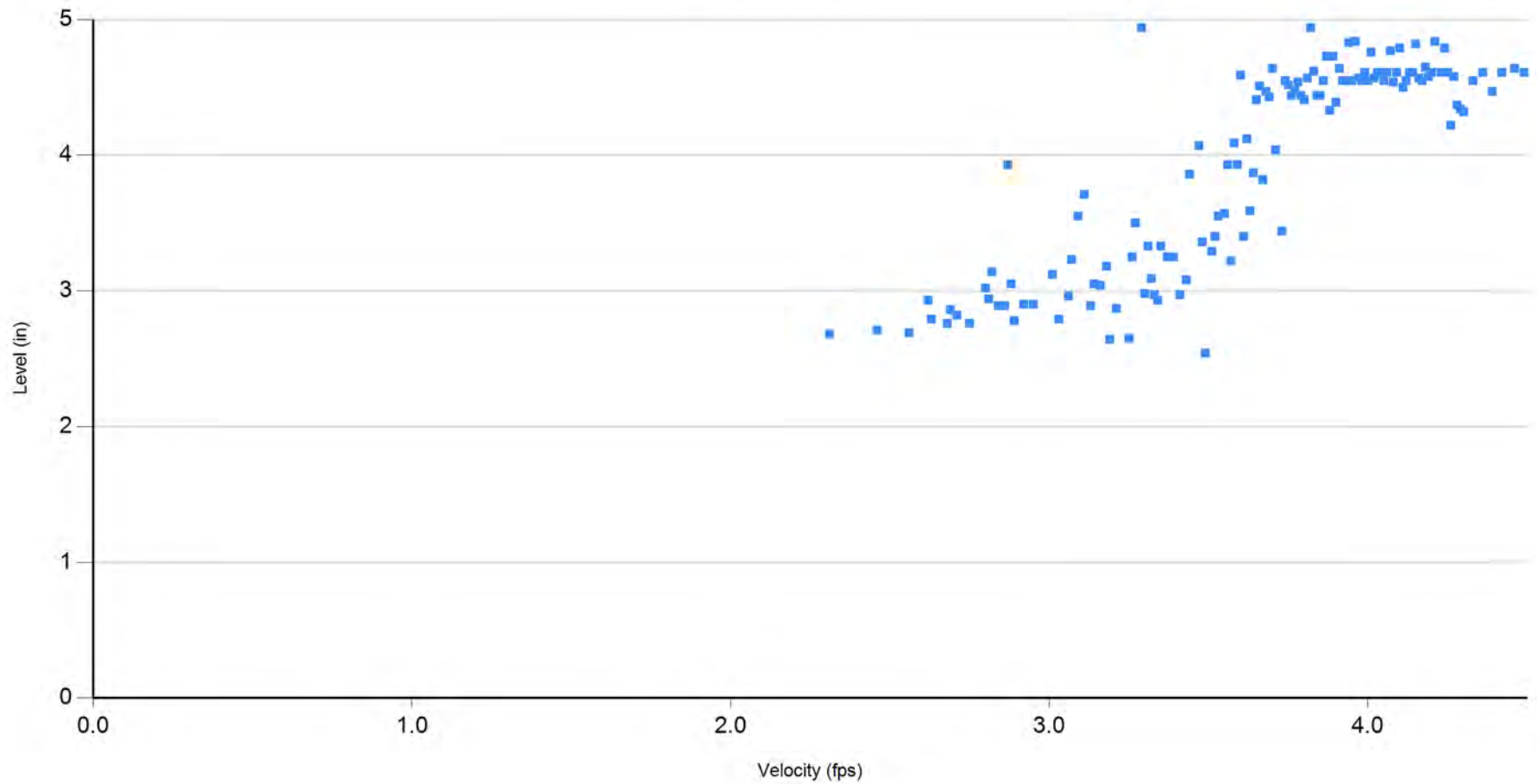


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	3.811	3.928	499.087	RainFall	Inches
Maximum	4.490	4.940	723.401		
Minimum	2.620	2.530	201.597		



10/14/2019

2019.10 Site 4 MH



10/02/2019 thru 10/10/2019



10/14/2019 1:30:40 PM



raSmith

MH at ~120 Brea Mall

Brea, CA 92821

2019.10 Site 1 MH US

MH # unknown

Access:

MH on CL of parking lot access road,
NE of address

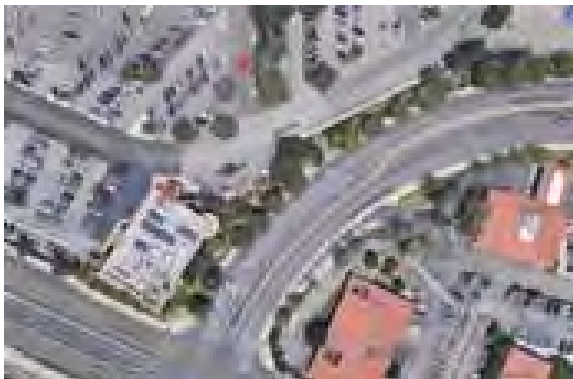
System Type:

Sanitary ☒

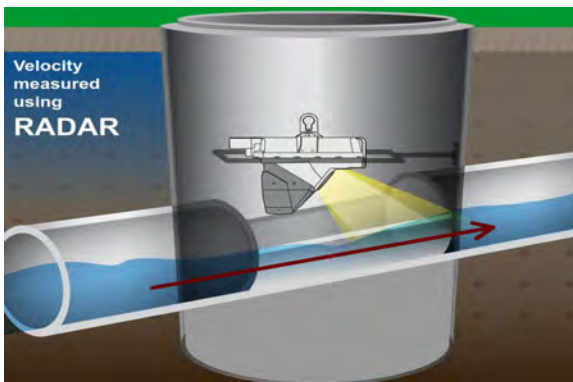
Storm ☐

Install Date: 10/04/2019

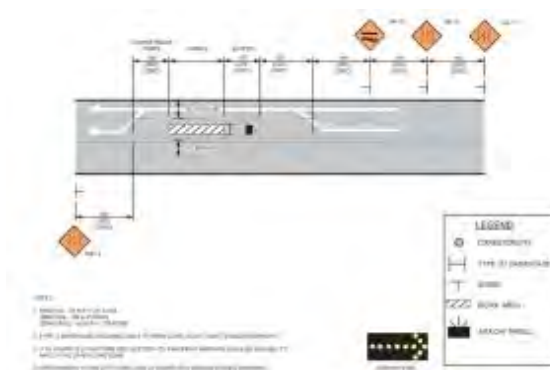
Map



Technology



Traffic Plan



Flow Meter

Meter Depth: 153"

MH Coordinates: 33.915117, -117.888619

Moderate open channel hydraulics

Avg Velocity	Avg Measured Level	Multiplier
2.0 fps	2.66"	1.0

Gas

O2	H2S	CO	LEL
20.9	0	0	0

Notes

Two inlets from west & north; monitored
downstream line to get total flow.

Traffic Safety

No formal TCP required; used cones & signs per
WATCH Diagram 15 requirements.

Land Use

Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	172"
Monitored Pipe Size	8"
Inner Pipe Size (In/Out)	8"/8"
Pipe Shape	Round
Pipe Condition	Fair
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	18.96"
Sensor Dist. to Crown	10.96"
Sensor Direction	Downstream
Flow Heading	East



Meter Site Document

2019.10 Site 1 MH US

MH at ~120 Brea Mall

Brea, CA 92821

Site



Manhole Before Install



Installation Process



Installed



Downstream Pipe Size



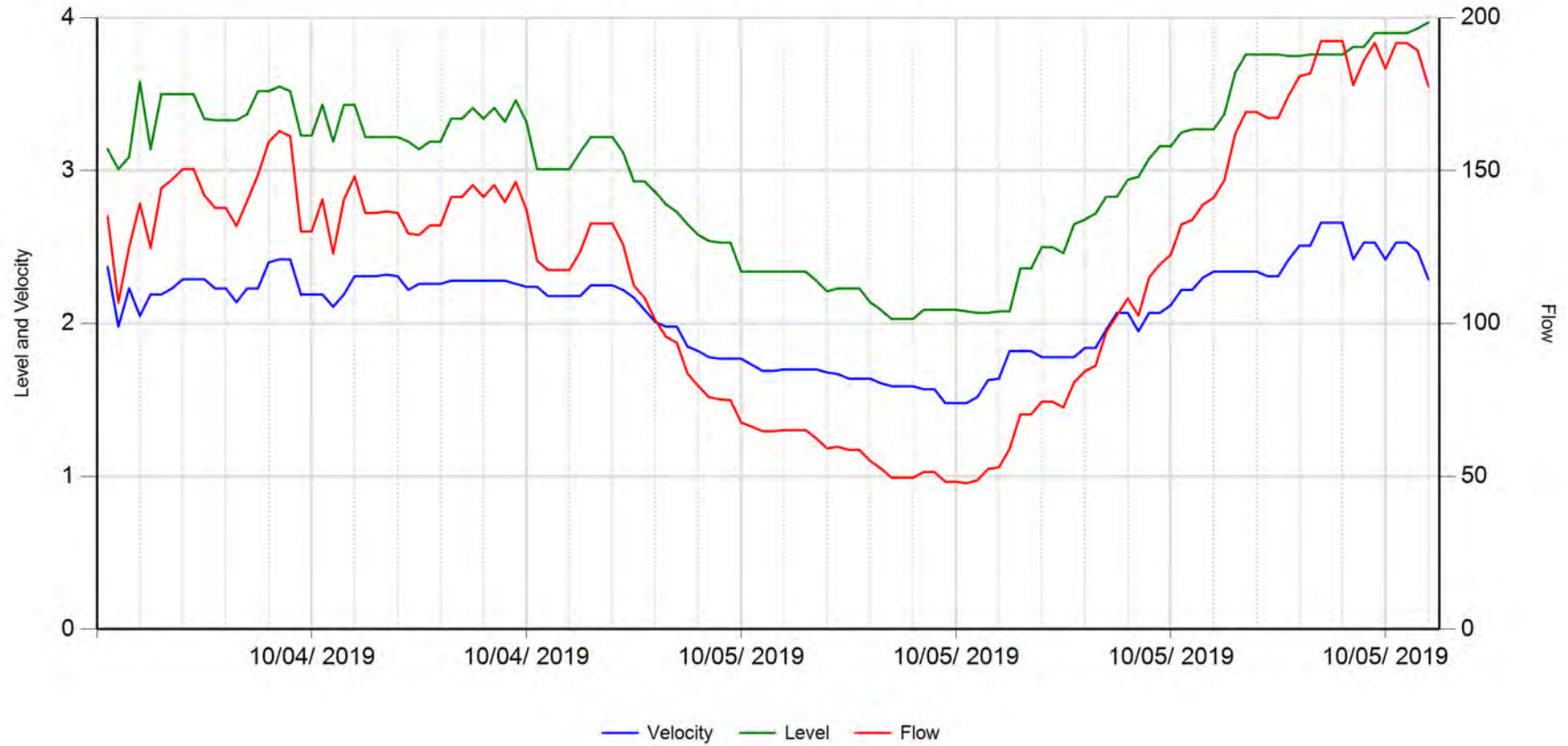
Downstream



Statistics for 2019.10 Site 1 MH US: 10/04/2019 thru 10/10/2019

	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)				
Date	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Total Gal	Rain
10/4/19	131.40	162.92	79.58	0.19	0.23	0.11	2.21	2.42	1.82	3.23	3.58	2.58	189,215	
10/5/19	113.06	192.36	47.78	0.16	0.28	0.07	2.04	2.66	1.48	2.96	3.97	2.03	162,803	
10/6/19	101.65	176.11	44.72	0.15	0.25	0.06	1.96	2.44	1.51	2.81	3.83	1.94	146,383	
Week:	115.37	192.36	44.72	0.17	0.28	0.06	2.07	2.66	1.48	3.00	3.97	1.94	498,401	
10/7/19	83.33	129.17	41.60	0.12	0.19	0.06	1.86	2.34	1.45	2.56	3.12	1.86	119,991	
10/8/19	78.92	137.22	22.29	0.11	0.20	0.03	1.82	2.35	1.22	2.45	3.19	1.36	113,639	
10/9/19	83.07	127.43	38.06	0.12	0.18	0.05	1.87	2.26	1.44	2.53	3.14	1.80	119,618	
10/10/19	45.36	70.97	37.43	0.07	0.10	0.05	1.54	1.81	1.44	1.93	2.46	1.78	65,319	
Week:	72.67	137.22	22.29	0.10	0.20	0.03	1.77	2.35	1.22	2.37	3.19	1.36	418,568	
Totals:	90.97	192.36	22.29	0.13	0.28	0.03	1.90	2.66	1.22	2.64	3.97	1.36	916,969	

2019.10 Site 1 MH US

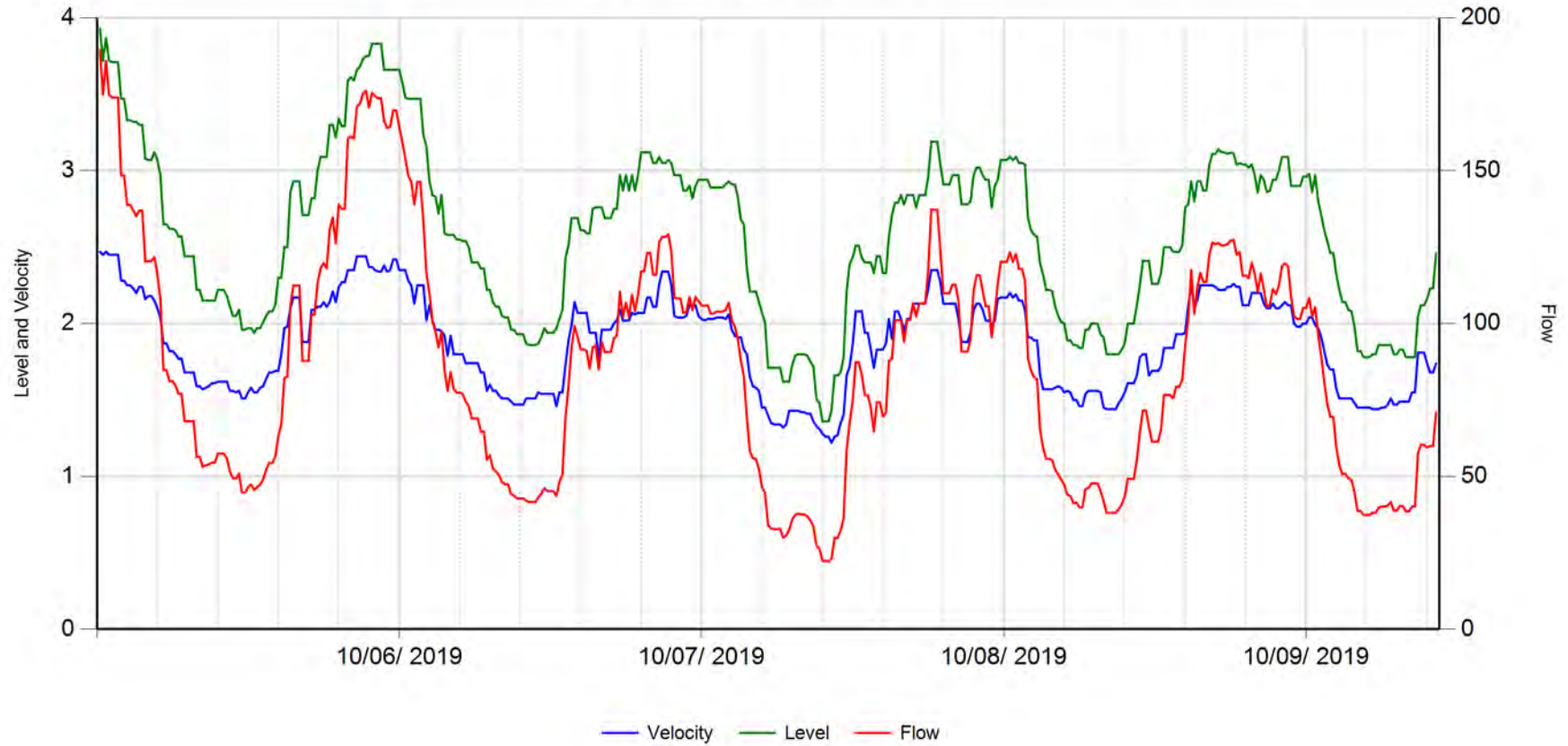


	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.086	3.023	117.515	RainFall	Inches
Maximum	2.660	3.970	192.361		
Minimum	1.480	2.030	47.778		



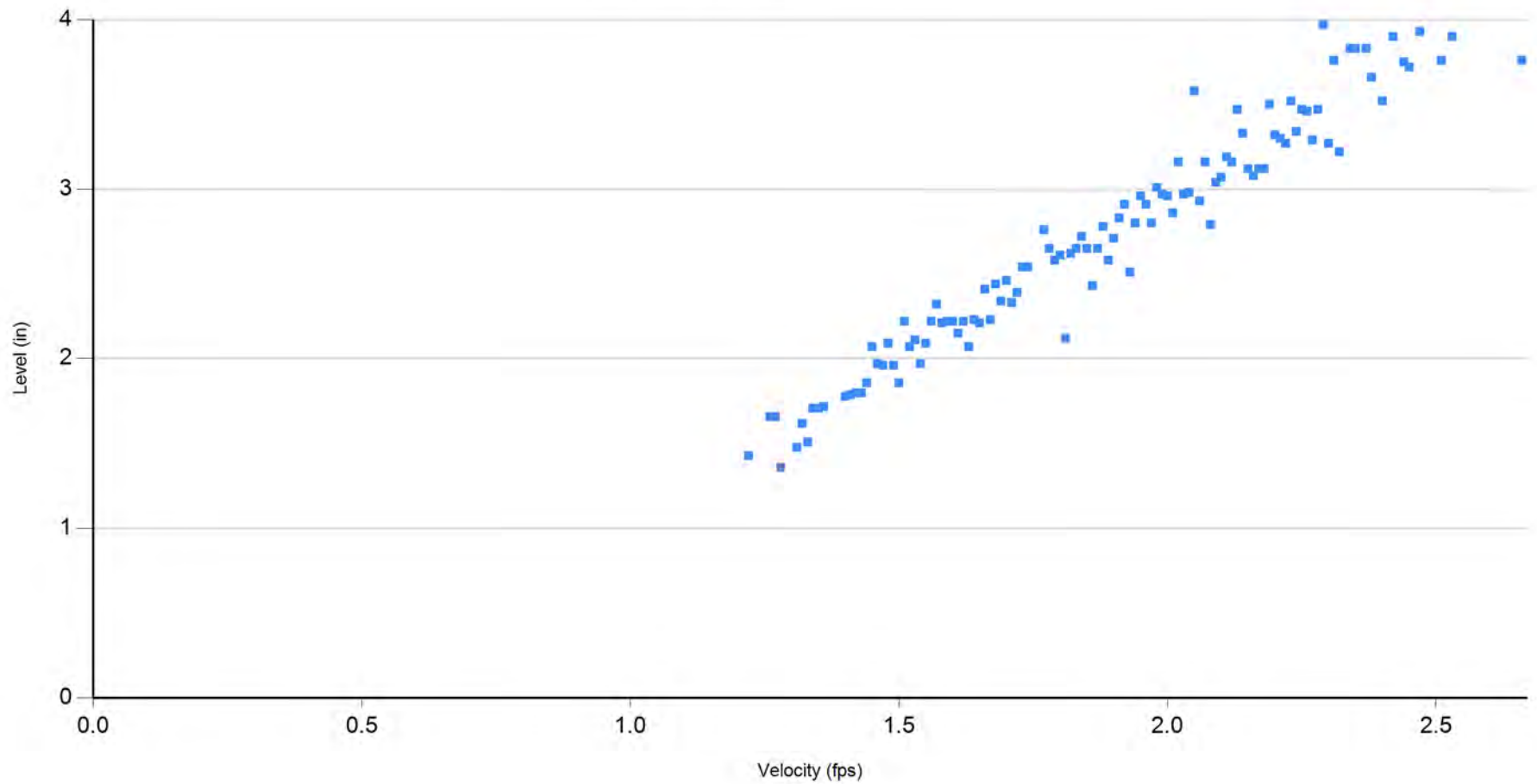
10/14/2019

2019.10 Site 1 MH US



	Velocity (fps)	Level (in)	Flow (gpm)			
Average	1.874	2.583	86.580	RainFall	Inches	
Maximum	2.470	3.930	189.305			
Minimum	1.220	1.360	22.292			
						10/14/2019

2019.10 Site 1 MH US



10/04/2019 thru 10/10/2019



10/14/2019 1:29:42 PM

Tab 3: Methods & Procedures & Equipment**3.1 Methods and Procedures**

Utility Systems Science & Software provided raSmith with an off the shelf, non-proprietary flow monitoring solution that included seven state of the art Hach Flo-Dar® AV Sensor systems. The project course of action is listed below. The US³ team:

- Assessed permitting and traffic control at the monitoring sites within the Brea Mall and on S. State College Blvd in Brea, CA.
- Validated the sites for suitability for sewer flow monitoring.
- Submitted the appropriate site-specific Work Area Traffic Control Handbook (WATCH) diagrams for traffic control and obtained City Encroachment Permits.
- Coordinated with Mall Security for installation and removal of equipment.
- Installed and removed traffic control in accord with the approved WATCH diagrams for both the installation and removal of equipment.
- Installed and calibrated the flow monitoring equipment per manufacturer recommendations on 9/24/2019, 10/02/2019 and 10/04/2019.
- Removed the equipment on 10/02/2019 and 10/10/2019, validated the data and prepared the report.

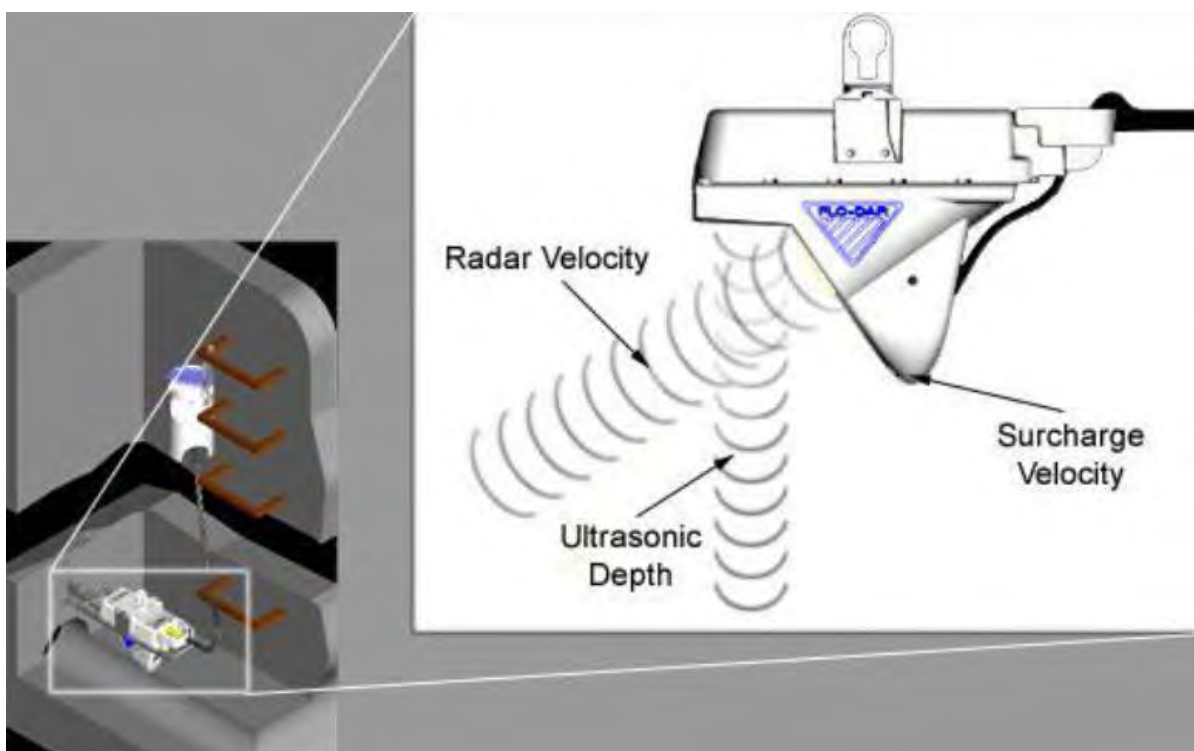
3.2 Equipment

Figure: Equipment installed as part of the Sewer Flow Monitoring Study



Figure: Web-Enabled Flo-Dar® AV Sensor, Radar-Based Velocity/Area Flow Meter

3.2.1 SPECIFICATIONS

- **Enclosure**
 - o IP68 Waterproof rating, Polystyrene
- **Dimensions**
 - o 160.5 W x 432.2 L x 297 D mm (6.32 x 16.66 x 11.7 in.),
 - o With SVS, D = 387 mm (15.2 in.)
- **Weight**
 - o 4.8 kg (10.5 lbs.)
- **Operating Temperature**
 - o -10 to 50°C (14 to 122°F)
- **Storage Temperature**
 - o -40 to 60°C (-40 to 140°F)
- **Power Requirements**
 - o Supplied by FL900 Flow Logger, Flo-Logger, or Flo-Station

- **Interconnecting Cable**
 - o Disconnect available at both sensor and logger or Flo-Station
 - o Polyurethane, 0.400 (± 0.015) in. diameter; IP68
 - o Standard length 9 m (30 ft), maximum 305 m (1000 ft)
- **Cables – available in two styles:**
 - o Connectors at both ends
 - o Connector from sensor with open leads to desiccant hub, desiccant hub with connector to logger. A potting/sealant kit will be included. This can be used to run the cable through conduit.
- **Certification**
 - o Certified to: FCC Part 15.245: FCC ID: VIC-FLODAR24
 - o Industry Canada Spec. RSS210. v7: IC No.: 6149A-FLODAR24

SURCHARGE DEPTH MEASUREMENT

- o Auto zero function maintains zero error below 0.5 cm (0.2 in.)
- **Method**
 - o Piezo-resistive pressure transducer with stainless steel diaphragm
- **Range**
 - o 3.5 m (138 in.), overpressure rating 2.5 x full scale

VELOCITY MEASUREMENT

- **Method**
 - o Radar
- **Range**
 - o 0.23 to 6.10 m/s (0.75 to 20 ft/s)
- **Frequency Range**
 - o 24.075 to 24.175 GHz, 15.2 mW (max.)
- **Accuracy**
 - o $\pm 0.5\%$; ± 0.03 m/s (± 0.1 ft/s)

DEPTH MEASUREMENT

- **Method**
 - o Ultrasonic
- **Standard Operating Range from Flo-Dar® Housing to Liquid**
 - o 0 to 152.4 cm (0 to 60 in.)
- **Optional Extended Level Operating Range from Transducer Face to Liquid**
 - o 0 to 6.1 m (0 to 20 ft.) with 43.18 cm (17 in.) dead band, temperature compensated.
- **Accuracy**
 - o $\pm 1\%$; ± 0.25 cm (± 0.1 in.)

FLOW MEASUREMENT

- **Method**
 - o Based on Continuity Equation
- **Accuracy**
 - o $\pm 5\%$ of reading typical where flow is in a channel with uniform flow conditions and is not surcharged, $\pm 1\%$ full scale max.

SURCHARGE CONDITIONS DEPTH/VELOCITY DEPTH (Std with Flo-Dar® Sensor)

- **Surcharge depth supplied by Flo-Dar® sensor.**

VELOCITY (Optional Surcharge Velocity Sensor)

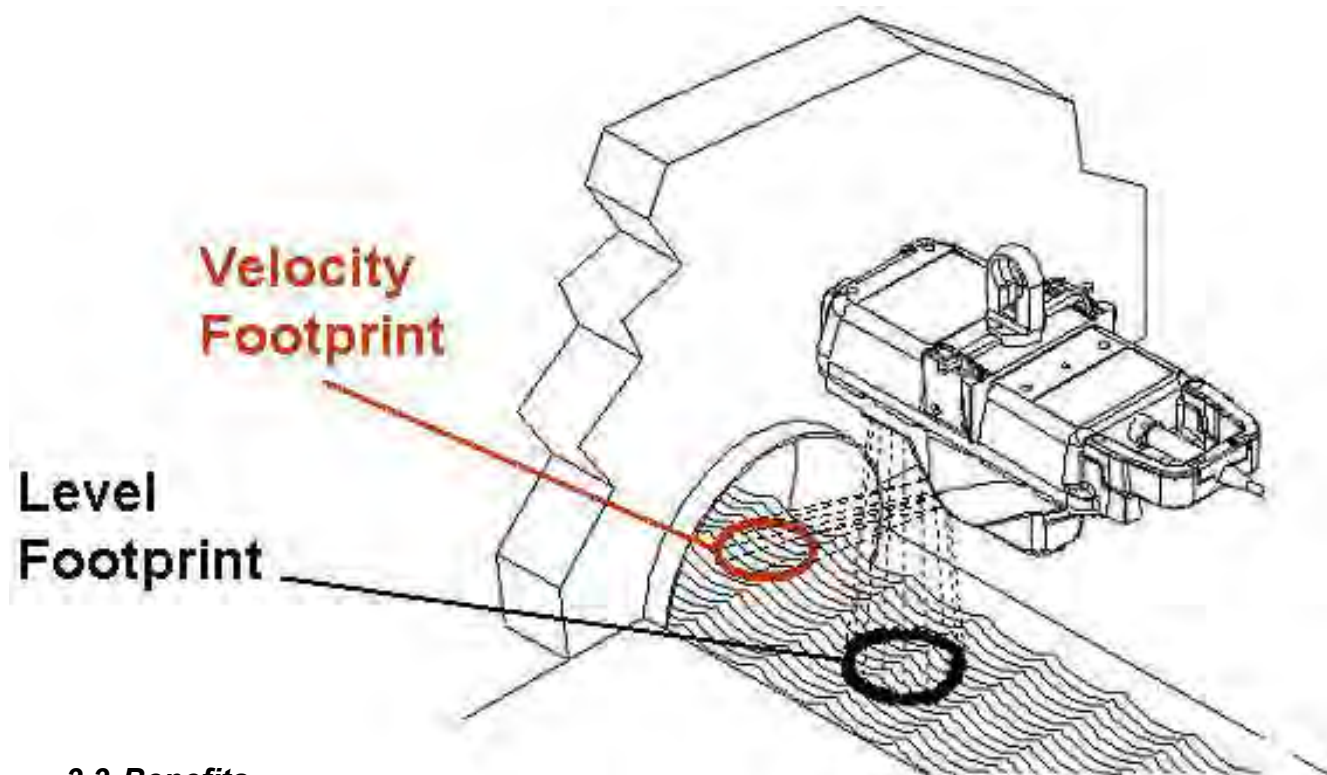
- **Method**
 - o Electromagnetic
- **Range**
 - o ± 4.8 m/s (± 16 ft/s)
- **Accuracy**
 - o ± 0.15 ft/s or 4% of reading, whichever is greater.
- **Zero Stability**
 - o ± 0.05 ft/s

The Flo-Dar® Open Channel Flow Meters provide an innovative approach to open channel flow monitoring. Combining digital Doppler radar velocity sensing with ultrasonic pulse echo level sensing, Flo-Dar® provides accurate open channel flow monitoring without the fouling problems associated with submerged sensors.

3.2.2 Perfect Solution for Difficult Flow Conditions:

- Flows with High Solids Content
- High Temperature Flows
- Caustic Flows
- Large Man-Made Channel
- High Velocities
- Shallow Flows





3.3 Benefits

- 3.3.1 Personnel have no contact with the flow during installation.
- 3.3.2 Maintenance caused by sensor fouling is eliminated.
- 3.3.3 Field Replaceable / Interchangeable Sensors and Monitors

3.4 How It Works

Flo-Dar® transmits a digital Doppler radar beam that interacts with the fluid and reflects back signals at a different frequency than that which was transmitted. These reflected signals are compared with the transmitted frequency. The resulting frequency shift provides an accurate measure of the velocity. Level is detected by ultrasonic pulse echo. Flow is then calculated based on the Continuity Equation:

$$Q = V \times A, \text{ Where } Q = \text{Flow}, V = \text{Average Velocity and } A = \text{Area}$$

3.5 Accurate Flow Measurements

Flo-Dar® provides the user with highly accurate flow measurements under a wide range of flows and site conditions. By measuring the velocity of the fluid from above, Flo-Dar® eliminates accuracy problems inherent with submerged sensors including sensor disturbances, high solids content and distribution of reflectors.



Understanding the Flo-DarTM Flow Measuring System

Independent tests verify non-contact flowmeter is highly accurate under both open channel and surcharge conditions

Flo-Dar is the only non-contact open channel velocity/area type flow meter available for measurement of flows in municipal wastewater and storm water sewers. Flo-Dar consists of a radar-based velocity measurement system and an ultrasonic-based pulse echo depth measurement system.

Flo-Dar has an optional surcharge velocity sensor (electromagnetic type) and depth sensor (pressure transducer) that provides the continuation of accurate flow data where intermittent, surcharged flow conditions are experienced.

Flo-Dar combines the information from the velocity and depth systems along with site specific data (pipe size, pipe shape, velocity profile) and provides the user with highly accurate, reliable flow data under a wide range of flow velocities and depths. Since the radar velocity sensor and the ultrasonic depth sensor cease to provide useful data when submerged, Flo-Dar has an optional surcharge velocity sensor (electromagnetic type) and depth sensor (pressure transducer) that provides for the continuous measurement of accurate flow data where intermittent, surcharged flow conditions are experienced.

The data system merges the data from these two independent flow systems and provides the user with a single flow signal that accurately represents flow over a range from a dry pipe to extreme surcharge conditions. Accuracy tests performed at Alden Research Labs have shown that the Flo-Dar is highly accurate under both open channel and surcharge (submerged) conditions.

Accuracy tests performed at Alden Research Labs have shown that the Flo-Dar is highly accurate under both open channel and surcharge (submerged) conditions.

Measurement of Flow Under Free Flow, Non-submerged Conditions

Open Channel Velocity

Open channel flow is any flow in a channel that has a free surface. Flo-Dar measures open channel flow as depicted in Figure 1. The radar velocity sensor measures flow in a manner similar to how radar guns measure the velocity of a baseball or an automobile.

Marsh-McBirney has developed and patented a process that yields an accurate determination of the average velocity from the measurement of the surface velocity at a known point on the flow surface.

Factors that influence the accuracy and stability of the measured surface velocity signal:

1. *Transmitted Frequency*
2. *Speed of Microwaves in Air*
3. *Angle of Microwave Beam*
4. *Calculation of Mean Velocity*

A radar “horn” contained inside of the watertight housing transmits a microwave beam through the housing at a defined angle to the flow surface. Disturbances on the surface reflect some of the microwaves back to the horn. The frequency of these returning microwave signals have been shifted (the Doppler effect) by an amount directly proportional to the speed of the moving surface. This frequency shift is detected and measured by the Flo-Dar flow meter and the data is stored as a measure of the surface velocity.

Since the accurate measurement of open channel flow requires the accurate determination of the average velocity of the flow stream, the measured surface velocity must be dynamically modified to obtain an accurate average velocity for use in the Continuity Equation, $Q = V_{av} \times A$. Marsh-McBirney has developed and patented a process that yields an accurate determination of the average velocity from the measurement of the surface velocity at a known point on the flow surface.

If one analyzes each of the four factors that influence the accuracy and stability of the measured surface velocity signal, it becomes obvious that a Doppler Radar based velocity sensor is very accurate and stable:

1. Transmitted Frequency - The transmitted frequency of 24.175 GHz is controlled to an accuracy of $\pm 0.065\%$
2. Speed of Microwaves in Air - Essentially constant at the speed of light
3. Angle of Microwave Beam - The sensor is placed in a rigid mount that is positioned parallel to the water surface (i.e. nearly level). The sensor can be removed from the mount and reinstalled while easily maintaining its original mounting location.
4. Calculation of Average Velocity—The relationship between the sensed (surface) velocity and the average velocity varies with pipe size and water depth.

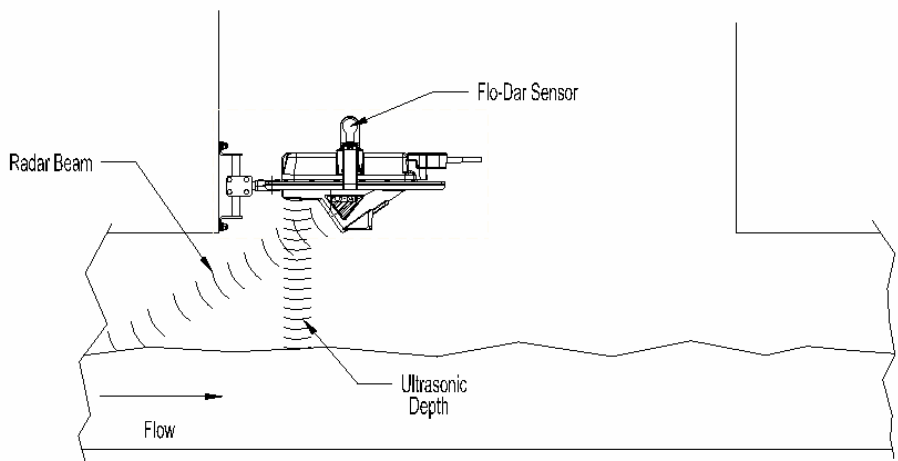


Figure 1

By applying algorithms developed through basic hydraulic principles and from actual flow data taken at Alden Labs and at various customer sites, the surface velocity is transformed into an accurate representation of the mean velocity.

Since the location of the sensing region on the flow surface is known, the repeatability of the surface velocity measurement is excellent and its relationship to the mean velocity is very predictable.

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Figures 2a, 2b, 2c and 2d depict the relationship that exists between various velocity contours and the mean velocity at different depth/Diameter ratios. Note that the velocity gradients that exist throughout the flow cross section are generally represented at the flow's surface - essentially creating a "finger-print" of the velocity contours that exist beneath the surface.

As one might expect, the velocities near the wall are less than the mean velocity and those near the surface are greater than the mean velocity. Since a) the radar sensor measures surface velocity at a known location on the flow surface, and b) these various surface velocities have known relationships to the mean velocity, then the mean velocity can be reliably and accurately calculated.

The accuracy of the calculated average velocity, after correction, is typically between 2% to 5%.

Note that the velocities present on the surface are typically within 10% of the average velocity. The accuracy of the calculated mean velocity, after correction, is typically between 2% to 5%. (See Note 1.)

Ultrasonic Pulse Echo Depth Measurement

Ultrasonic pulse echo depth sensors operate by energizing a piezoelectric transducer with an electronic pulse. This pulse creates an ultrasonic pulse of energy that travels to the flow surface where a portion of the energy returns to the transducer.

The transit time to the flow surface and back is recorded and the distance calculated by knowing the speed of sound at the site which has been corrected by an embedded temperature sensor. The accuracy of the depth measurement is 1%, +/- 0.1 inch .

Measurement of Flow Under Submerged Conditions

Electromagnetic (EM) Surge Velocity Sensor

As stated previously, the radar based velocity sensor measures the surface velocity of the flowing stream by detecting the average speed of the surface irregularities. When the radar sensor becomes totally submerged, it becomes "blind" and is no longer capable of measuring the fluid velocity.

Figures 2a, 2b, 2c and 2d depict the relationship that exists between various velocity contours and the mean velocity at different **depth/Diameter** ratios. Note that the velocity gradients that exist throughout the flow cross section are generally represented at the flow's surface—essentially creating a “finger-print” of the velocity contours that exist beneath the surface.

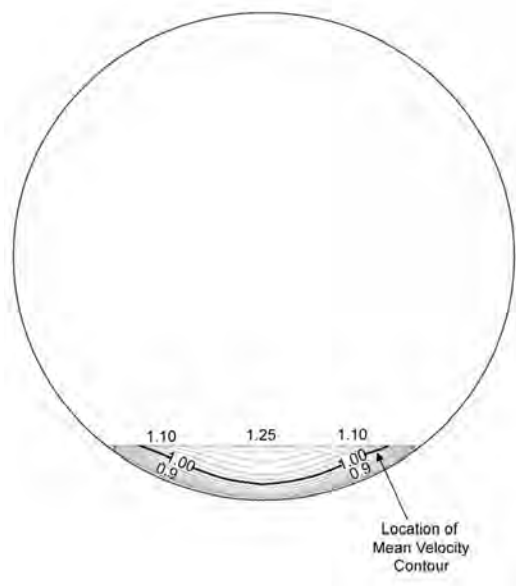


Figure 2a:
 $d/D = 0.10$

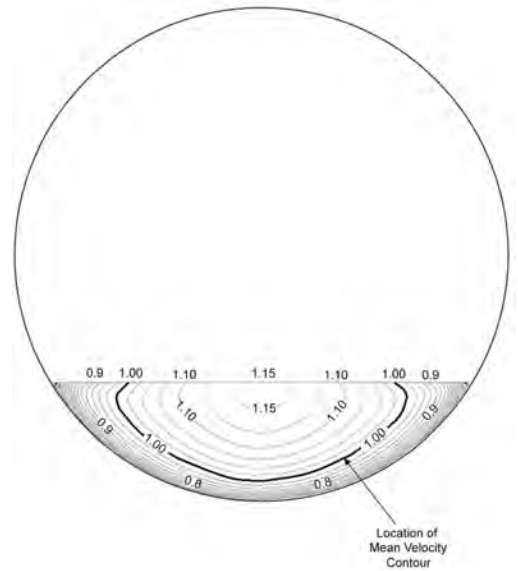


Figure 2b:
 $d/D = 0.25$

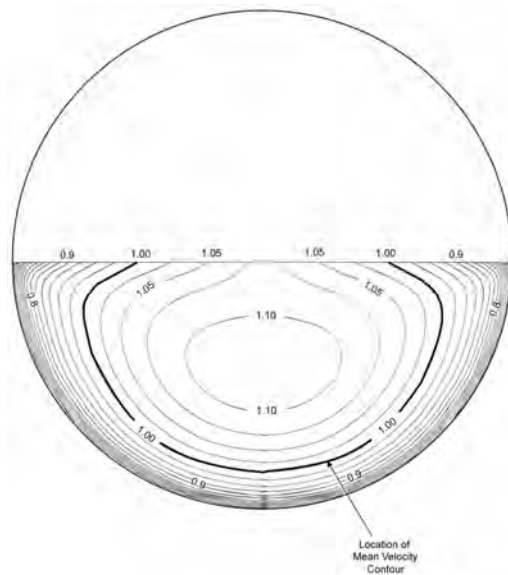


Figure 2c:
 $d/D = 0.50$

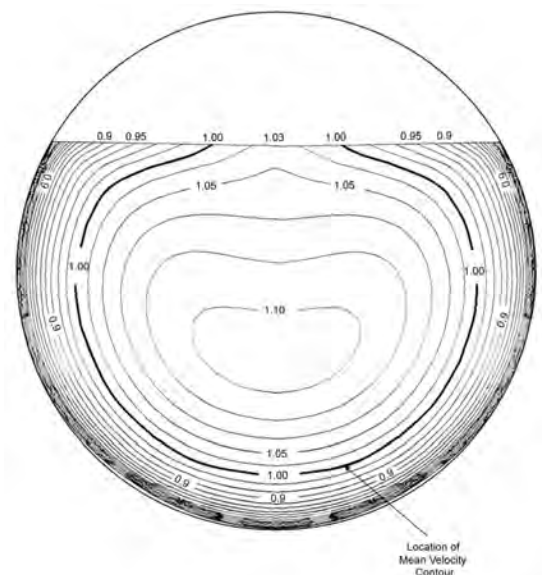


Figure 2d:
 $d/D = 0.75$

To allow for the uninterrupted measurement of flow under conditions that change from open channel flow to submerged flow as experienced in sewers that surcharge, Marsh-McBirney has added an additional surcharge velocity sensor. Placed on the underside of the standard Flo-Dar sensor, this electromagnetic sensor becomes active when the flow level rises to within four inches of the Radar horn and remains activated until the flow once again falls beneath that depth.

To allow for the uninterrupted measurement of flow under conditions that change from open channel flow to submerged flow as experienced in sewers that surcharge, Marsh-McBirney has added an additional surcharge velocity sensor.

Placed on the underside of the standard Flo-Dar sensor, this electromagnetic sensor becomes active when the flow level rises to within 4 inches of the Radar horn and remains activated until the flow once again falls beneath that depth.

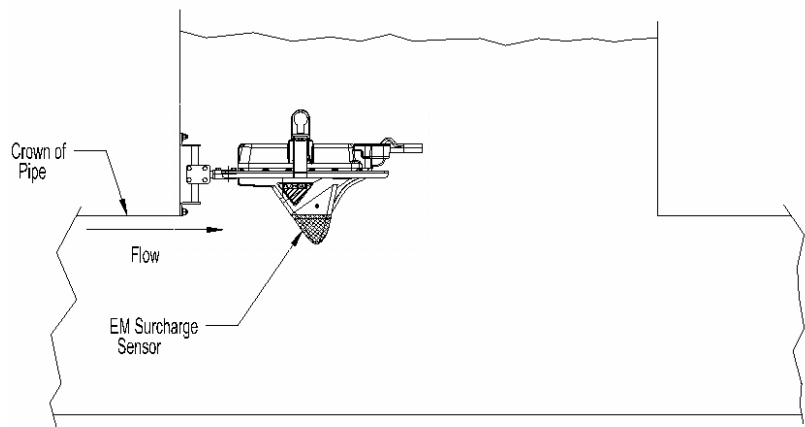
The optional surcharge velocity sensor is based on the Faraday Principle of Electromagnetic Induction. This is the same well-proven principle that “full bore” or “spool-piece” magmeters utilize, the most widely used method of measuring wastewater flow in full pipes.

In the Marsh-McBirney design, an electromagnet embedded within the streamlined sensor generates a magnetic field in the flowing stream. The flow of the water passing through this magnetic field generates voltages in the water that are directly proportional to the speed of the water passing the sensor. Marsh-McBirney uses an in-house 120 foot long towing basin for calibration of electromagnetic sensors. Tow carriage accuracy is better than $\pm 0.5\%$.

Surcharge Depth Sensor

Once submerged conditions exist, the ultrasonic depth sensor ceases to provide useful depth information. To measure depth of the flow during surcharge conditions, a pressure transducer embedded in the Flo-Dar sensor is used in the system.

The location of the surcharge velocity sensor relative to the crown of the pipe is shown in Figure 3. This location provides sensing of the velocity stream just below the crown of the pipe where the flow exits the upstream piping. Empirical data, verified by independent tests at Alden Labs in Holden, Massachusetts indicate that the velocity measured at this location, when multiplied by 0.9, is typically equal to the average velocity.



Laboratory Tests

In September 2002 Marsh-McBirney contracted Alden Research Labs of Holden, Massachusetts to perform flow accuracy tests on the Flo-Dar sensor with an electromagnetic surcharge sensor. The Flo-Dar was subjected to a flow range of 400 gpm to over 9000 gpm in a pipe size of 23.5 inches. The pipe had a slope of approximately zero. The test results are shown in Figure 4, Figure 5, Figure 6 and Figure 7.

The flow tests showed that the Flo-Dar compared very favorably with the Alden flow standard (weigh tank) over a wide range of flows where the open channel flow ranged from 400 gpm to 6000 gpm, and the surcharge (submerged) flow ranged from 6000 gpm to 9000 gpm.

The flow tests showed that the Flo-Dar compared very favorably with the Alden flow standard (weigh tank) over a wide range of flows where the open channel flow ranged from 400 gpm to 6000 gpm, and the surcharge (submerged) flow ranged from 6000 gpm to 9000 gpm.

Tests were also run to depict how Flo-Dar performs under transition conditions where the flow goes from an open channel condition to a surcharge (submerged) condition.

Test results show that the data from the open channel radar sensor and surcharge electromagnetic sensor overlay each other and the Alden Standard. Tests were run under both free flow conditions as well as where the pipe outlet was partially blocked so as to create an entirely different velocity/depth relationship.

Additional flow accuracy tests were run on a 36" pipe at Alden on July 17, 2003. All of the data points were shown to be within 3.5% of the Alden Standard.

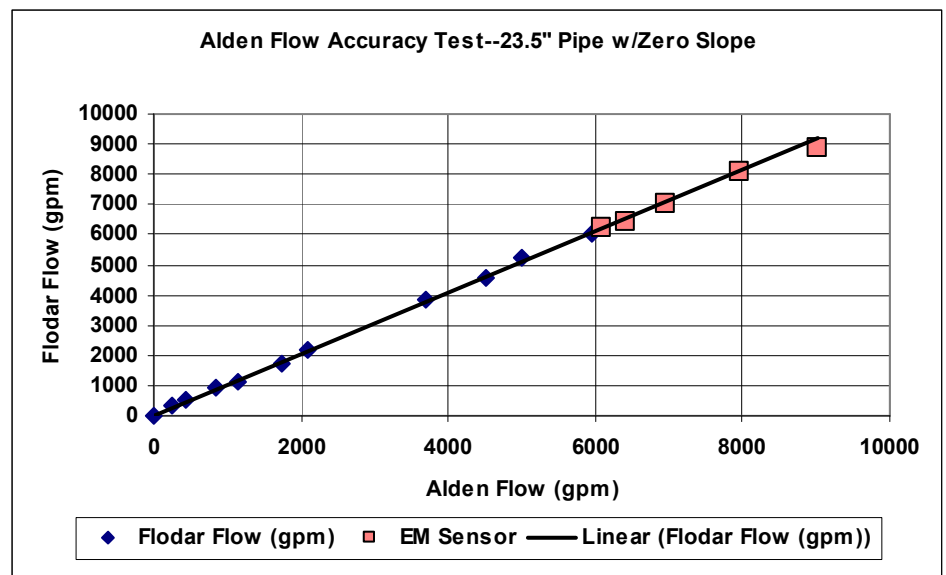


Figure 4 compares the Flo-Dar flow vs. the Alden Standard (weigh tank). The flow condition for this test was both open channel flow and surcharge (submerged) flow.

Test results show that the data from the open channel radar sensor and surcharge electromagnetic sensor overlay each other and the Alden Standard.

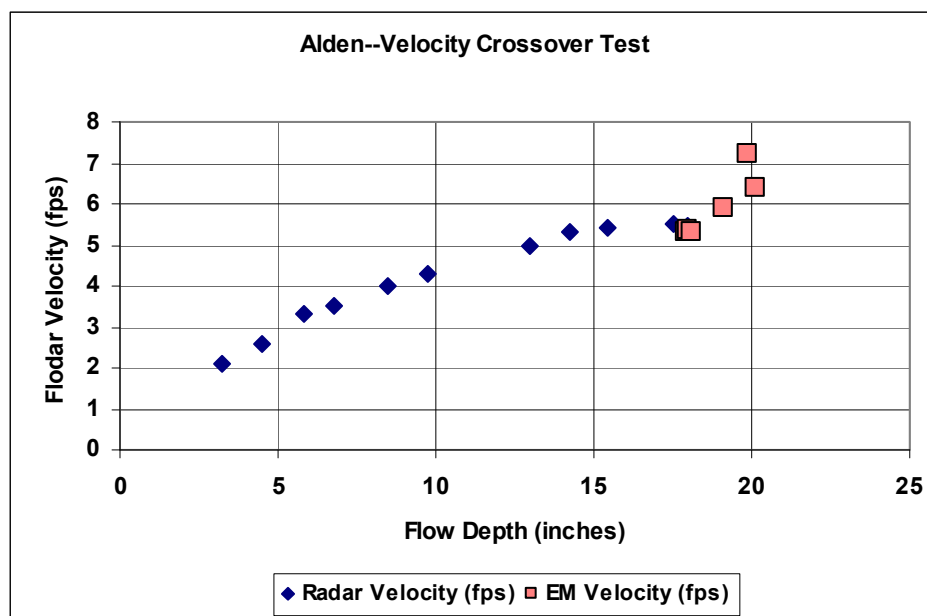


Figure 5 compares the velocity measured by the Radar sensor plotted against flow depth. Note that when the depth reaches approximately 18 inches the EM surcharge sensor has been activated. There is one data point where both sensors are active and then the EM surcharge sensor continues to measure after the radar sensor has become submerged and inoperative.

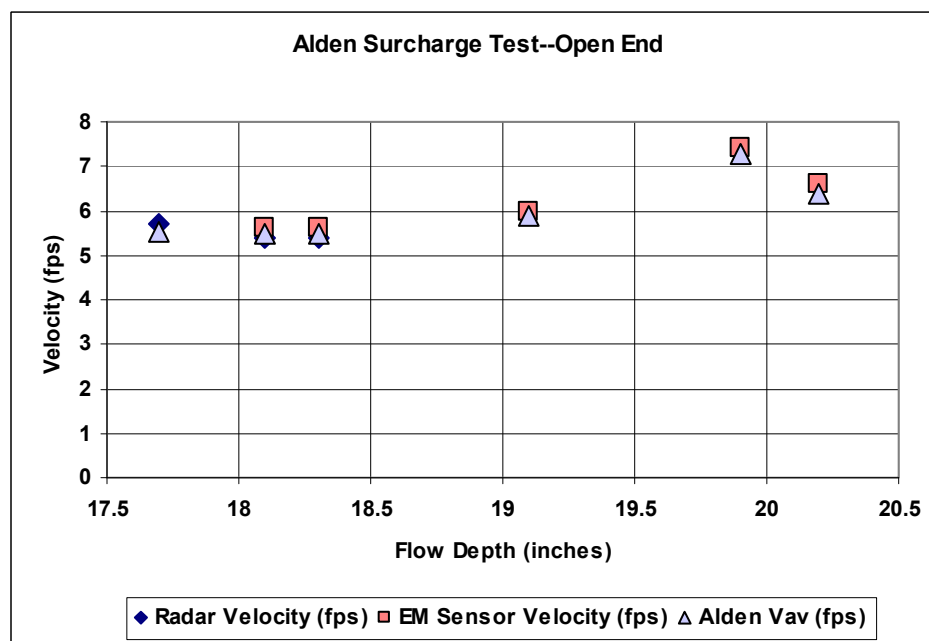


Figure 6 depicts a second surcharge test where the flow was incremented more slowly in order to achieve additional data points in the area where both the Radar sensor and the EM surcharge sensors are active simultaneously. Note that both the Radar sensor and the EM sensor are active between flow depths of 18 inches and 18.5 inches. Also, note how both the Radar and EM data points overlay each other and the Alden standard.

The accuracy of Flo-Dar under both open channel conditions as well as surcharge (submerged) conditions is more than adequate for the most demanding of metering applications including open channel billing applications.

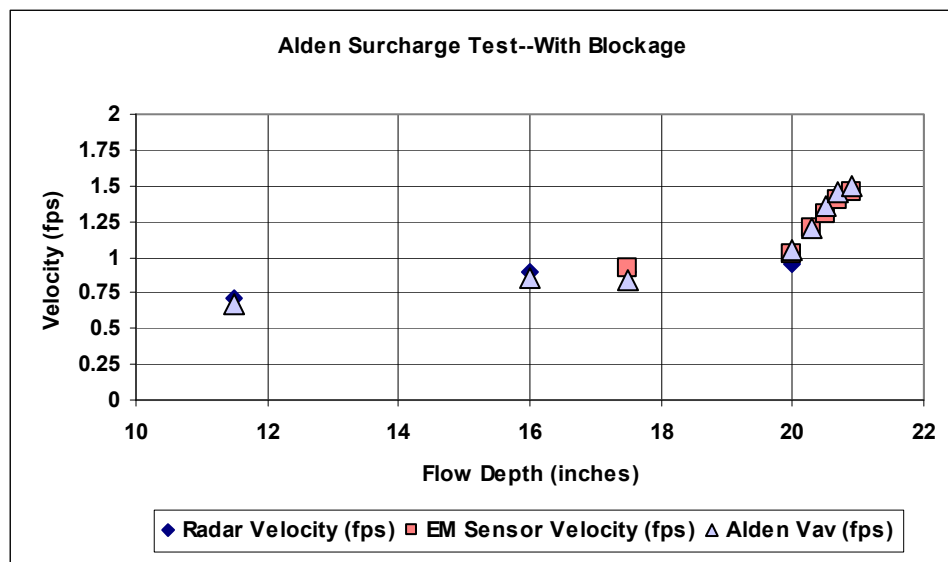


Figure 7 depicts the result of a surcharge test at a lower flow rate. In this test, a round plate with multiple holes was placed at the outlet of the test pipe so as to achieve submerged flow at a lower velocity. Note the consistency of both the Radar velocity data and the EM velocity data as compared to the Alden standard.

Additional tests performed at Alden in 2003 on a 36" pipe again validated Flo-Dar's accuracy under open channel and surcharge flow.

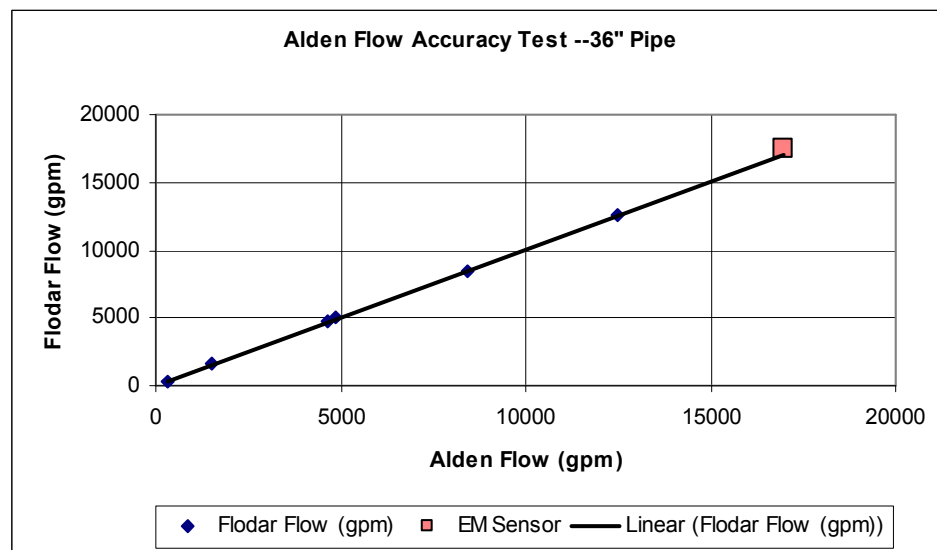


Figure 8 compares the Flo-Dar flow vs. the Alden Standard (weigh tank) for flow accuracy tests in a 36" pipe. These tests were performed on July 17, 2003. Note that at 17,000 gpm the sensor was under surcharge conditions. All of the data points were shown to be within 3.5% of the Alden Standard.

Flo-Dar measures open channel velocity and depth by non-contact means virtually eliminating the need to periodically clean the sensors as required by all submerged type sensors.

Data recovery from Flo-Dar deployments ranges between 98% to 100% even under site conditions that render most submerged sensors inoperable.

The Flo-Dar data logger records all four of the flow parameters - open channel surface velocity and depth, and surcharged velocity and depth. When the water depth is below the bottom of the Flo-Dar sensor, only the surface velocity and the flow depth of the open channel flow are used in the flow calculation.

Once the flow depth is such that both the surcharge depth sensor is activated and a conductivity switch is activated, then flow is calculated using the full pipe dimensions for area and the surcharge velocity sensor for velocity.

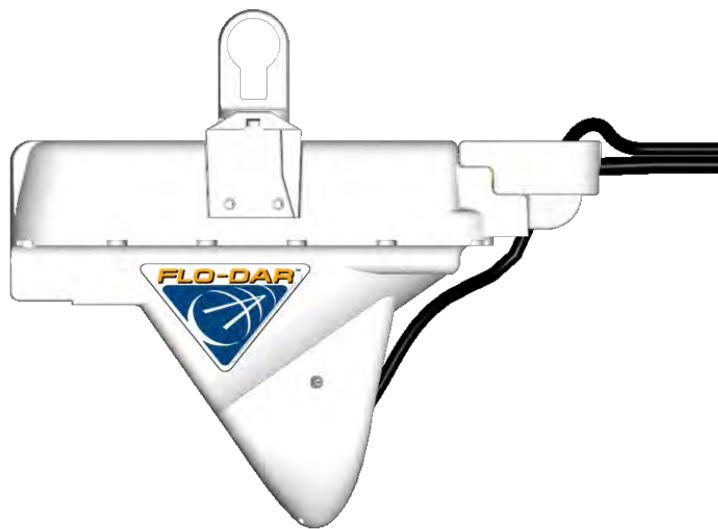
Conclusions

Flo-Dar is a rugged, general purpose flow meter for use in most open channels such as sanitary sewers, storm water sewers and other man-made channels such as aqueducts as well as certain natural channels such as small streams. Flo-Dar measures open channel velocity and depth by non-contact means virtually eliminating the need to periodically clean the sensors as required by all submerged type sensors. Data recovery from Flo-Dar deployments ranges between 98% to 100% even under site conditions that render most submerged sensors inoperable.

The accuracy of Flo-Dar under both open channel conditions as well as surcharge (submerged) conditions is more than adequate for the most demanding of metering applications including open channel billing applications.

Note 1. The accuracy of open channel flow meters can be affected by adverse conditions present at any metering site. The accuracy specifications of most manufacturers are generally stated under ideal conditions.

Open Channel Flow Monitoring **Study**



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1) Locate the following parts (See Figure 1):

- | | |
|--------------------------------|---|
| 1) Flo-Dar Sensor | 7) Extension Pipe, Tee Fitting, and Bushing |
| 2) Flo-Dar Logger | 8) Clamp Set with qty. (8) 1/4-20 Bolts |
| 3) Flo-Dar Communication Cable | 9) Desiccant Capsule |
| 4) Flo-Ware Software CD | 10) Laser-Alignment Tool |
| 5) Sensor Mounting Frame | 11) Installation & Operations Manual |
| 6) Jack-Bar Assembly | 12) Start-Up Guide (not pictured) |



Figure 1

Methods & Procedures

2) Flo-Ware Software Configuration.

1. Insert the “Flo-Ware For Windows Resources CD” into your drive.
2. Select (single-click) “floware4.exe” from the “Software” box on your screen.
3. Select “Save” from the “File Download—Security Warning” screen.
4. Select “Save” from the “Save As” screen.
5. Select “Run” from the “Download Complete” screen.
6. Select “Run” from the “Internet Explorer—Security Warning” screen.
7. An installation wizard will initiate and load the files onto your hard drive.
8. Select the language you want to use from the “Select Language” screen.
9. Select “Next” from the “Welcome” screen.
10. Select “Next” from the “Choose Destination Location” screen.
11. Select “Next” from the “Select Components” screen.
12. Select “Next” from the “Start Installation” screen.
13. Select “Finish” from the “Installation Complete” screen.
14. Scroll down the screen and find “Flo-Dar / SVS” on the left side of the screen. Select (single-click) “flodar.exe” from that box on your screen
15. Select “Run” from the “File Download—Security Warning” screen.
16. Select “Run” from the “Internet Explorer—Security Warning” screen.
17. An installation wizard will initiate and install the files onto your hard drive.
18. Select “Finish” from the “Flo-Dar / SVS File Driver Installation” screen.

NOTE: There are ample help files on the “Flo-Ware for Windows Resources CD”

3) Set up the mounting frame and jack-bar assembly.

- A) Install the jack-bar assembly in the manhole. As a general rule, the jack-bar should be approximately 20” to 24” above the crown (top) of the pipe. In order to reduce movement of the jack-bar due to the cantilever action of the sensor, the jack-bar should be located as parallel to the pipe and invert of the manhole as possible.

MOST Desirable Jack-Bar Mount



LEAST Desirable Jack-Bar Mount



B) Assemble the frame, clamp-set, bushing, tee, and extension as shown in figure 2. Position the frame as close as possible to the lip of the pipe by sliding the assembly along the jack-bar with the slide. Be sure to secure the set-screw.



Figure 2

C) Set the elevation of the frame (measured to the top of the frame tubes) to be 6" above the inside crown of the pipe (for pipe I.D. under 25") or 5" above the inside crown of the pipe (for pipe I.D. of 25" and greater). An easy way to set the frame elevation is to measure the distance from the bottom of the manhole invert to the top of the mounting frame tubes. (This assumes that there is no drop or hydraulic jump from the lip of the pipe to the invert) Set the dimension to equal the pipe I.D. plus 6" (for pipe I.D. under 25") or the pipe I.D. plus 5" (for pipe I.D. of 25" or greater).



Figure 3

D) If you are not interested in measuring flow under surcharge conditions, or if you are sure the site will not surcharge, you can mount the sensor at any elevation above the surface of the water as long as the frame is within 60" of the water surface. When the sensor is mounted at higher elevations than those shown in Figure 3, it will still read normal velocity and level readings. Surcharge level will still be recorded properly, but surcharge velocity readings will not be possible. If you are mounting the sensor at higher elevations, it is still necessary to confirm the location of the velocity radar beam as described on pages 5 & 6 of this guide.

- E) Align and level the frame by placing the laser alignment tool in the frame as shown in figure 4. Utilize the bubble-level on the tool to level the frame.

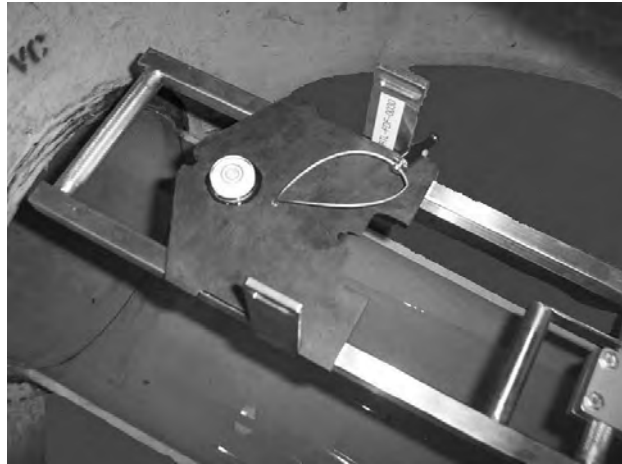


Figure 4

- F) Snap the laser-pointer into the laser alignment tool as shown below in figure 5. It is a tight fit. Make sure the pointer is firmly and evenly seated in its slot as shown.



Figure 5

- G) With the laser-pointer snapped into the tool, as shown, place the alignment tool back into the frame. The laser is now set up to duplicate the velocity radar beam angle. Use the laser-pointer to shine the beam onto the surface of the water. Ideally, the beam should be aligned so that it lands in the middle of the surface of the water inside the pipe.

NOTE: There are numerous adjustment points on the frame and jack-bar assembly.

- H) Remove the laser-pointer from the tool and re-install it into the tool as shown below in figure 6. With the laser-pointer in the position shown, it is now set up to duplicate the ultra-sonic level transducer beam location.
- I) Align the beam so that it lands in the middle of the channel you are measuring.

NOTE: You may have to check level, velocity laser alignment, and level laser alignment several times to ensure all three are correct. Adjusting one or more of the alignments will often affect one or more of the other adjustments! It is critical to remember to tighten all bolts on the jack-bar and clamp set to assure that the sensor frame does not move, once positioned correctly.



Figure 6

4) Install the Sensor.

- A) Gently lower the sensor into the mounting frame and lock it in place by rotating the bail assembly (located on top of the sensor) 90 degrees. The two locking arms will extend out to engage the slots in the vertical side webs of the frame ensuring that the sensor will not dislodge from the frame, particularly if the manhole surcharges.

NOTE: Make sure the sensor is placed in the frame so that the cables are exiting the sensor on the downstream (manhole effluent) side. (see Figure 7 below)

5) Connect the Data Logger.

- A) Connect the sensor cables to the data logger. Make sure the grey cable-end connects to the connector marked grey. Connect the yellow cable-end to the connector marked yellow. Tighten the threaded cable connector-ends securely to the data logger connectors.
- B) Remove the desiccant capsule from the vacuum-sealed bag and plug it onto the brass A.P.R. fitting (located next to the yellow cable connector) on the data logger. See Figure 8 below.



Figure 7



Figure 8

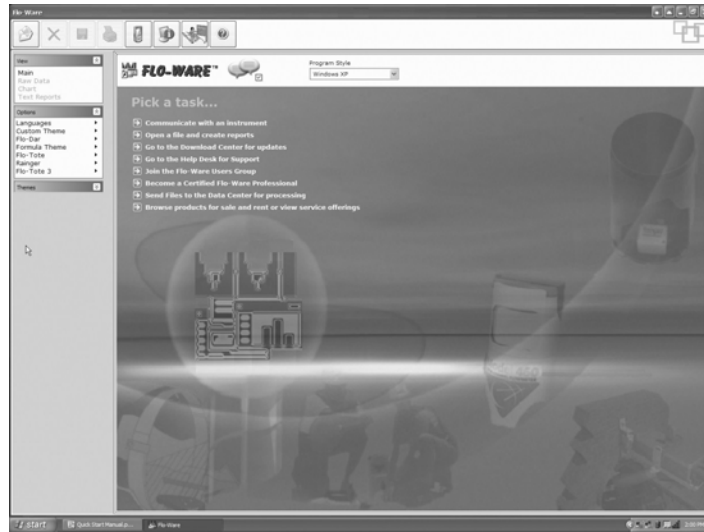
6) Configure the Data Logger using Flo-Ware Software.

A) Connect the interface cable from the data logger to the laptop's 9-pin serial port.

NOTE: If your laptop does not have a 9-pin serial port, you will have to use a USB port with a USB-to-serial port adapter (not provided by Marsh-McBirney).

B) Double-click the "Flo-Ware" icon on your computer's desktop.

C) When Flo-Ware opens, you will see the screen shown below.



D) Place your cursor on the line that says "Communicate with an instrument" and single-click. A small pop-up window will open. Place your cursor over the "Flo-Dar" line and single-click. A second pop-up window will appear. Single-click on the word "communications". The site set-up screen will appear as shown below.

The screenshot shows the 'Site Setup' dialog box. It has a tabbed interface with 'Site Setup' selected. The dialog is divided into several sections. The top section has buttons for 'Save Site', 'Delete Site', 'Read Setup', and 'Send Setup'. Below these are input fields for 'Site ID' (a dropdown), 'Location' (a text field), 'Cycle Time' (15 min), 'Samples' (1 per cycle), 'Flow Unit' (MGD), and 'Start Type' (Immediate). The middle section has a 'Multiplier' field (1.00) and a 'Calc...' button. The right section has 'Memory' (Fixed), 'Shape' (Circular), 'Diameter' (10.00 in), 'Sediment' (0.00 in), 'Sensor Offset' (12.00 in), and a 'Calc...' button. Below these is an 'Extended Setup' dropdown and an 'S/N' field. The bottom section is a table for 'Channels' with columns 'Name', 'Logging', and 'Unit'. The table contains rows for 'Velocity' (On, Feet Per Second), 'Level' (On, Inches), 'Temperature' (Off, Celsius), and 'Surcharge Level' (Off, Inches). At the bottom are 'User' and 'Quality Control' fields, and 'OK' and 'Cancel' buttons. On the far right, it shows 'File Driver Ver. 3.1.0.0' and 'Firmware Ver.'.

- E) Proceed to enter your specific site information into the appropriate boxes in the site set-up screen. An example of a typical set-up is shown below, along with explanations-actions of the input required from the user.

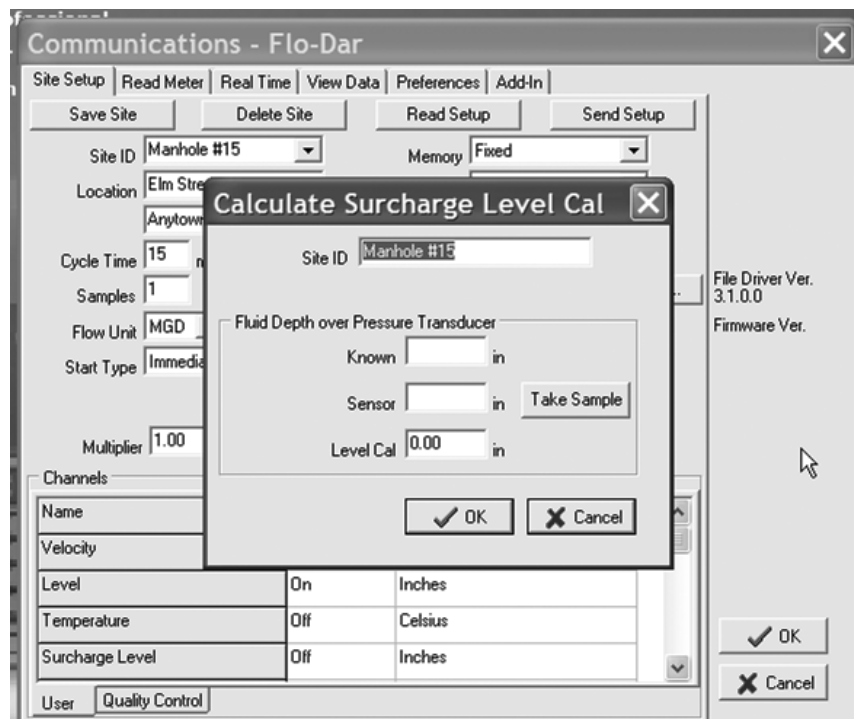
The screenshot shows the 'Communications - Flo-Dar' window with the 'Site Setup' tab selected. The window contains the following elements:

- Buttons:** Save Site, Delete Site, Read Setup, Send Setup, Calc... (next to Sensor Offset), Calc... (next to Multiplier), OK, and Cancel.
- Fields:**
 - Site ID: Manhole #15 (dropdown)
 - Location: Elm Street (text box), Anytown, USA (text box)
 - Cycle Time: 15 min (text box)
 - Samples: 1 per cycle (text box)
 - Flow Unit: MGD (dropdown)
 - Start Type: Immediate (dropdown)
 - Memory: Fixed (dropdown)
 - Shape: Circular (dropdown)
 - Diameter: 24.00 in (text box)
 - Sediment: 0.00 in (text box)
 - Sensor Offset: 30.00 in (text box)
 - Multiplier: 1.00 (text box)
- Channels Table:**

Name	Logging	Unit
Velocity	On	Feet Per Second
Level	On	Inches
Temperature	Off	Celsius
Surcharge Level	Off	Inches
- Other:** An 'Extended Setup' button is visible below the Sensor Offset field. On the right side, there are labels for 'File Driver Ver. 3.1.0.0' and 'Firmware Ver.'.

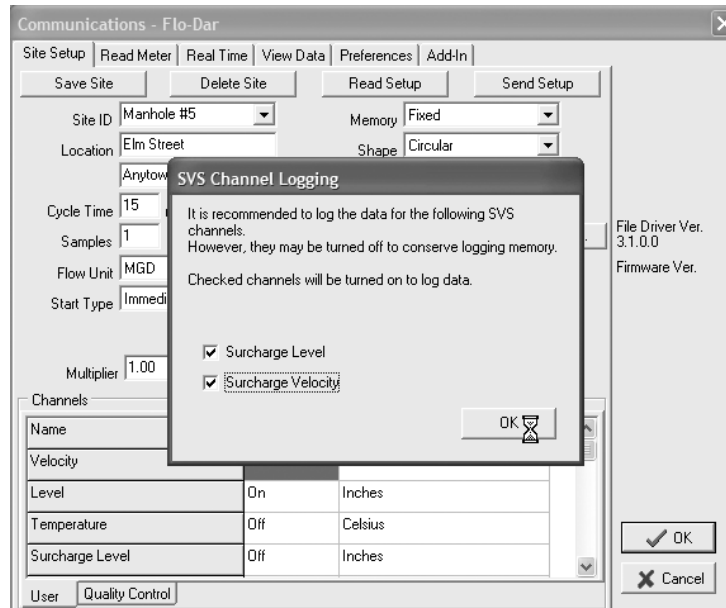
- Site I.D. and Location are self-explanatory. You **MUST** enter something in the site I.D. box in order for the program to work.
- Cycle time is the time interval between the start of each sample.
- Number of samples is the number of 1-minute samples that the instrument will take at the beginning of each cycle.
- Flow Units can be selected by using the pull-down arrow to view the available choices.
- Start Type is either immediate or delayed. If you choose a delayed start, you can use the pull-down arrow to reveal a calendar box and time box. You can use the pull down arrow on the calendar box to view convenient calendars which allow you to click on the date you desire. When using a delayed start, the instrument will “sleep” until the desired start-up date and time are reached. It will then “wake up” and start sampling.
- Multiplier should be left at 1.00 for most applications in round pipes. If you have a round pipe greater than 54” in diameter, or you are using the instrument in a square/rectangular channel, or an odd-shaped channel, contact the Customer Support Department at 714-542-1004 for instructions about the multiplier.
- Memory can be either “Fixed” or “Wrapped”. If you choose “Fixed”, the instrument will stop collecting data once the memory is full. In “Wrapped” mode, when the memory becomes full, the instrument will continue collecting data and will over-write the first data point, then the second, etc., with new data. This will continue indefinitely until a new set-up is downloaded to the instrument.

- Shape is self-explanatory. If you are measuring flow in an odd-shaped conduit, please call the US3 at 714-542-1004 for detailed instructions.
- Diameter is the INSIDE diameter of the pipe. This dimension should be measured in the field. Often, the pipe diameter is not what one assumes from the specs on a given pipe. Always measure the inside diameter to be sure of the dimension.
- Sediment is the amount of non-flowing sediment that may be in the bottom of the pipe. The software will take sediment into account when calculating cross-sectional area for the flow calculation. If there is no sediment, leave the number at 0.00.
- Sensor offset is the dimension from the top surface of the horizontal sensor mounting frame tubing, to the bottom of the invert or channel. (see Figure 3, page 4) If you want to measure flow in a surcharge condition, or if you want to set the instrument up to measure flow in case the manhole surcharges, then the mounting frame should be located so that the sensor offset dimension is equal to the pipe diameter plus 6 inches for pipe diameters up to 24", or equal to the pipe diameter plus 5 inches for pipe diameters greater than 24".
- Single-click on the "Extended Setup" button.
- Single-click on "Surcharge Level Cal"
- A window marked "Calculate Surcharge Level Cal will appear as shown below.

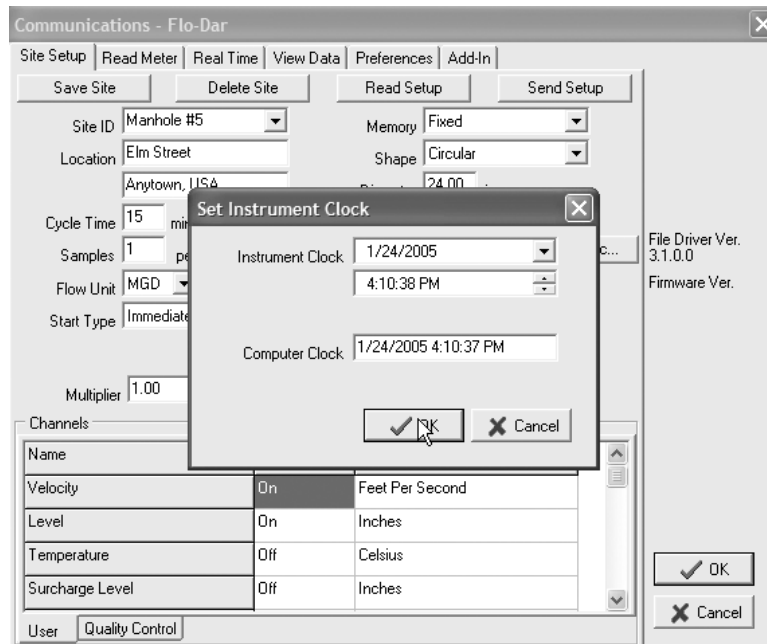


- Type 0.00 in the box marked "known".
- Single-click on the "Take Sample" box.
- Allow the unit to perform a real time sample of the surcharge pressure transducer. This will take approx. 45 seconds. The software will fill in the box marked "Sensor" and the box marked "Level Cal" with the proper values automatically.

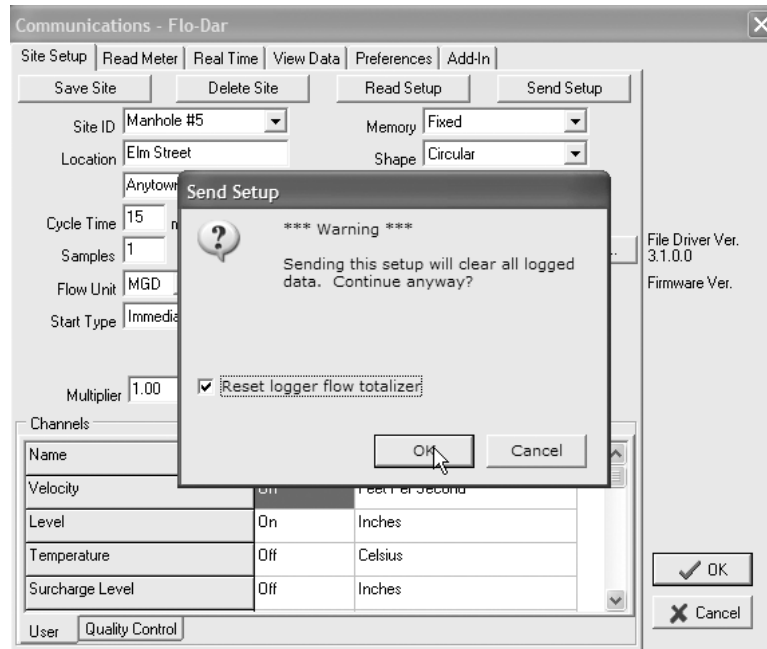
- 7) Save the site information to your hard drive by clicking on the “Save Site” button near the upper left-hand corner of the set-up screen.
- 8) Download the site information to the data logger by clicking on the “Send Setup” button near the upper right-hand corner of the site set-up screen.



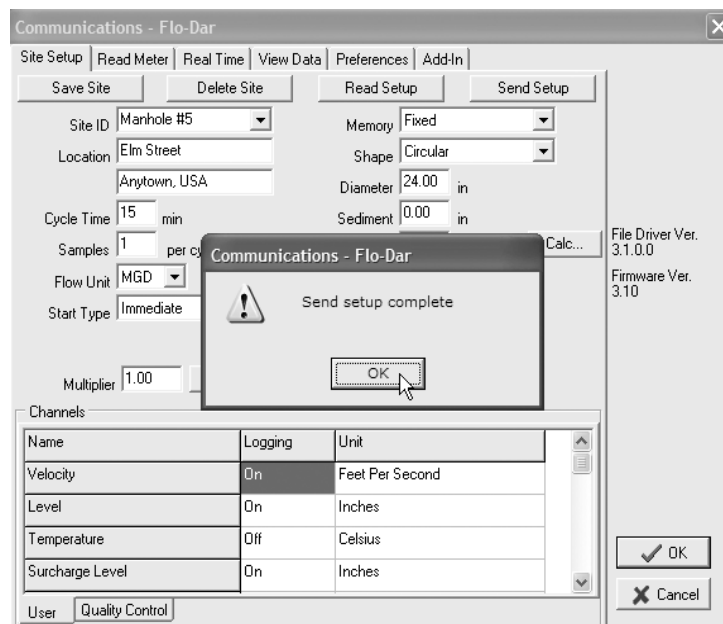
- 9) Turn on (check the boxes) both of the SVS channels as shown above.
- 10) Adjust the instrument clock to match your laptop computer clock as shown below. Use the pull-downs next to the date and time to help you set the instrument clock time. Click OK.



- 11) A warning screen will appear as shown below. Select whether or not you want to reset the logger flow totalizer, then click OK.

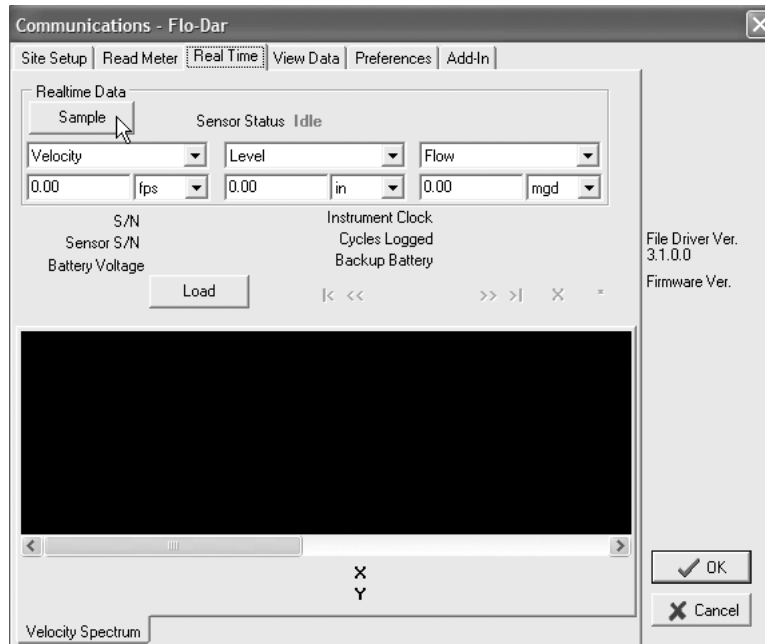


- 12) The “Send setup complete” screen (shown below) will appear, indicating that you have successfully sent the setup data to the instrument. The instrument will now begin collecting data.

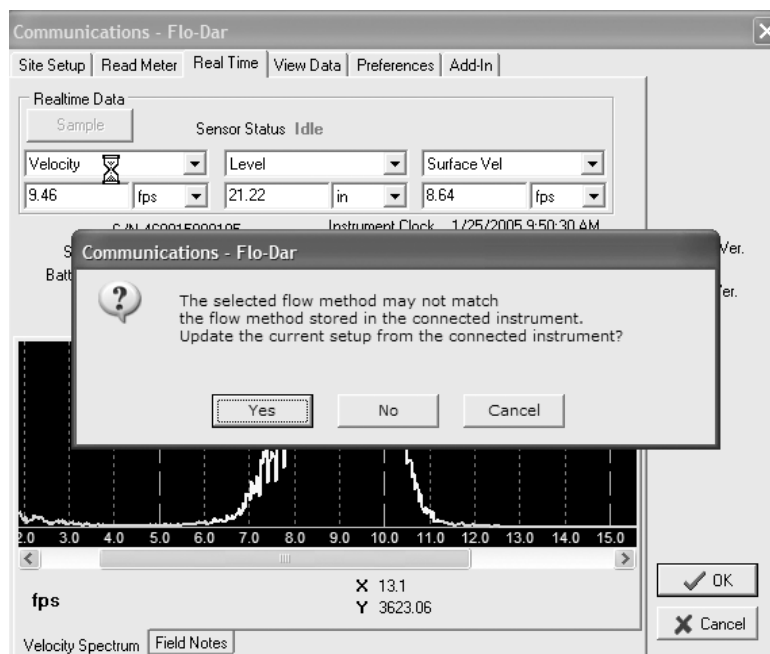


13) Collect real-time readings to confirm proper operation of the instrument before leaving the metering site.

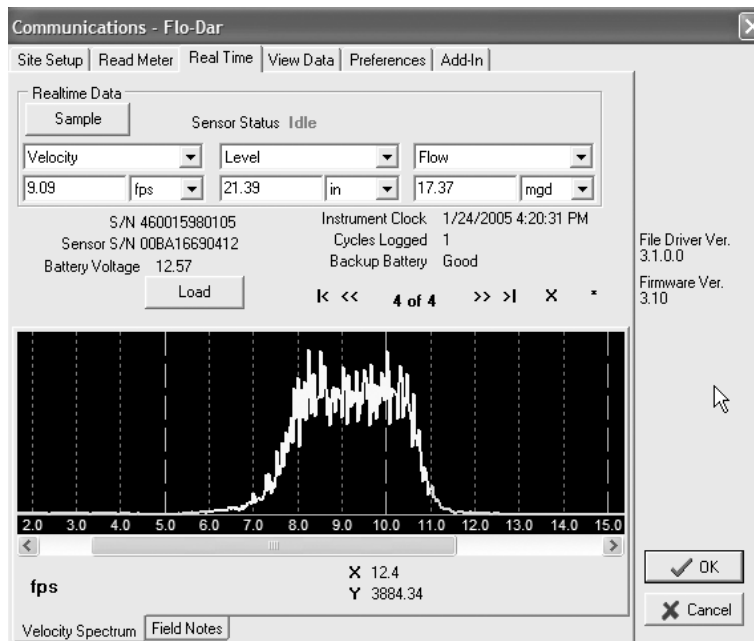
A) Single-click on the “Real Time” tab on the Communications Screen. The real time screen will appear as shown below.



B) Single-click on the “Sample” button. You may or may not see the following pop up window appear.



- C) Single-click the “Sample” button. It will take about 45 to 60 seconds for the meter to sample velocity, level, and send the data packet to the data logger. It will then display the real time sample on the screen (see below).



- D) Confirm the level reading on the screen matches the actual water level in the pipe.
Confirm that the velocity reading on the screen matches the velocity you approximate in the pipe.

- 14) Close the real time window and Flo-Ware main screen.
- 15) Disconnect the communications cable from your laptop to the data logger.
- 16) Screw the protective metal cap onto the communications port connector.
in order to protect the connector from damage due to water or dirt.
- 17) Coil the sensor cables and secure them to the top ladder rung. Hang the data logger from the top ladder rung. (See Figure 9 next page.)



Figure 9

You have successfully installed the Flo-Dar Flowmeter. Please remember to secure the manhole lid prior to leaving the site.

If you have any questions regarding this flowmeter, please contact US3. Please note that telephone support is available Monday through Friday between 9:00 AM and 5:00 PM U.S. Pacific Standard Time.

Marsh-McBirney FLO-DAR® Area/Velocity Radar Flow Meter Sensor

FLOW



The Flo-Dar Sensor provides an ideal solution for non-contact, maintenance-free portable or permanent sewer flow monitoring.

Features and Benefits

The Flo-Dar Area/Velocity Radar Flow Meter provides a revolutionary approach to open channel flow monitoring. The sensor combines advanced Digital Doppler Radar velocity sensing technology with ultrasonic pulse echo depth sensing to remotely measure open channel flow. Use with FL900 Series Flow Logger or Flo-Logger/Logger XT for portable monitoring; for permanent monitoring sites, the Flo-Dar can be connected to the Flo-Station which displays flow rate, velocity, and level. (See Lit. No. 2709 [standard] or Lit. No. 2711 [wireless] for Flow Logger product information, or Lit. No. 2616 for Flo-Station product information). Intrinsically safe models available.

Accurate Flow Measurement

Flo-Dar provides the user with highly accurate flow measurements under a wide range of flows and site conditions. By measuring the velocity of the fluid from above, Flo-Dar eliminates accuracy problems inherent with submerged sensors including sensor disturbances, high solids content and distribution of reflectors.

Non-Contact Sensor Eliminates Lost Data

No lost data with non-contact, above the flow sensor that is unaffected by fouling due to debris and grease.

Easy Installation and Maintenance

As the sensor is mounted above the flow, personnel have little or no contact with the flow during installation. Future sensor removal can be done without the need for confined space entry.

Independent Accuracy / Long-Term Stability Verification

Flo-Dar sensor accuracy and long-term stability (up to 3 years without need for site calibration) from low flow depths up to surcharge conditions has been independently verified

many times over the years including a formal evaluation by the Alden Research Laboratory, Inc. and recent field evaluations done by municipalities and consulting engineering firms.

Perfect Solution for Difficult Flow Conditions

Operates in the most difficult conditions including flows with high solids content, high temperature, shallow and caustic flows, large man-made channels, and high velocities up to 20 ft/s.

Optional Surcharge Velocity Sensor

During surcharge events Flo-Dar's optional electromagnetic sensor will continue to provide uninterrupted and accurate flow monitoring through dry and wet weather flows without the need for routine sensor cleaning or maintenance.

Applications

Municipal

- Sanitary Sewer Evaluation Studies
- Collection Systems
- Capacity Studies
- Combined Sewer Overflows
- Inflow and Infiltration (I&I) Studies
- Billing / Custody Transfer
- Plant Influent and Effluent

Industrial

- Process Waste
- Plant Influent
- Plant Effluent
- Non-contact Cooling Water
- Stormwater Monitoring and Compliance

DW = drinking water WW = wastewater municipal PW = pure water / power
IW = industrial water E = environmental C = collections FB = food and beverage



Be Right™

Specifications*

FLO-DAR SENSOR

Enclosure

IP68 Waterproof rating, Polystyrene

Dimensions

160.5 W x 432.2 L x 297 D mm (6.32 x 16.66 x 11.7 in.), with SVS, D = 387 mm (15.2 in.)

Weight

4.8 kg (10.5 lbs.)

Operating Temperature

-10 to 50°C (14 to 122°F)

Storage Temperature

-40 to 60°C (-40 to 140°F)

Power Requirements

Supplied by FL900 Flow Logger, Flo-Logger, or Flo-Station

Interconnecting Cable

–Disconnectable at both sensor and logger or Flo-Station

Polyurethane, 0.400 (±0.015) in. diameter; IP68
Standard length 9M (30 ft), maximum 305 m (1000 ft)

Cables are available in two styles:

–connectors both ends
–connector from sensor with open leads to desiccant hub, desiccant hub with connector to logger. A potting/sealant kit will be included. This can be used to run the cable through conduit.

Important Note: The sensor cable assembly with desiccant hub is compatible with either the Marsh-McBirney Flo-Logger/Logger XT or the Hach FL900 Series Flow Loggers. When using this cable assembly with the Marsh-McBirney Flo-Logger, do not disconnect the desiccant cartridge that is attached to the Flo-Logger itself. It is important to keep the air tube plugged.

If using Flo-Dar cable with Flo-Station, the cable will have bare leads to the Flo-Station (30 to 1000 ft. lengths) and there will be no desiccant hub, as the air tube terminates inside of the Flo-Station housing.

Warranty

1 year

Set-up/Data Retrieval

Flo-Ware for Windows software is the user on-site set-up, data management, and report generation software. It is compatible with desktop/laptop computers utilizing Windows operating system.

Certification

The Flo-Dar Transmitter is certified to the following requirements:

- Transmitter type: Field Disturbance Sensor
- Frequency: 24.125 GHz - Doppler pulse
- Maximum rated power output: 128 dbuV (ave) @ 3 meters

Certified to: FCC Part 15.245: FCC ID: VIC-FLODAR24
Industry Canada Spec. RSS210. v7: IC No.: 6149A-FLODAR24

Use of this device is subject to the following conditions:

1. There are no used serviceable items inside this device.
2. The user must install this device in accordance with the supplied installation instructions and must not modify the device in any manner whatsoever.
3. Any service involving the transmitter must only be performed by Hach Company.
4. The user must ensure that no one is within 20 cm of the face of the transmitter when operating.

SURCHARGE DEPTH MEASUREMENT

Auto zero function maintains zero error below 0.5 cm (0.2 in.)

Method

Piezo-resistive pressure transducer with stainless steel diaphragm

Range

3.5 m (138 in.), overpressure rating 2.5 x full scale

VELOCITY MEASUREMENT

Method

Radar

Range

0.23 to 6.10 m/s (0.75 to 20 ft/s)

Frequency Range

24.075 to 24.175 G-Hz, 15.2mW (max.)

Accuracy

±0.5%; ±0.03 m/s (±0.1 ft/s)

DEPTH MEASUREMENT

Method

Ultrasonic

Standard Operating Range from Flo-Dar Housing to Liquid

0 to 152.4 cm (0 to 60 in.)

Optional Extended Level Operating Range from Transducer Face to Liquid

0 to 6.1 m (0 to 20 ft.) with 43.18 cm (17 in.) dead band, temperature compensated.

Accuracy

±1%; ±0.25 cm (±0.1 in.)

FLOW MEASUREMENT

Method

Based on Continuity Equation

Accuracy

±5% of reading typical where flow is in a channel with uniform flow conditions and is not surcharged, ±1% full scale max.

SURCHARGE CONDITIONS DEPTH/VELOCITY

DEPTH (Std with Flo-Dar Sensor)

Surcharge depth supplied by Flo-Dar sensor.

VELOCITY (Optional Surcharge Velocity Sensor)

Method

Electromagnetic

Range

±4.8 m/s (±16 ft/s)

Accuracy

±0.15 ft/s or 4% of reading, whichever is greater.

Zero Stability

> ±0.05 ft/s

CERTIFICATION INTRINSICALLY SAFE

The Flo-Dar and Surcharge Velocity Sensors are certified to Class I, Zone 1 Standards. They conform to ANSI/UL 60079-11 and are certified to CAN/CSA E60079-11 and EN 60079-11 standards.

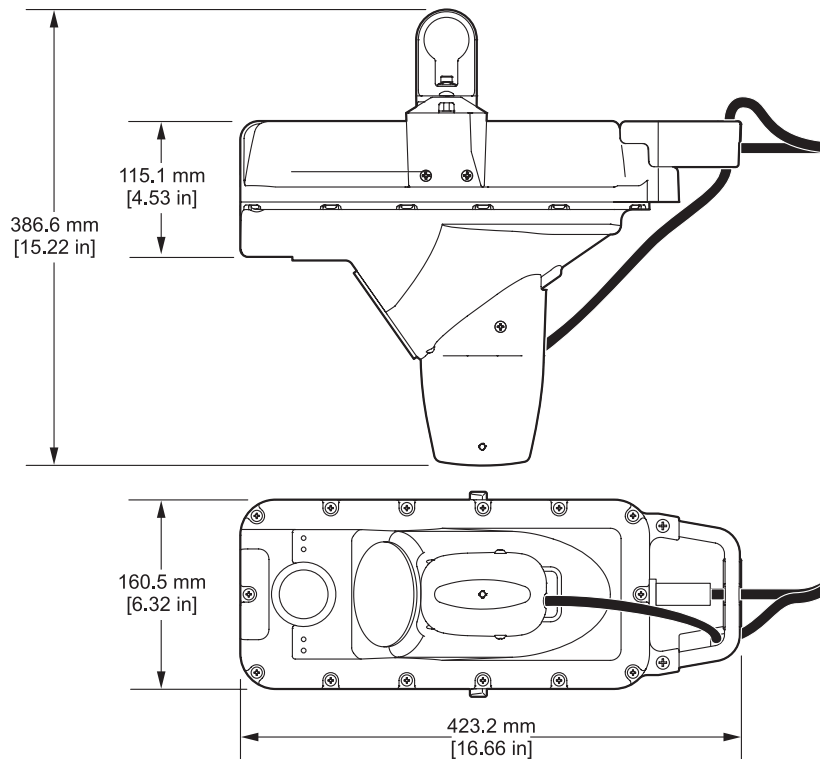


The Flo-Dar sensor meets CE requirements.

Engineering Specifications

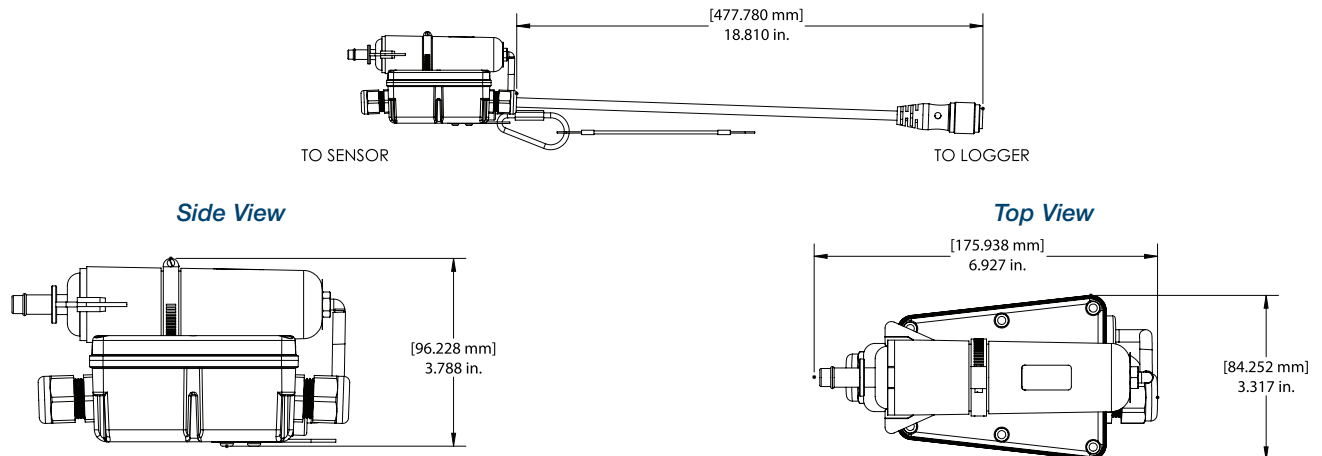
1. The flow meter shall be capable of measuring level, average velocity and surcharge depth.
2. The method of velocity measurement shall be Doppler radar.
3. The sensor shall combine advanced Doppler Radar velocity sensing technology with ultrasonic pulse echo depth sensing to remotely measure open channel flow.
4. Flow shall be calculated based on the Continuity Equation ($Q=V \times A$), where Q =Flow, V =Average Velocity and A =Area.
5. The range of velocity measurement shall be 0.23 to 6.10 m/s (0.75 to 20 ft/s).
6. The method of depth measurement shall be ultrasonic.
7. The standard operating range for depth measurement shall be 0 to 152.4 cm (0 to 60 in.) with an optional operating range of 0 to 6.1 m (0 to 20 ft.) with 43.18 cm (17 in.) deadband, temperature compensated.
8. The flow meter shall have a surcharge condition velocity sensor option.
9. Exterior dimensions of the sensor shall not exceed 160.5 W x 432.2 L x 297 D mm (6.32 W x 16.66 L x 11.7 D in.) or 160.5 W x 432.2 L x 387 D mm (6.32 W x 16.66 L x 15.2 D in.) with Surcharge Velocity option.
10. The sensor shall be able to measure bi-directional surcharge flow.
11. Optional Intrinsically Safe models available for flow monitoring in hazardous locations.
12. The model shall be the Marsh-McBirney Flo-Dar Open Channel Flow Meter Sensor.

Dimensions



Flo-Dar Area/Velocity Radar Flow Meter

The desiccant hub assembly includes a junction box to connect sensor cable to the desiccant and subsequently to the FL900 Logger. The desiccant can easily be replaced without need to purchase a separate desiccant module.



*Desiccant Hub Assemblies for use with portable FL900 Series Loggers and Flo-Logger.
(Sensor cable for use with Flo-Station will not contain a desiccant hub and will have bare wires on cable end.)*

Ordering Information

Configure FLO-DAR Sensor to Logger (Portable)

Flo-Dar Sensor	Model 4000	—	4	X	X
Flo-Dar Sensor with specified cable length (need to add cable as separate line item)			4		
Non Intrinsically Safe Surcharge Velocity Sensor Option (IMPORTANT NOTE: SVS cable length MUST MATCH FloDar Sensor Cable length)				0 3	
Non Extended Range Extended Range Option —Allows use in flow depths up to 18 feet. Allow for 18" deadband. Standard unit max depth is 60". SVS Option requires Remote Extended Range below. Remote Extended Range Option with 6' sensor cable —Flow depths up to 18 feet. Allow for 18" deadband. Standard unit max depth is 60".					0 1 2

Configure FLO-DAR Sensor to Flo-Station (Permanent)

Flo-Dar Sensor	Model 4000	—	9	X	X
Flo-Dar Sensor with specified cable length (need to add cable as separate line item)			9		
Non Intrinsically Safe Surcharge Velocity Sensor Option (IMPORTANT NOTE: SVS cable length MUST MATCH Flo-Dar Sensor Cable length)				0 3	
Non Extended Range Extended Range Option —Allows use in flow depths up to 18 feet. Allow for 18" deadband. Standard unit max depth is 60". SVS Option requires Remote Extended Range below. Remote Extended Range Option with 6' sensor cable —Flow depths up to 18 feet. Allow for 18" deadband. Standard unit max depth is 60".					0 1 2

Cables

FD9000CBL-XXX*	FL900 Series Logger to Flo-Dar sensor. Cable w/two connectors.
FDJCTBOXCBL-XXX*	FL900 Series Logger to Flo-Dar sensor. Cable with connector to sensor, open end to desiccant hub, desiccant hub with connector to sensor. Includes finishing kit for potting/sealing desiccant hub. For use with conduit.
6000062XX*	SVS Sensor with connector for use with FL900 Series Logger.
570011800-XXX* Model 4000-9	Flo-Station to Flo-Dar sensor Cable with one connector and bare leads.
6000059XX*	SVS Sensor with bare leads for use with Flo-Station.

*Contact customer service for product numbers.

Available Cable Lengths (in feet)

30	125	225	400	700
60	150	250	450	800
75	175	300	500	900
100	200	350	600	1000

See Lit. No. 2709 (standard models) and Lit. No. 2711 (wireless models) for FL900 Series Flow Logger ordering information. See Lit. No. 2616 for Flo-Station ordering information.

Mounting Hardware

800016701	Permanent Sensor Mount—Includes sensor frame & all mounting hardware. Portable Sensor Mounts Available (Sizes 34-107") Contact Sales.
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Accessories & Spares

245000501	Sensor Retrieval Pole - Used to place and retrieve sensor from mounting bracket. Pole extends to 7.3 m (21 ft.)
510012701	Sensor Retrieval Hook - Used with Sensor Retrieval Pole
570011401	Grounding Strap (required with Retrieval Pole and Hook when used with IS units)
8755500	Bulk desiccant beads (1.5 pounds)

Lit. No. 2708 Rev 2

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In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications to equipment at any time.



At Hach, it's about learning from our customers and providing the right answers. It's more than ensuring the quality of water—it's about ensuring the quality of life. When it comes to the things that touch our lives...

Keep it pure.

Make it simple.

Be right.

For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

In the United States and all other countries except Europe, contact:

HACH COMPANY
4539 Metropolitan Court
Frederick, MD 21704-9452, U.S.A.
Telephone: 800-368-2723
Fax: 301-874-8459
E-mail: hachflowsales@hach.com
www.hachflow.com

In Europe contact:

Flow-Tronic
Rue J.H. Cool 19a
B-4840 Welkenraedt Belgium
Telephone: +32-87-899799
Fax: +32-87-899790
E-mail: site@flow-tronic.com
www.flow-tronic.com



Be Right™

Hach FL900 Series Cellular Wireless Flow Logger

FLOW

NEW!



When combined with the Flo-Dar or Flo-Tote 3 sensor, the Hach FL900 Series Wireless Flow Logger takes flow monitoring to a whole new level. With features that reduce site time and increase crew safety, the wireless flow monitoring system allows you to easily manage your flow data 24/7, as well as your budget.

WW

Features and Benefits

The FL900 Wireless Flow Logger provides users with a reliable, budget saving open channel wireless flow monitoring solution for open portable flow monitoring applications. Flow data is accessible 24/7 with Hach fsDATA web-based software. When combined with the Flo-Dar or Flo-Tote 3 sensor, the system will drastically reduce site time and increase safety for monitoring crews.

Increase Monitoring Crew Safety

With the time saving features designed into the FL900 Wireless Flow Loggers, crews spend less time in the manhole and less time on site to decrease monitoring costs while increasing the safety of flow monitoring crews.

Plug and Play Sensor Ports

The FL900 Series Flow Logger is available with 1, 2 or 4 sensor ports. The sensor ports are "plug and play"; the logger auto-detects the type of sensor connected (Flo-Dar, Surcharge Velocity Sensor or Flo-Tote 3) to allow customers maximum flexibility for their Hach flow sensor inventories.

Flow Monitoring Data at Your Fingertips with fsDATA™ Web-Based Software

Hach fsDATA web-based flow meter software is the ideal time-saving and economical solution for the management of your Hach wireless flow meters and data 24/7. With

fsDATA routine site visits to collect flow data are eliminated keeping flow monitoring crews safe. (See Lit. No. 2707 for additional information on fsDATA.)

Easy Installation/Versatile Mounting Options

The logger can be quickly attached to a wall, pole or manhole ladder in minutes. Users can choose to hang logger from standard carabiner or optional 4-bolt wall mount for pole, horizontal or vertical wall mount or ladder rung mount.

LED Gives Quick Confirmation of Logger Status

Get peace of mind the logger is ready to capture the next flow event, before you leave the site. The rugged FL900 Wireless Flow Logger includes a status LED panel. The indicator light on the top of the logger shows the status of the instrument and modem (if equipped with wireless option). The user can manually send a call to the server to make sure the network connection is good by simply swiping the magnet over the call initiation target.

IW

C

DW = drinking water WW = wastewater municipal PW = pure water / power
IW = industrial water E = environmental C = collections FB = food and beverage



Be Right™

Specifications*

FL900 SERIES FLOW LOGGER PORTABLE DC POWERED ELECTRONICS (Includes Models FL901, FL902 & FL904)

Dimensions (W x D x H)

25.4 x 22 x 40 cm (10.0 x 8.7 x 16.0 in.)

Enclosure

PC/ABS structural foam

Environmental Rating

NEMA 6P (IP68)

Weight (Using Model FL900)

4.5 kg (10 lb)—no batteries; 6.3 kg (14 lb)—2 batteries;
8.2 kg (18 lb)—4 batteries

Operating Temperature

–18 to 60°C (0 to 140°F) at 95% RH

Storage Temperature

–40 to 60°C (–40 to 140°F)

Power Requirements

8 to 18 Vdc from batteries or external power source,
2.5W max.

Battery Life at 15 minute logging intervals (at room temperature)

185 days with 4 lantern batteries and a Flo-Dar sensor,
306 days with 4 lantern batteries and a Flo-Tote sensor

The optional long life alkaline battery pack can be used to extend battery life, if the Flow Logger is ordered with the external power option connector.

LED Status Indicator

- Green Flashes every 3 seconds during normal operation.
Flashes every 15 seconds during sleep mode.
- Red Flashes when an attached sensor does not agree with the logger program, when an expected sensor is not found or the sensor is not working properly.

LED Modem Indicator

- Stays green during a call to the server. Goes blank after the call is successfully completed and terminated.
- Flashes red if the call to the server failed.

Sensor Ports

1, 2 or 4 ports

Connectors

Stainless steel connectors

Datalog Channels

16 maximum

Alarms

Maximum of 16 channel alarms including high/high, high, low, low/low and system alarms including low battery, low RTC battery, low slate memory, slate memory full.

Alarm Actions

Trigger sampler, change logging interval, change call interval, send an e-mail, or send text message (SMS).

Logging Intervals

1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 or 60 minutes
Primary and secondary intervals for dynamic logging.

Data Storage

Event Log: 1,000 events maximum in non-volatile flash memory
Sample History: 2,000 sample events maximum in non-volatile flash memory
Datalog: 325,000 data points; 1128 days for 3 channels at 15-minute log intervals

Local Communication

USB

RS232 (Baud rates: 9600, 19200, 38400, 57600, 115200)

Remote Communication (optional)

Wireless modem; CDMA or GPRS technology with a mobile provider, CDMA2000 1xRTT or GPRS.

Protocols

Modbus RTU; Modbus ASCII; Mobile-Terminated SMS;
Mobile-Originated SMS; TCP/IP

Timebase Accuracy

±0.002%, synchronized every 24 hours with server software and modem

Supported Sensors

Flo-Tote 3, Flo-Dar, Flo-Dar with SVS, Rain Gauge

Sampler Interface

Compatible with Sigma 900 Standard, Sigma 900 Max, Hach SD900 to support set-point sampling, flow- pacing, and logging sample history.

Desktop Software

Flo-Ware for Windows software is required for programming the logger, data management, and report generation software. It is compatible with desktop/lap top computers utilizing Windows operating system. Minimum resolution needed is 1024x768.

Internet Application Software

FSDATA web-based software for flow meter data management and report generation for wireless flow meters and data access 24/7.

Certifications

Logger: CE; optional AC power supply: UL/CSA/CE

Warranty

1 year



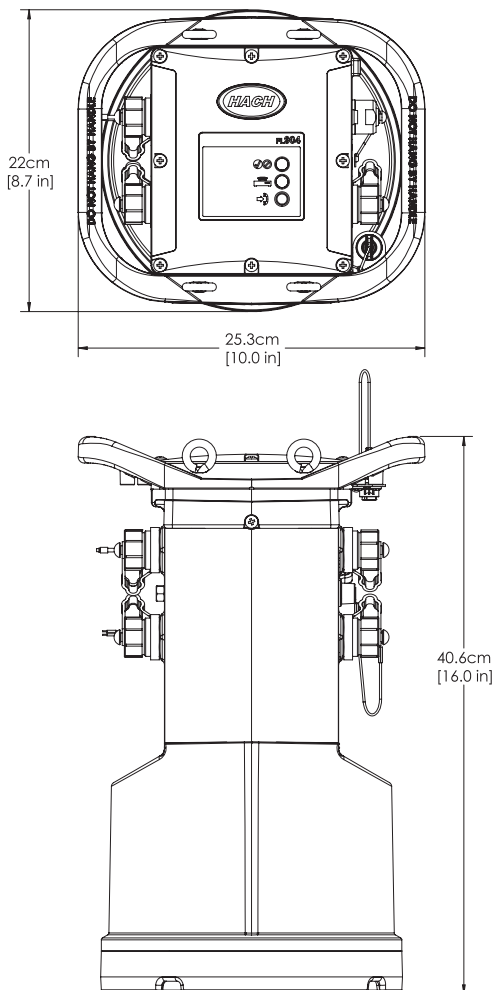
The FL900 Series Loggers meet CE requirements.

*Specifications subject to change without notice.

Engineering Specifications

1. Exterior dimensions of the Flow Logger shall be 25.4 W x 22 D x 40 cm H (10.0 W x 8.7 D x 16.0 in. H)
2. The Flow Logger enclosure material shall be PC/ABS structural foam with NEMA 6P (IP68) rating.
3. The operating temperature for the Flow Logger shall be -18 to 60°C (0 to 140°F) at 95% relative humidity and storage temperature of -40 to 60°C (-40 to 140°F).
4. Power requirements of the Flow Logger shall be 8 to 18 Vdc from batteries or external power source, 2.5W max.
5. When used with a Flo-Dar sensor, the Flow Logger shall have a battery life of 185 days utilizing 4 6v alkaline batteries at a 15 minute logging interval (at room temp.). When used with a Flo-Tote sensor, the Flow Logger shall have a battery life of 306 days utilizing 4 6v alkaline batteries at a 15 minute logging interval (at room temperature). A long-life battery for longer deployments shall be available option.
6. The Flow Logger shall have 1, 2 or 4 sensor ports with stainless steel connector, 1 communications port and 1 auxiliary port.
7. The Flow Logger shall have primary logging intervals of 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 or 60 minutes.
8. The Flow Logger shall have secondary logging intervals available to modify the logging rate based on a defined channel alarm condition or trigger.
9. Optional remote communication shall be available on the FL900 Series Loggers via Wireless modem; CDMA2000 1xRTT or GPRS.
10. The Flow Logger data storage event log shall be 1,000 events maximum in non-volatile flash memory.
11. Timebase Accuracy of the Flow Logger shall be 0.002% synchronized every 24 hours with server software and modem.
12. The Flow Logger shall support the Flo-Dar, Flo-Dar with SVS, Flo-Tote 3 Sensors and Rain Gauge.
13. The Flow Logger shall be compatible with Sigma 900 Standard, Sigma 900 Max and Hach SD900 to support set point sampling, flow-pacing and sample history logging.
14. The Flow Logger shall be able to connect to a lap top or desk top PC using either USB or RS232 serial connection.
15. The Flow Logger shall have an LED indicator for operating /programming status visible on the topmost horizontal surface of the logger.
16. The internet data management software shall indicate sites in alarm condition in either a map view or list view.
17. When connected to an external power source, the FL900 series logger shall be capable of power switching, i.e. drawing power from the external source and conserving the alkaline batteries inside the logger base. At the time the external power source reaches a low alarm condition, it will then switch the power draw to the alkaline batteries mounted inside the base of the logger.
18. The internet software for flow data management shall be Hach FSDATA.
19. The logger will be a Hach FL901, FL902, or FL904 Flow Logger.

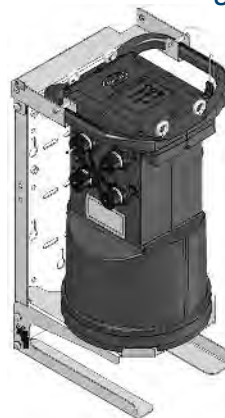
Dimensions



Installation/Mounting Options



*Flow Logger
Suspension Cable with
Carabiner (Standard)*



*Flow Logger Wall Mount
Prod. No. 8542700
(Optional)*



*Flow Logger Ladder Rung Mount
Prod. No. 854450
(Optional)*

Ordering Information

		Sensor Connector(s)	Country Code	Modem	Rain Gauge
FL90X Electronics (Flow Logger)	Model FL90		97		
1 Sensor Connector		1			
2 Sensor Connectors		2			
4 Sensor Connectors		4			
None				X	
AT&T (Activated)				A	
GPRS no SIM				G	
Sprint (Inactive)				R	
Sprint (Activated)				S	
No Rain Gauge Connector					X
With Rain Gauge Connector					R

Cables

8528700	Cable, External power, 2 wire, 9 ft.
8528200	Cable, Communication, RS232
8528300	Cable, Communication, USB
8528400	Cable, Aux, 7pin MIL 5015 (Connect to Sigma Sampler), 9 ft.
8528401	Cable, Aux, 7pin MIL 5015 (Connect to Sigma Sampler), 25 ft

Antennas

5228400	Antenna, Half Wave (824-894, 1850-1990 MHz) —US for Verizon, Sprint, AT&T, T-Mobile (Is attached to Logger)
6241804	Antenna, Mini-Wing, Quad (824-960, 1710-2170 MHz) —US for Verizon, Sprint, AT&T, T-Mobile (Customer to Mount)
6683000	Antenna, Traffic Rated In Road/Burial (1850-1990 MHz) —US for use with Sprint only wireless service
6246200	Antenna, Traffic Rated In Road/Burial (824-896 MHz) —US for use with Verizon only wireless service
5255400	Antenna, Traffic Rated Manhole Lid (824-896, 1850-1990 MHz) —US for Verizon, Sprint, AT&T, T-Mobile

Software

Model T200-200	Flo-Ware Desktop Software
FS-HOSTING	Monthly data hosting service for FSDATA
FS-DATAXFR	Monthly wireless service

Mounting Hardware

8543800	Wall mount bracket (304 Stainless)
8545600	Wall mount bracket with ladder hanger (304 Stainless)
8542700	Wall mount bracket with AC Power Supply shelf (304 Stainless)
8544500	Wall mount bracket with AC Power Supply Shelf with ladder hanger (304 Stainless)

Replacement Parts

8755500	Desiccant refill beads, Bulk 1.5 lb
11013M	Battery, 6V lantern
8542900	Battery, long-life alkaline
8543000	Battery pack top cap adaptor and cable (for long-life alkaline battery pack 800017701)
8542800	Rain Gauge with 100 ft. cable

Lit. No. 2711

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In the interest of improving and updating its equipment, Hach Company reserves the right to alter specifications to equipment at any time.

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For current price information, technical support, and ordering assistance, contact the Hach office or distributor serving your area.

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E-mail: hachflowsales@hach.com
www.hachflow.com

In Europe contact:

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Rue J.H. Cool 19a
B-4840 Welkenraedt Belgium
Telephone: +32-87-899799
Fax: +32-87-899790
E-mail: site@flow-tronic.com
www.flow-tronic.com



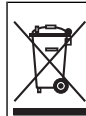
Be Right™

User Instructions

Antennas for flow products

Precautionary labels

Read all labels and tags attached to the instrument. Personal injury or damage to the instrument could occur if not observed.



Electrical equipment marked with this symbol may not be disposed of in European public disposal systems after 12 August of 2005. In conformity with European local and national regulations (EU Directive 2002/98/EC), European electrical equipment users must now return old or end-of-life equipment to the Producer for disposal at no charge to the user.

Note: For return for recycling, please contact the equipment producer or supplier for instructions on how to return end-of-life equipment, producer-supplied electrical accessories, and all auxiliary items for proper disposal.

Product components

Make sure that all components have been received. If any items are missing or damaged, contact the manufacturer or a sales representative immediately.

Required equipment/software

Make sure that the following requirements are available:

- FL900 Series flow logger with modem option or Sigma 930T
- Remote host computer operating FSDATA or Telogers for Windows server software
- Portable computer operating FSDATA, FloWare or Telogers for Windows
- Activated wireless account

FL900 Series Flow Logger

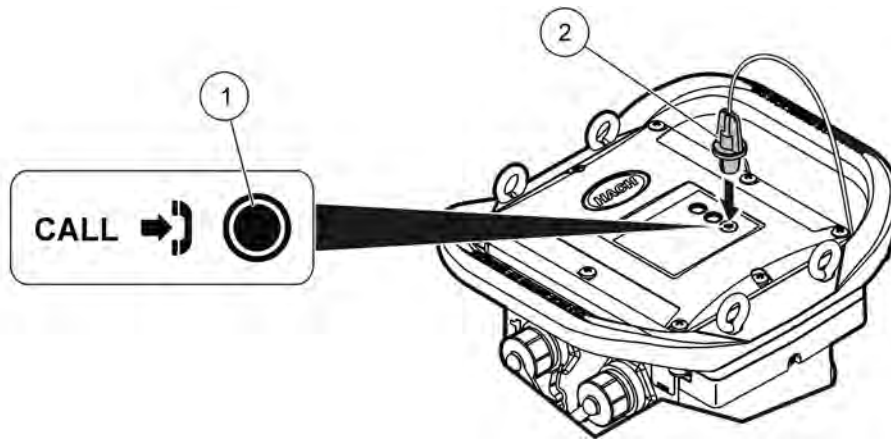
Verify the telemetry (wireless option)

The user can manually send a call to the server to make sure that the network communication is good.

1. Temporarily attach the antenna to the logger to test the antenna and the cell coverage at the site location before installation.
2. Touch the magnet to the call initiation target ([Figure 1](#)). The modem LED indicator changes to green.
3. Look at the modem LED indicator during the call (45 to 90 seconds) and wait for a change:
 - LED goes off—the connection to the server is good.
 - LED flashes red—the connection to the server failed.

Note: If the connection failed, refer to the instrument user manual for more information.

Figure 1 Call the server



1 Call initiation target

2 Magnet

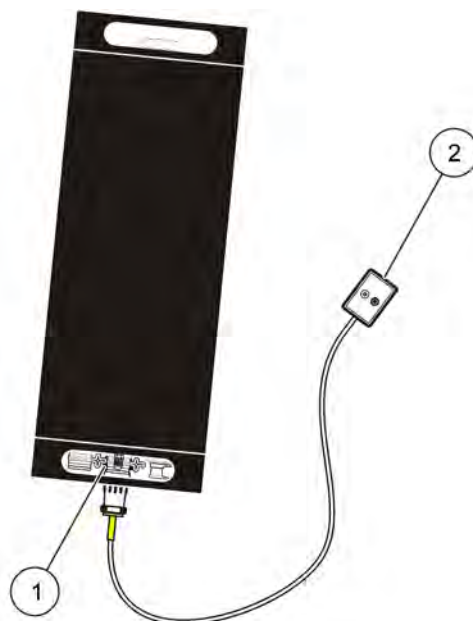
930T Flow meter

Verify the wireless connection

The tamper button is used to examine if the wireless connection is working.

1. Temporarily attach the antenna to the logger to test the antenna and the cell coverage at the site location before installation.
2. Attach the tamper module to the RS232 connector on the flow meter ([Figure 2](#)).
3. Push the tamper button to start a cellular call from the flow meter to the remote host computer.
4. Go to the event log in Telogers for Windows to make sure that the data was successfully downloaded from the flow meter to the remote host computer. Refer to the 930T documentation for further information about telemetry troubleshooting.

Figure 2 Tamper module connected to the 930T Flow meter



1 RS232 connector

2 Tamper module

Installation

⚠ WARNING

Electromagnetic radiation hazard. To meet the requirements of the FCC Grant, CE Mark and other regulatory bodies, do not use or install the device with an antenna that is not supplied by the manufacturer. Make sure that all antennas are kept at a minimum distance of 20 cm (7.9 in.) from all personnel in normal use.

NOTICE

Test the antenna and cell coverage at the site location before installation.

NOTICE

Make sure that the flow meter is programmed to call the host PC before installation.

Half wave antenna

NOTICE

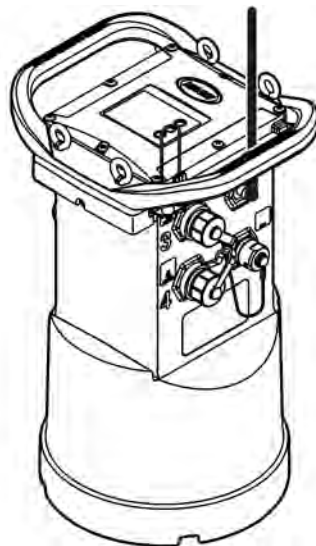
The half wave antenna is intended for above-ground use.

1. Unpack the antenna ([Figure 3](#)).
2. Bend the antenna at the joint to a 90 degree angle between the antenna and the swivel fitting.
3. Put the antenna extension inside of the logger handle ([Figure 4](#)).
4. Align the threads from the antenna fitting to the antenna receptacle on the logger. Hand-tighten by turning the swivel end.

Figure 3 Half wave antenna



Figure 4 Half wave antenna attached



Traffic rated manhole lid antenna

Required tools:

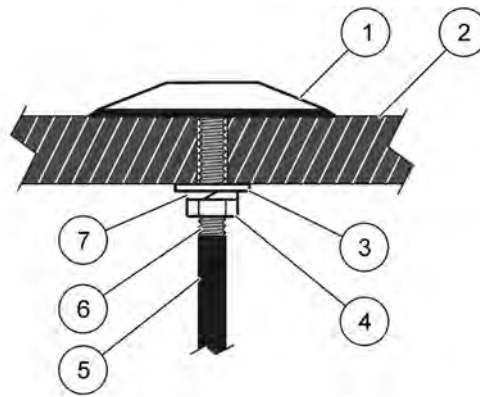
- 31.75 mm (1¼ in.) open-end wrench
- Large nylon Ty-wrap cable ties

1. Unpack the antenna ([Figure 5](#)) or disassemble the antenna from the instrument.
2. Make sure that the manhole lid has a 25.4 mm (1 in.) hole for the antenna neck to fit into.
***Note:** Do not use the pick hole. Use a drill, motor oil for lubrication and increasing size drill bits to drill the 25.4 mm (1 in.) hole if needed. Make sure that the location of the hole does not coincide with the ribs on the underside of the manhole lid.*
3. Remove the manhole lid and put the lid in a stable position where the lid top and bottom are accessible.
4. Remove the nut and washers from the threaded neck on the base of the antenna ([Figure 6](#)).
5. Put the antenna cable and neck through a hole on the manhole lid until the base of the antenna is against the top of the manhole lid.
6. Install the flat washer, then the lock washer and then the nut on to the threaded neck of the antenna.
7. Tighten the nut with the open-end wrench until both washers are flush against the base of the manhole lid and the antenna is tight ([Figure 6](#)).
8. Connect the antenna cable to the instrument connector labeled "Antenna". To make sure proper transmission, hand-tighten the connections.
9. Attach any excess cable to the access ladder or another non-obstructing location with Ty-wrap cable ties.
10. Replace the manhole lid.

Figure 5 Traffic rated manhole lid antenna



Figure 6 Manhole lid installation



1 Antenna top	5 Antenna cable
2 Manhole lid	6 Antenna threaded neck
3 Flat washer	7 Lock washer
4 31.75 mm (1¼ in.) nut	

Wing Quad antenna

The Wing Quad antenna can be attached to an interior wall or to a window for a longer term deployment or the antenna can be attached to a manhole lid for a short term deployment.

Required tools:

- Large nylon Ty-wrap cable ties

1. Unpack the antenna ([Figure 7](#)).
2. To attach the antenna to a window or a wall, remove the adhesive backing and push the antenna to a clean surface.
3. To attach the antenna to a manhole, make sure that the manhole lid has a hole large enough for the antenna connector to fit into.
Note: Do not use the pick hole. Use a drill, motor oil for lubrication and increasing size drill bits to drill the 1" hole if needed. Make sure that the location of the hole does not coincide with the ribs on the underside of the manhole lid.
4. Remove the manhole lid and put the lid in a stable position where the lid top and bottom are accessible.
5. Put the antenna cable and neck through a hole on the manhole lid until the base of the antenna is against the top of the manhole lid.
6. Attach the antenna to the manhole lid with heavy tape or tar tape.
7. Connect the antenna cable to the instrument connector labeled "Antenna". To make sure proper transmission, hand-tighten the connections.
8. Attach any excess cable to the access ladder or another non-obstructing location with Ty-wrap cable ties.
9. Replace the manhole lid.

Figure 7 Wing Quad antenna



Traffic rated in-road/burial antenna

Required tools:

- Asphalt saw or auger: saw capable of cutting 127 mm (5 in.) in diameter and 76.2 mm (3 in.) deep into a road surface or ground
- Asphalt chisel
- Hammer drill with 19.1 to 25.4 mm ($\frac{3}{4}$ to 1 in.) asphalt drill bit (for antenna cable installation)
- Sakrete asphalt mix (Asphalt patch)
- Bondo; Mar-Hyde P606 Traffic Detector Wire Loop Sealer or equal
- Shovel, if placing in the ground

The traffic rated in-road/burial antenna is intended for burial beneath the road surface or ground adjacent to a manhole or vault that is being monitored ([Figure 9](#)).

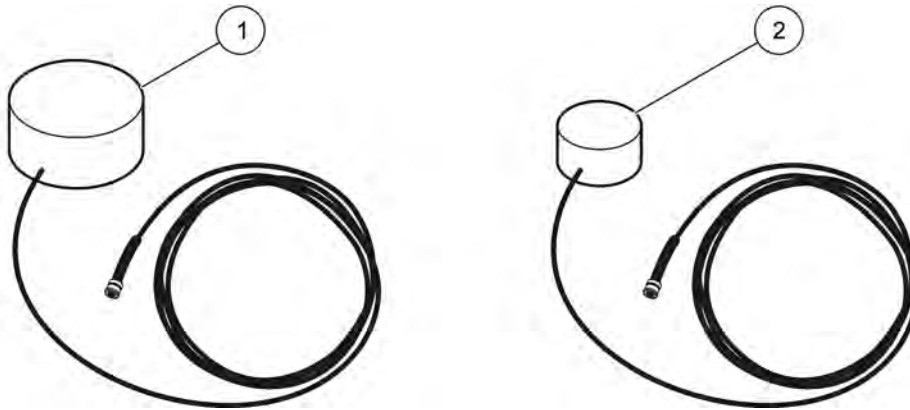
NOTICE

The antenna should be installed in the road approximately 152.4 to 203.2 mm (6 to 8 in.) inches from the manhole or vault containing the flow meter.

1. Unpack the antenna ([Figure 8](#)) or disassemble the antenna from the instrument.
2. Excavate a hole or trench in the road surface or ground approximately 127 mm (5 in.) in diameter (or square) and 76.2 mm (3 in.) deep.
3. Select the closest position from the excavated hole to the manhole. Drill a 19.1 to 25.4 mm ($\frac{3}{4}$ to 1 in.) hole from the selected position to the manhole. Make sure to drill the hole below the steel manhole cover support ring ([Figure 9](#), [List item](#) on page 7).
4. Put the antenna cable through the drill hole into the manhole or vault.
5. Install the antenna in the excavated hole. Pull the antenna cable taut. Locate the antenna so that the ceramic side of the antenna is approximately 6.4 ($\frac{1}{4}$ in.) to 12.7 mm ($\frac{1}{2}$ in.) maximum below the road or ground surface. Make sure the antenna sits safely in the hole.
6. Attach the antenna cable to the antenna connector.
7. Make sure that the antenna is working by placing a call from the instrument (refer to [Verify the wireless connection](#) on page 2).
8. When the operation of the antenna is confirmed, permanently bury the antenna.
 - a. Insert asphalt mix around the antenna and pack it in place. Make sure the antenna is sitting firmly on a solid base and cannot be rocked back and forth.
 - b. Install the asphalt mix around the antenna. The mix should be level with the road surface but not over the antenna surface.
 - c. Pour the Bondo sealer on and over the asphalt mix and over the top of the antenna. There should be no more than 6.4 mm ($\frac{1}{4}$ in.) of Bondo sealer over the top of the antenna.

- d. Connect the desired sensors and options to the flow meter. Calibrate the sensors and install the flow meter in the manhole.

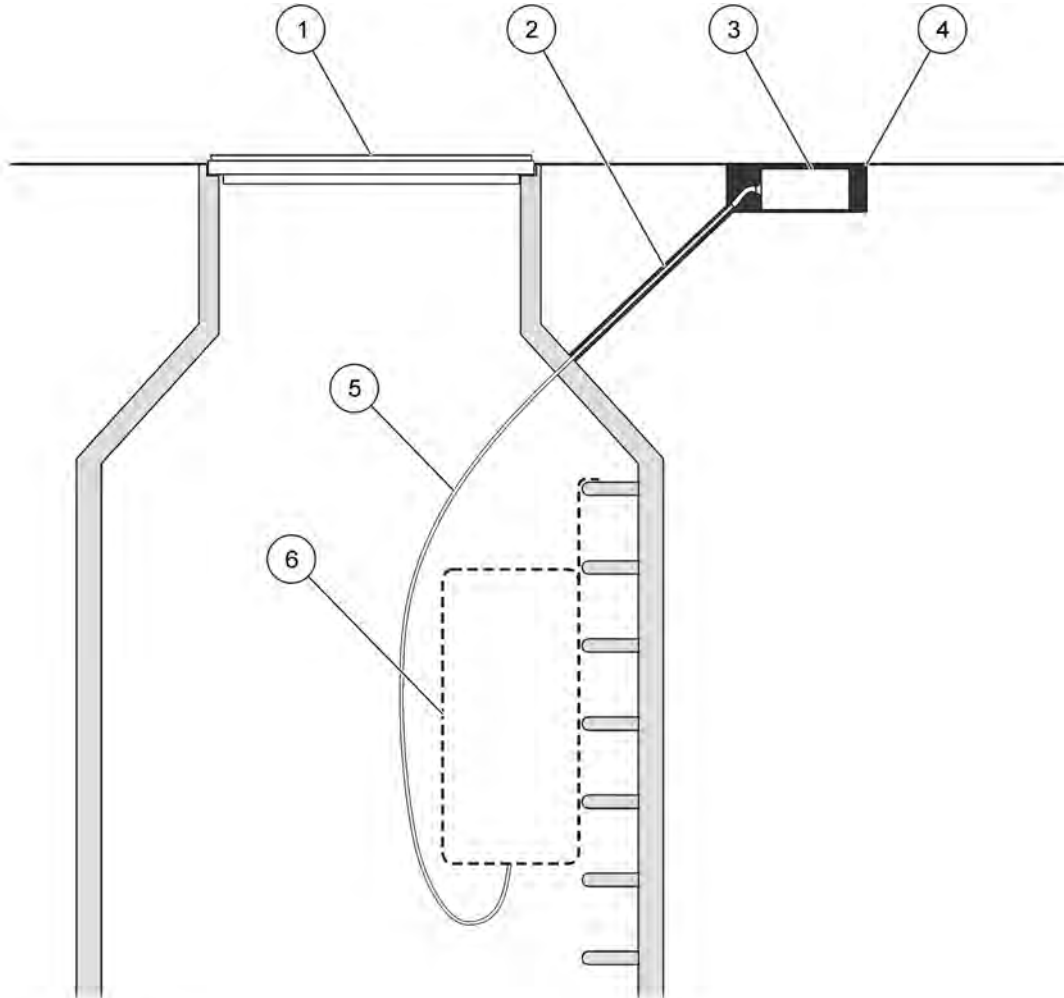
Figure 8 Burial antennas



1 Traffic rated in-road/burial antenna (Verizon)

2 Traffic rated in-road/burial antenna (Sprint)

Figure 9 Burial antenna assembly



1 Manhole cover

2 19.1 to 25.4 mm ($\frac{3}{4}$ to 1 in.) hole

3 Antenna

4 Trench or hole for antenna

5 Antenna cable

6 Flow meter

Replacement Parts

Note: Product and Article numbers may vary for some selling regions. Contact the appropriate distributor or refer to the company website for contact information.

Description	Item no.
Half wave, 824-894 & 1850-1990 MHz, 3 dBi	5228400
Half wave European, 870-960 & 1710-1880 MHz, 3dBi	5255300
Traffic rated manhole lid quad, 824-896 & 1850-1990 MHz, 3 dBi	5255400
Wing Quad, 824-960 & 1710-2170 MHz, 2.15 dBi	6241804
Traffic rated in-road/burial antenna (Verizon), 824-896 MHz, 3 dBi	6246200
Traffic rated in-road/burial antenna (Sprint), 1850-1990 MHz, 3 dBi	6683000

Tab 4: DVD with Raw Flow Monitoring Data

Tab 5: US³ Company Information

US³ is a California Corporation **Federal ID No. 33-0729605** and qualifies as a Minority Business Enterprise. US³ has certified as an MBE with the California Public Utility Commission's authorized clearinghouse, **Verification Number: 97ES0008**.

US³ is a specialty service company for the Water & Waste Water industry, providing monitoring and control for Utilities since 1996. US³ is in the forefront of this industry by taking the proven technological approaches developed in other high-tech industries and applying them to protect one of our most precious natural resources - our water.

US³ engineers and technical personnel have applied advanced instrumentation system technology to water/wastewater open channel flow monitoring, pipeline evaluation, engineering, and data analysis, all coupled to the power of the Internet. This unique integrated systems approach allows the company to bring greater insight and intelligence to gathering information about water/wastewater system performance of our clients, and in turn, to support the fulfillment of their commitments to manage and cost effectively design, operate, and maintain these systems.

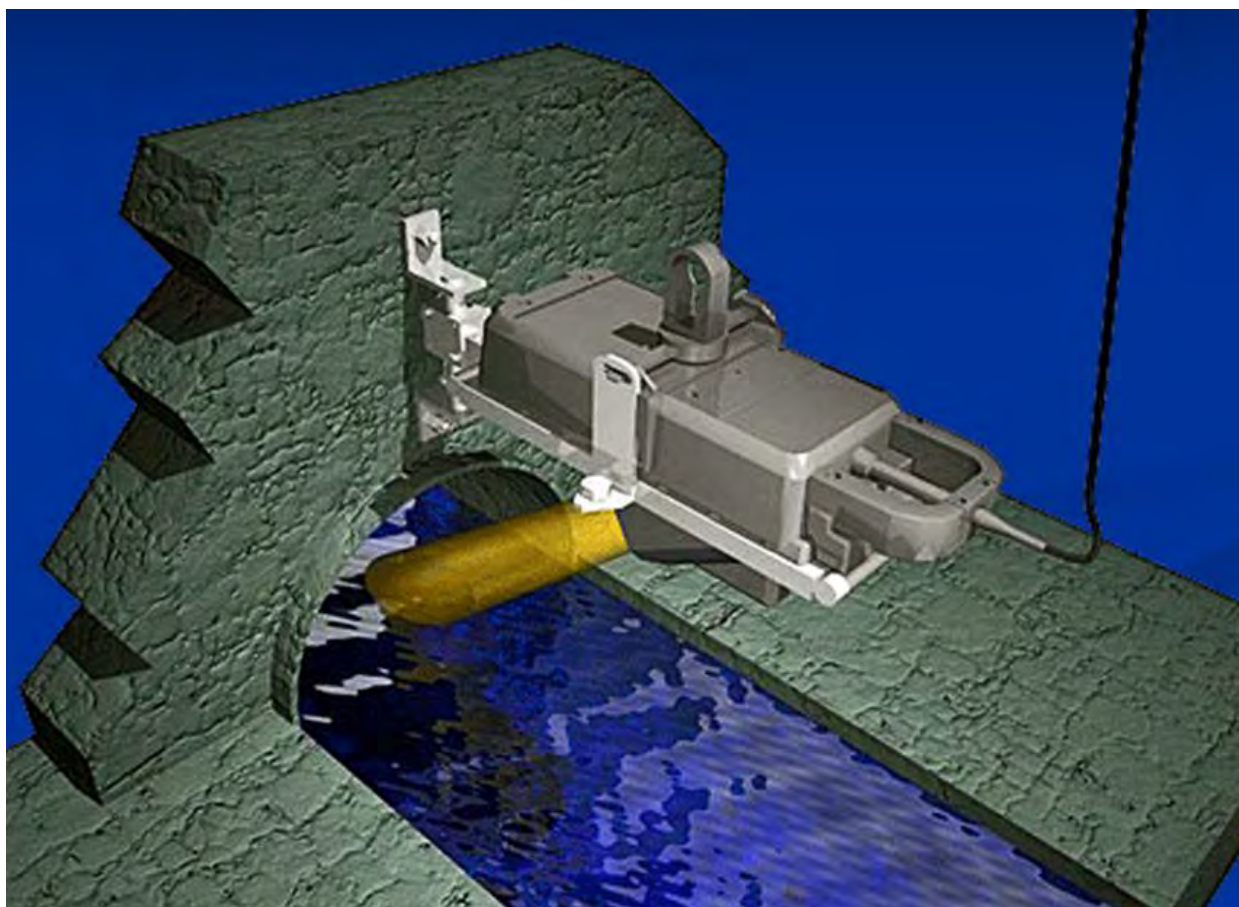


Figure: US³ utilizes exclusively Hach March-McBirney Flo-Dar® Meters

Moreover, **US³** supports Municipalities, Consulting Engineering firms and other water/waste water systems integrators by providing temporary technical services for engineering, software programming and technical site maintenance and calibration site support work, primarily in the Water and Waste Water industries.



Figure: All technicians are certified for Confined Space Entry.

Name, Title, Address and Telephone numbers of persons to contact concerning this report.

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Appendices

Appendix L: Hydrology Report

Appendices

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Preliminary Hydrology Memo

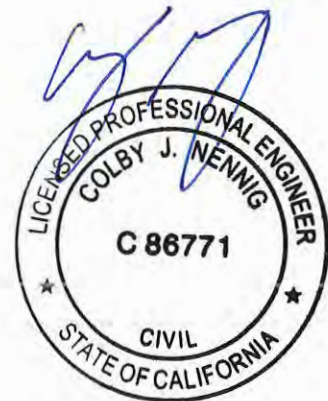
DATE: November 11, 2019

TO: City of Brea

FR: R.A. Smith

CC:

RE: Brea Mall Expansion Preliminary H & H Report



Section 1 – Project Description

The proposed redevelopment is located at 1065 Brea Mall, in Brea California. The property is bound by Randolph Avenue to the west, E Birch Street to the north, State College Boulevard to the East, and Imperial Highway to the south. The existing site was previously developed and the project is proposing demolition of the existing Sears Building and associated pedestrian access. Additionally, the existing A.C. Parking lot is proposed to be demolished. The existing utilities servicing the Sears Building are proposed to be removed, and utilities that are passing through the existing parking lot are proposed to be re-routed adjacent to the proposed redevelopment.

The proposed redevelopment has both a residential and retail component. The westernmost building is a multi-level building with 310 proposed residential dwelling units. On the first ground level of this building there are proposed retail/restaurant tenants. The northern portion of the building is designated as a residential parking structure and will provide parking for residents only. This building also contains a loading dock on the north side of the building adjacent to the ring road.

The proposed building located in the Southwest Corner of the redevelopment is a proposed Fitness Center including an outdoor pool area. The fitness center is serviced by an existing at-grade loading dock to the east of the building.

The proposed buildings on the easterly side of the redevelopment consist of a Sporting Goods Store on the upper level, and retail/restaurants on the lower level. There is a proposed parking structure at the Southeast Corner of the development that is provided for customers/employees only. There will be ingress/egress provided at the lower level, and 2nd level. There is a proposed loading dock located on the upper level for service to the Sporting Goods/Retail/Restaurant. These proposed buildings will abut and connect to the existing mall.

The existing ring road will be reconfigured with a new A.C. Pavement ring road that provides vehicular access to the proposed residential parking structure, retail parking structure, and proposed loading docks. It is anticipated that the existing ring road south of the redevelopment will be utilized for new utilities and/or utility re-routing. As such, there will be new A.C. Pavement within these trenching locations, and the existing ring road will be milled and overlaid to match the existing grades.

There is a proposed Paseo containing hardscape, softscape, and landscaping between the new buildings. This area will provide a place for pedestrians to lounge, walk and provides access between the different uses.

On the easterly side of the project site, east of the proposed Sporting Goods Store, the existing parking lot on the upper level will be reconfigured with a new A.C. Pavement Parking lot and access road to the retail parking structure.

New Utility services (electrical, gas, water, fire, sanitary sewer, storm roof drains) will be provided to each proposed building. Two new ADS Chamber systems are proposed for water quality treatment and hydromodification.

The disturbed area of the project site is approximately 742,265 sf. Because of the improvements to the existing ring road it is not feasible to capture and treat the entirety of the disturbed area. Instead, a portion of the existing parking lot run-on (97,336sf) will be treated in lieu of the disturbed area (57,680sf) which follows existing drainage patterns.

There will be proposed landscaping on the project site within the parking lot areas, and the paseo. However, at this time the quantity of landscaping/pervious areas has not been determined. For the purposes of this report it is conservatively assumed that the entirety of the proposed redevelopment is 100% impervious.

See Existing Hydrology Map in in Attachment 2 and Proposed Hydrology Map in Attachment 3.

A summary of the Hydrologic Areas are provided below:

Existing Hydrologic Area						
Identification	Area (sf)	Area (ac)	Pervious Area (sf)	Pervious Area (ac)	Impervious Area (sf)	Impervious Area (ac)
1-West	485,060	11.14	34,214	0.79	450,846	10.35
2-East	290,483	6.67	13,068	0.30	277,415	6.37
Total	775,543	17.80	47,282	1.09	728,261	16.72
Proposed Hydrologic Area						
Identification	Area (sf)	Area (ac)	Pervious Area (sf)	Pervious Area (ac)	Impervious Area (sf)	Impervious Area (ac)
DMA #1	597,559	13.72	0	0.00	597,559	13.72
DMA #2	177,984	4.09	0	0.00	177,984	4.09
Total	775,543	17.80	-	-	775,543	17.80

Section 2 – Hydrology Requirements

This H & H Report is provided to show that the project will satisfy the following hydrology requirements outlined by the Orange County Hydrology Manual and Technical Guidance Document for projects in North Orange County. The methodology discussed in the Orange County Hydrology Manual, and latest addendum, was used to satisfy the requirements below:

1. Hydromodification Requirements of the 2-year 24-hour storm event
 - Reduce Peak Runoff Volume to less than 5% increase of the pre-developed condition
 - Increase Time of Concentration to match the pre-developed condition
 - Reduce Peak Flows to less than 10% increase of the pre-developed condition
2. Hydrology/Hydraulic Analysis of existing and post-development peak 100-year storm flow rates, including mitigation measures to reduce peak flows to existing conditions
3. Hydrology/Hydraulic Analysis to ensure proposed storm drain system is designed to accommodate 100-year peak flows discharging from the project.

Section 3 – Hydromodification

See Section II.3 and Attachment 1 of the WQMP Report for Hydromodification Calculations and WinTR-55 Model Output. A Summary of results is provided below:

Runoff Volume (cf):

$$(V_{2\text{-yr},POST} / V_{2\text{-yr},PRE}) \leq 1.05$$

$$\text{Raw Data: } (117,754 \text{ cf} / 107,122 \text{ cf}) = 1.10 > 1.05$$

$$\text{Chamber \#1 Sizing} = 40,445 \text{ cf}$$

$$\text{Chamber \#2 Sizing} = 12,056 \text{ cf}$$

$$\text{Total retained on-site} = 52,501 \text{ cf}$$

$$\text{Actual Runoff Volume in Post-Condition} = 117,754 \text{ cf} - 52,501 \text{ cf} = 65,253 \text{ cf}$$

$$\text{Accounting for Chamber System: } (65,253 \text{ cf} / 107,122 \text{ cf}) = 0.61 < 1.05$$

Time of Concentration (hr):

$$(T_{c2\text{-yr},PRE} / T_{c2\text{-yr},POST}) = \leq 1.05$$

$$(0.100\text{hr} / 0.123\text{hr}) = 0.81 \leq 1.05$$

Peak Flow (cfs):

$$(Q_{2\text{-yr},POST} / Q_{2\text{-yr},PRE}) \leq 1.10$$

$$(23.99 \text{ cfs} / 23.10 \text{ cfs}) = 1.04 \leq 1.10$$

Section 4 – Hydrology/Hydraulic Analysis of pre vs. post 100-year Peak Flows

The hydrologic analysis was performed in accordance with the Orange County Rational Methodology outlined in the Orange County Hydrology Manual and its latest addendum. The addendum limits the initial drainage area to 300ft. As such, the time of concentration was assumed to be 5 minutes based on size and land use of predominately paved and impervious sub areas. The rainfall intensity was determined from the appropriate intensity-duration-frequency (IDF) curve for the particular area of study. Orange County uses different IDF curves based depending on whether the location is a mountainous or non-mountainous region. Since this site is below 2,000 in elevation the main precipitation intensities for non-mountainous areas was used. Figure B-3 from the Orange County Hydrology Manual was used for finding the intensities. The Fp used is 0.25 for Soil Group C soils. See applicable Sections from the Hydrology Manual in Attachment 1 of this Report.

As shown in the Proposed Hydrology Exhibit (Attachment 3) the proposed site contains a series of new storm drain infrastructure. Each pipe run corresponds to a travel time (Tt) which results in a higher time of concentration and a lower intensity. The Manning's Equation was used to calculate the velocity within each pipe. (Note that at this time the full hydraulic analysis of each pipe run is not included in this Report as this is a Preliminary Study).

Manning Equation:

$$Q = VA \quad V = \frac{k}{n} \left(\frac{A}{P} \right)^{2/3} S^{1/2}$$

Where k = 1.49

A = Flow Area of the Pipe (sf)

P = Wetted Perimeter (ft)

Q = Discharge Flow Rate (cfs)

S = Slope (ft/ft)

V = Velocity (ft/s)

The travel time can be found by dividing the pipe length by the velocity and multiplying the value by 60 to get the travel time in minutes:

$$Tt \text{ (min)} = [\text{pipe length (ft)}] / [\text{velocity (ft/s)} * 60 \text{ (sec/min)}]$$

In addition to reducing the peak flows another important aspect of the design is to size the storm drain pipes to accommodate the runoff from the 100-year peak flows. Using the Manning's Equation above, the peak flows (Q) for the 100-year storm were calculated for each proposed drainage area. The pipes were sized for a capacity to bypass the 100-year peak flows whilst maintaining a minimum velocity of 2.0 ft/s.

Hydraulic Calculations were performed using a spreadsheet based on the Hydrology Manual and Methodology as discussed above. The results are depicted in (Attachment 4) and as summarized below:

Pre-Development				
Rational Analysis	Coefficient, C	Intensity (in/hr)	Area (ac)	Q100 (cfs)
Area 1 - West	0.84	5.38	11.14	50.15
Area 2 -East	0.86	6.19	6.67	35.46
Existing Combined Flows to Public Storm Drain				85.61
Post-Development				
Rational Analysis	Coefficient, C	Intensity (in/hr)	Area (ac)	Q100 (cfs)
DMA #1	0.90	4.77	13.72	58.85
DMA #2	0.90	6.17	4.09	22.70
Proposed Combined Flows to Public Storm Drain				81.55

As depicted above and in Attachment 4 the flows to the storm drain system are less in the redeveloped condition than the existing. Note that the redeveloped condition is also assuming 100% impervious area, and has not taken into account the additional storage volume provided by the proposed Chamber System.

Section 5 – Bypass Flows

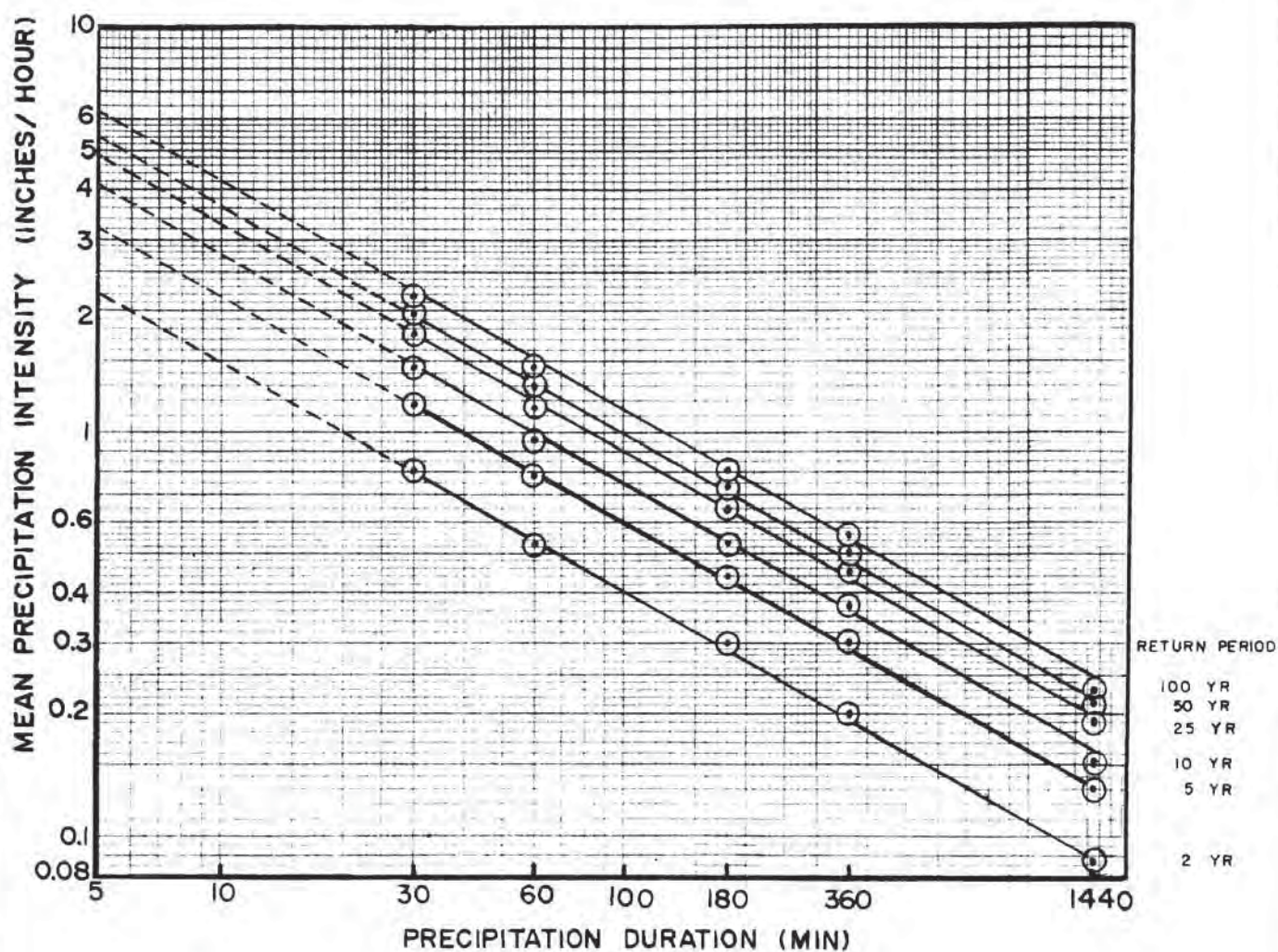
As shown in the Existing Hydrology Exhibit (HYD-01), there are two existing storm drain pipes that run through the project site and discharge near the Randolph Avenue Driveway. The pipe heading south (running westerly of the existing Nordstrom Parking Structure) is an 18" RCP pipe running at a slope of 2.00%. The pipe running in a southwesterly direction is a 36" RCP pipe sloping at 0.25%. Using the Manning's Equation (with an N Value of 0.013) the existing pipes have a capacity of 14.90cfs, and 33.43cfs, respectively. This yields a total capacity of approximately 48.33cfs in the existing condition.

Because of the location of the proposed buildings these two pipes are proposed to be re-routed and/or upsized. The existing 36" pipe is proposed to be re-routed through the new ring road alignment, where the new pipe will pickup the existing 18" pipe. The new 36" pipe will follow the alignment of the existing 18" pipe running southerly just west of the proposed Residential Building. The new pipe is 36" HDPE. Using the Manning's Equation (with an N Value of 0.009) the proposed bypass pipe has a capacity of 61.09cfs. As such, the capacity of the proposed storm drain bypass system exceeds the existing storm drain system that is in place, and will not adversely impact the redevelopment.

Attachment 1 – Orange County Hydrology Manual Exhibits

Regression Equations: $I(t) = at^b$
 (I= Intensity in inches/hour, t= duration in minutes)

Return Frequency (years)	a	b
2	5.702	-0.574
5	7.870	-0.562
10	10.209	-0.573
25	11.995	-0.566
50	13.521	-0.566
100	15.560	-0.573



ORANGE COUNTY
 HYDROLOGY MANUAL

**MEAN PRECIPITATION
 INTENSITIES FOR
 NONMOUNTAINOUS AREAS**

C.6.4. Estimation of Maximum Loss Rates for Pervious Areas, F_p

Table C.2 lists the maximum loss rates (inch/hour), F_p , for pervious area as a function of soil group.

TABLE C.2.
MAXIMUM EFFECTIVE PERVIOUS AREA LOSS RATES (inch/hour), F_p

<u>SOIL GROUP:</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
F_p :	0.40	0.30	0.25	0.20

Table C.2 reflects the model calibration assuming an F_p of 0.30 in/hr. for all the considered catchments and storm return frequencies. This mean value of F_p of 0.30 in/hr. was assigned to Hydrologic Soil Group B due to the actual average soil conditions in the reconstitution study areas. The F_p values for Hydrologic Soil Groups A, C, and D, were assigned to account for the different soil types that may be found in Orange County.

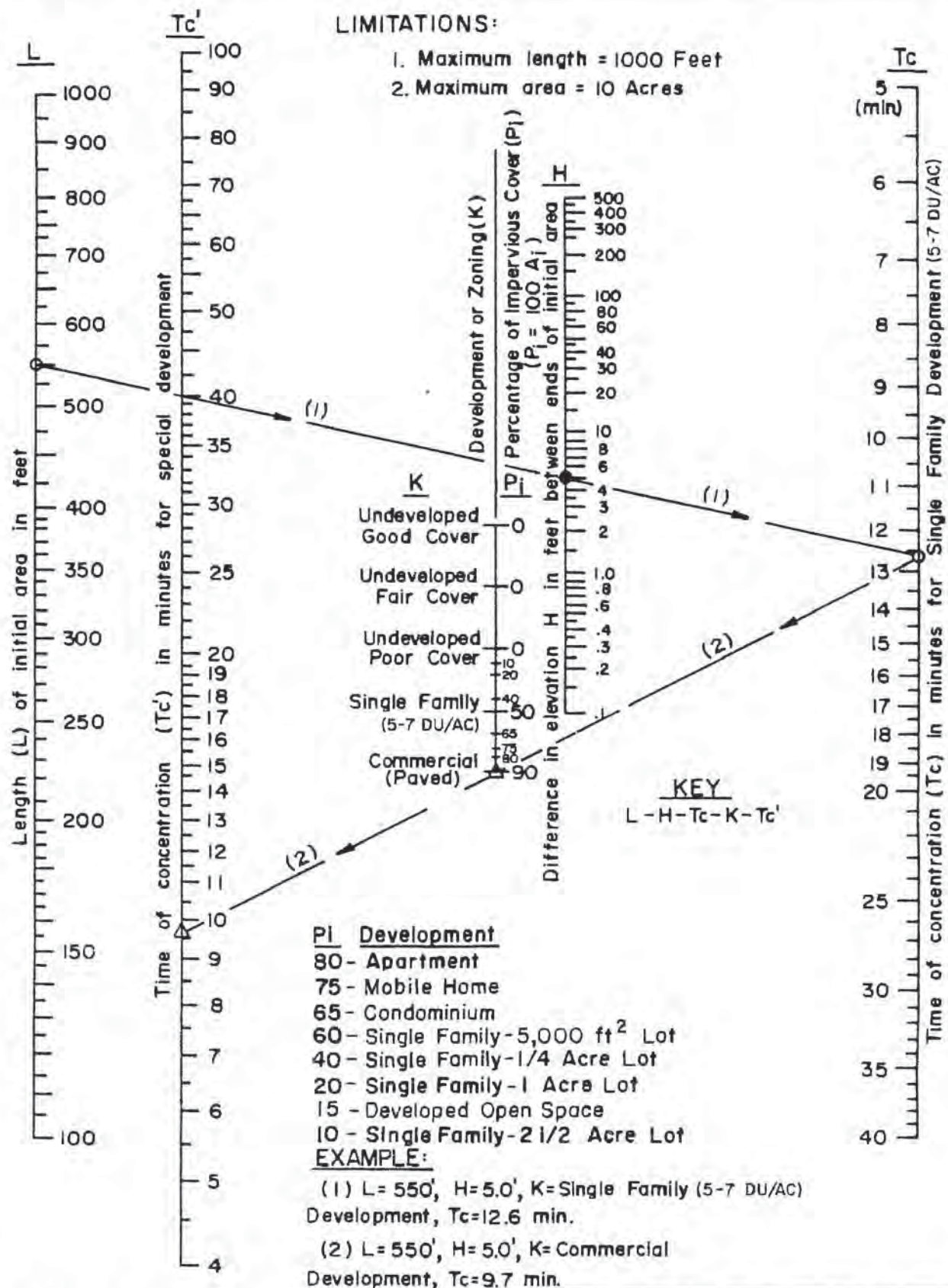
C.6.5. Estimation of Catchment Maximum Loss Rates, F_m

The maximum loss rate selected from Table C.2 applies to the pervious area fraction of the watershed. The loss rate assumed for an impervious surface is 0.0 inch/hour. The maximum loss rate, F_m , for a catchment is therefore given by

$$F_m = a_p F_p \quad (C.7)$$

where a_p is the pervious area fraction and F_p is the maximum loss rate for the pervious area (Section C.6.4).

Should a catchment contain several F_m values, the composite F_m value is determined as a simple area average of the several F_m values.



ORANGE COUNTY
HYDROLOGY MANUAL

**TIME OF CONCENTRATION
NOMOGRAPH
FOR INITIAL SUBAREA**

It is noted that the T_c computation procedure is based upon the summation of an initial subarea time of concentration with the several travel times estimated by normal depth flow-velocities through subsequent subareas.

D.4. INTENSITY-DURATION CURVES

The precipitation intensity-duration curves presented in Section B.3 (Figures B-3 and B-4) are appropriate for the rational method.

D.5. RUNOFF COEFFICIENT

The runoff coefficient (C) is the ratio of rate of runoff to the rate of rainfall at an average intensity (I) when the total drainage area is contributing. The selection of the runoff coefficient depends on rainfall intensity, soil infiltration rate (F_p), and impervious and pervious area fractions (a_i and a_p).

Since one acre-inch/hour is equal to 1.008 cfs, the rational formula is generally assumed to estimate a peak flowrate in cfs. Runoff coefficient curves are developed using the relationship:

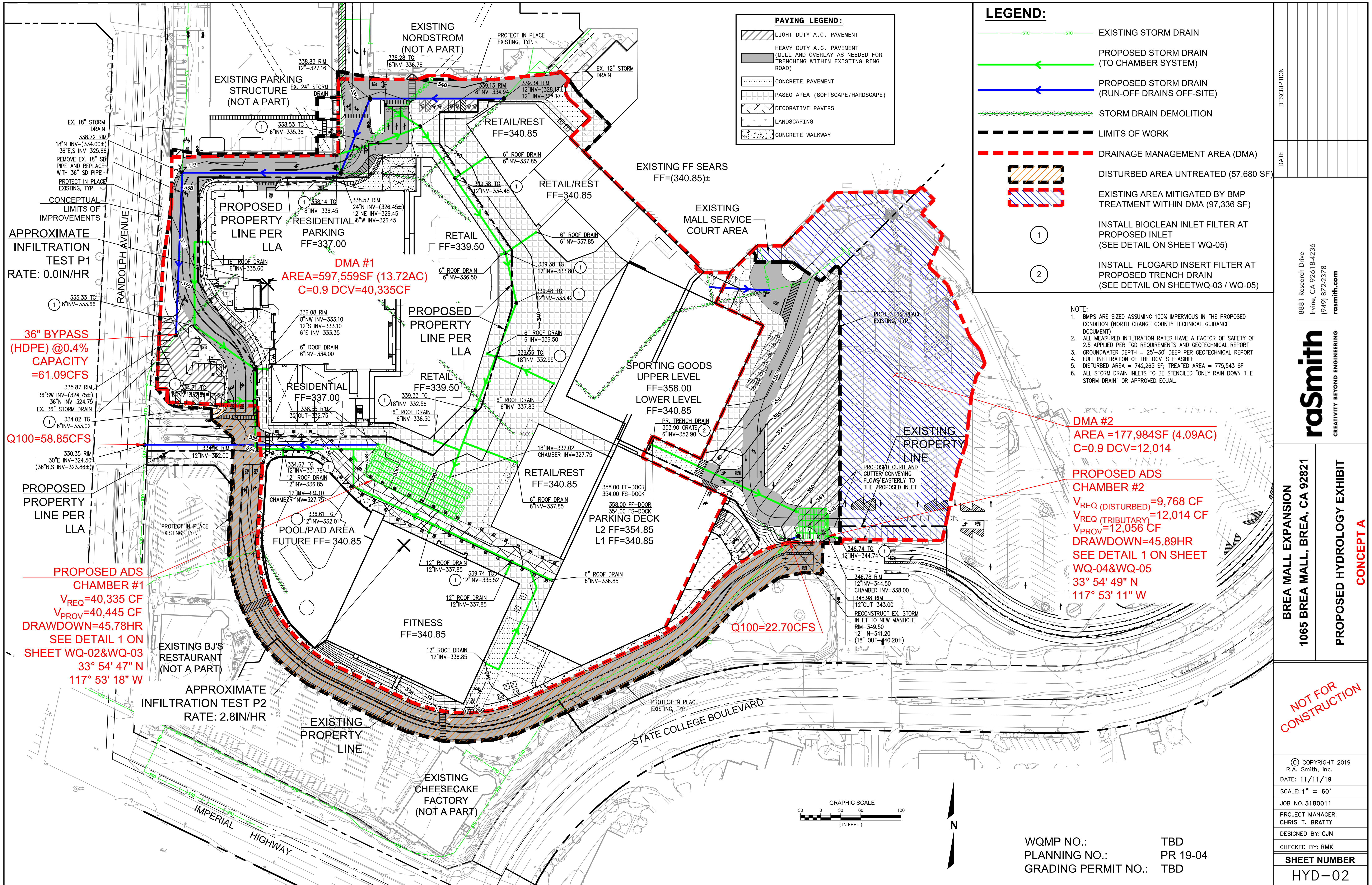
$$C = \begin{cases} 0.90 \left(a_i + \frac{(I - F_p)a_p}{I} \right), & \text{for } I \text{ greater than } F_p \\ 0.90 a_i, & \text{for } I \text{ less than or equal to } F_p \end{cases} \quad (D.3)$$

where the proportion factor of 0.90 is a calibration constant determined by an average fit between the rational method and design storm unit hydrograph (see Section E) peak flow rate estimates, and where

- C = runoff coefficient
- I = rainfall intensity (inches/hour)
- F_p = infiltration rate for pervious areas (inches/hour)
(see Section C.6.4)
- a_i = ratio of impervious area to total area (decimal fraction)
- a_p = ratio of pervious area to total area (decimal fraction), ($a_p = 1 - a_i$)

Attachment 2 – Existing Hydrology Exhibit

Attachment 3 – Proposed Hydrology Exhibit



DESCRIPTION	DATE
8881 Research Drive Irvine, CA 92618-4236 (949) 872-2378 rasmith.com	
raSmith CREATIVITY BEYOND ENGINEERING	
BREMA MALL EXPANSION 1065 BREMA MALL, BREMA, CA 92821	
PROPOSED HYDROLOGY EXHIBIT CONCEPT A	
NOT FOR CONSTRUCTION	
© COPYRIGHT 2019 R.A. Smith, Inc. DATE: 11/11/19 SCALE: 1" = 60' JOB NO. 3180011 PROJECT MANAGER: CHRIS T. BRATY DESIGNED BY: CJN CHECKED BY: RMK SHEET NUMBER HYD-02	

Q:\3180011\Drawings\Hydrology\HYD-02 PROPOSED HYDROLOGY EXHIBIT - 11/19/2019 6:45:29 PM.dgn

Attachment 4 – Rational Methodology Calculation Spreadsheet



rasmith.com

Phone: (949)-872-2378

Fax: (949)-387-3915

JOB NO: 3180011

100-YEAR HYDROLOGIC CALCULATIONS

ADAPTED FROM ORANGE COUNTY HYDROLOGY MANUAL																					CJN		11/8/2019
CITY OF BREA																							
HYDROLOGY MANUAL				100 - Year Rainfall Analysis													PAGE 1 OF 1						
NODE/CONTROLLING PATH		DRAINAGE AREA NAME	AREA	AREA (ACRES)		SOIL	DEV.	Tt	Ai	TC	I	C	Fp	Q(TOTAL)	SHEET FLOW		PIPE HYDRAULICS						
																	PIPE	LENGTH	SLOPE	n	VEL.		
																	DIA (IN)		FT/FT		FPS		
Sheet Flow		Existing Area 1	485,060	11.14	11.14	C	MIX		92.9%	5.00	6.19	0.90	0.25	61.83	277	0.01	Q=61.83CAP=33.44						
								1.374									BAD	36	390	0.0025	0.013	4.731	
To Public Storm Drain		Existing Area 1	-	-	11.14	C	MIX		92.9%	6.37	5.38	0.84	0.25	50.15	-	-							
Sheet Flow		Existing Area 2	290,483	6.67	6.67	C	MIX		95.5%	5.00	6.19	0.86	0.25	35.46	600	0.02		-	-				
Sheet Flow		DMA #1	597,559	13.72	13.72	C	MIX		100.0%	5.00	6.19	0.90	0.25	76.39	435	0.01		-	-				
								2.569									12	716	0.005	0.009	4.646		
To Infiltration Chamber		DMA #1	-	-	13.72	C	MIX		100.0%	7.57	4.88	0.90	0.25	60.24	-	-	Q=60.24CAP=91.26						
								0.314									OK	30	350	0.0236	0.009	18.592	
To Public Storm Drain		DMA #1	-	-	13.72	C	MIX		100.0%	7.88	4.77	0.90	0.25	58.85	-	-							
Sheet Flow		DMA #2	177,984	4.09	4.09	C	MIX		100.0%	5.00	6.19	0.90	0.25	22.75	600	0.02							
								0.018									12	10	0.02	0.009	9.291		
To Public Storm Drain		DMA #2	-	-	4.09	C	MIX		100.0%	5.02	6.17	0.90	0.25	22.71	-	-	Q=22.71CAP=19.99						
								0.003									BAD	12	5	0.15	0.009	25.446	
To Infiltration Chamber		DMA #2	-	-	4.09	C	MIX		100.0%	5.02	6.17	0.90	0.25	22.70	-	-							

RATIONAL METHOD

D.1. RATIONAL METHOD EQUATION

The rational method was originally developed to estimate runoff from small (less than one square mile) urban and developed areas and its use shall be limited to those conditions. Basically, the rational method equation relates rainfall intensity, a runoff coefficient, and drainage area size to the direct peak runoff from the drainage area. This relationship is expressed by the equation:

$$Q = CIA \quad (D.1)$$

where

- Q = the runoff in cubic feet per second (cfs) from a given area
- C = a runoff coefficient representing the ratio of runoff to rainfall
- I = the time-averaged rainfall intensity in inches per hour corresponding to the time of concentration
- A = drainage area (acres)

When the flow is concentrated in curb and gutters, drainage channels or conduits, the flow velocity may be estimated by the well-known Manning's equation

$$V = \frac{1.49}{n} \quad R^{2/3} S^{1/2} \quad (D.2)$$

where

- V = mean velocity (fps)
- n = Manning coefficient of roughness (see Design Manual)
- R = hydraulic radius (feet)
- S = energy slope which equals the conduit invert slope for uniform flow

The travel time will then be the flow distance divided by the velocity of flow.

Appendices

Appendix M: Preliminary WQMP

Appendices

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Priority Project Preliminary Water Quality Management Plan (PWQMP)

Project Name: Brea Mall Expansion

Planning Application No. PR 19-04

Address: 1065 Brea Mall, Brea CA 92821

APN: 319-101-37

Prepared for:

Simon Property Group

Clif Poynter

225 West Washington Street

Indianapolis, IN 46204-3438

(317) 263-7312

Prepared by:

R.A. Smith Inc.

Colby Nennig

8881 Research Drive

Irvine, CA 92618

(949) 242-8043

Date: November 11, 2019



Project Owner's Certification			
Planning Application No. (If applicable)	PR 19-04	Grading Permit No.	
Tract/Parcel Map and Lot(s) No.	PM 38394 Book 139, Pages 12-16, Parcel 3	Building Permit No.	
Address of Project Site and APN (If no address, specify Tract/Parcel Map and Lot Numbers)			1065 Brea Mall Brea, CA 92821 APN: 319-101-37

This Preliminary Water Quality Management Plan (WQMP) has been prepared for Simon Property Group by R.A. Smith, Inc. The WQMP is intended to comply with the requirements of the County of Orange NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan, including the ongoing operation and maintenance of all best management practices (BMPs), and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the Santa Ana Region. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner:			
Title	Senior Civil Engineer (Clif Poynter)		
Company	Simon Property Group		
Address	225 West Washington Street, Indianapolis, IN 46204-3438		
Email	Clif.Poynter@Simon.com		
Telephone #	(317) 263-7994		
I understand my responsibility to implement the provisions of this WQMP including the ongoing operation and maintenance of the best management practices (BMPs) described herein.			
Owner Signature		Date	

Preliminary Water Quality Management Plan (WQMP)
Brea Mall Expansion

Preparer (Engineer):			
Title	Project Engineer (Colby Nennig)	PE Registration #	C 86771
Company	R.A. Smith, Inc.		
Address	8881 Research Drive, Irvine, CA 92618		
Email	Colby.Nennig@raSmith.com		
Telephone #	(949) 242-8043		
I hereby certify that this Water Quality Management Plan is in compliance with, and meets the requirements set forth in, Order No. R8-2009-0030/NPDES No. CAS618030, of the Santa Ana Regional Water Quality Control Board.			
Preparer Signature			Date
Place Stamp Here			

Contents

Page No.

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Section II	Project Description	3
Section III	Site Description	12
Section IV	Best Management Practices (BMPs)	17
Section V	Inspection/Maintenance Responsibility for BMPs	34
Section VI	BMP Exhibit (Site Plan)	35
Section VII	Educational Materials	36

Attachments

Attachment 1 .	Hydromodification, and H&H Report
Attachment 2 .	Geotechnical Report
Attachment 3 .	Maps from OC Technical Guidance Document
Attachment 4 .	Infiltration Feasibility Screening

Section I Permit(s) and Water Quality Conditions of Approval or Issuance

Provide discretionary or grading/building permit information and water quality conditions of approval, or permit issuance, applied to the project. If conditions are unknown, please request applicable conditions from staff. *Refer to Section 2.1 in the Technical Guidance Document (TGD) available on the OC Planning website (ocplanning.net).*

Project Information	
Permit/ Application No. (If applicable)	PR 19-04
Grading or Building Permit No. (If applicable)	
Address of Project Site (or Tract Map and Lot Number if no address) and APN	1065 Brea Mall Brea, CA 92821 APN: 319-101-37
Water Quality Conditions of Approval or Issuance	
Water Quality Conditions of Approval or Issuance applied to this project. (Please list verbatim.)	Not Applicable
Conceptual WQMP	
Was a Conceptual Water Quality Management Plan previously approved for this project?	No – this Report serves as the Preliminary/Conceptual WQMP for the Project.

Watershed-Based Plan Conditions	
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	The receiving waters for the project site are Coyote Creek, San Gabriel River Reach 1, San Gabriel River Estuary, and San Pedro Bay. A WIHMP has been developed for the Coyote Creek-San Gabriel River Watershed and has been submitted to the Executive Officer for approval, but has not yet been approved. Coyote Creek TMDLS – Metals (Copper, Lead, Zinc) San Gabriel TMDLS – Metals (Copper, Lead, Zinc), Selenium

Section II Project Description

II.1 Project Description

Provide a detailed project description including:

- Project areas;
- Land uses;
- Land cover;
- Design elements;
- A general description not broken down by drainage management areas (DMAs).

Include attributes relevant to determining applicable source controls. *Refer to Section 2.2 in the Technical Guidance Document (TGD) for information that must be included in the project description.*

Description of Proposed Project	
Development Category (From Model WQMP, Table 7.11-2; or -3):	• Restaurants where the land area of development is 5,000 square feet or more including parking area. This category is defined as facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC code 5812). • Parking lots 5,000 square feet or more including associated drive aisle, and potentially exposed to urban stormwater runoff. A parking lot is defined as a land area or facility for the temporary parking or storage of motor vehicles used personally, for business, or for commerce. • All significant redevelopment projects, where significant redevelopment is defined as the addition or replacement of 5,000 or more square feet of impervious surface on an already developed site. Redevelopment does not include routine maintenance activities that are conducted to maintain original line and grade, hydraulic capacity, original purpose of the facility, or emergency redevelopment activity required to protect public health and safety.

Project Area (ft²): 742,265	Number of Dwelling Units: 310		SIC Code: 5812, 5311	
Project Area	Pervious		Impervious	
	Area (acres or sq ft)	Percentage	Area (acres or sq ft)	Percentage
Pre-Project Conditions	40,600	5.5	701,665	94.5
Post-Project Conditions	0**	0.00**	742,265**	100.00%**
** At the time of this Preliminary WQMP the site plan areas (specifically the proposed landscape areas) have not been determined. For the sake of this report it is conservatively assumed that the entirety of the proposed redevelopment is 100% impervious.				
Drainage Patterns/Connections	In both the existing and proposed conditions there is essentially a lower level (westerly) and an upper level (easterly) that provide access to the different mall levels. The primary drainage pattern for the lower level is from Northeast to Southwest and the primary drainage patterns for the upper level is North to South. In the existing condition the lower level (west) sheet flows to existing storm drain inlets and discharges to the public storm drain within Randolph Avenue. The proposed project maintains the existing drainage patterns in that the runoff is captured via storm drain inlets, conveyed to the proposed ADS Chamber System for infiltration, and overflows to the public storm drain within Randolph Avenue. This Lower Level is considered DMA #1 for the purposes of this report. In the existing condition the upper level (east) sheet flows to existing storm drain inlets and discharges to the private storm drain adjacent to State College Boulevard within the inner ring road of the Mall. The runoff is then conveyed south of the existing Cheesecake Factory and conveyed west to the public storm drain with Randolph Avenue. The proposed project maintains the existing drainage patterns in that the runoff is captured via storm drain inlets, conveyed to the proposed ADS Chamber System for infiltration, and overflows to the same inlet as the existing project site.			

Narrative Project
Description:
(Use as much space as
necessary.)

The existing development consists of a portion of the existing Brea Mall including the existing Sears Department Store, A.C. Pavement parking lot, concrete sidewalk for pedestrian access, and existing utilities.

The Brea Mall Expansion Redevelopment is proposing to demolish the existing Sears Building and associated pedestrian access. Additionally, the existing A.C. Parking lot is proposed to be demolished. The existing utilities servicing the Sears Building are proposed to be removed, and utilities that are passing through the existing parking lot are proposed to be re-routed adjacent to the proposed redevelopment.

The proposed redevelopment has both a residential and retail component. The westernmost building is a multi-level building with 310 proposed residential dwelling units. On the first ground level of this building there are proposed retail/restaurant tenants. The northern portion of the building is designated as a residential parking structure and will provide parking for residents only. This building also contains a loading dock on the north side of the building adjacent to the ring road.

The proposed building located in the Southwest Corner of the redevelopment is a proposed Fitness Center including an outdoor pool area. The fitness center is serviced by an existing at-grade loading dock to the east of the building.

The proposed buildings on the easterly side of the redevelopment consist of a Sporting Goods Store on the upper level, and retail/restaurants on the lower level. There is a proposed parking structure at the Southeast Corner of the development that is provided for customers/employees only. There will be ingress/egress provided at the lower level, and 2nd level. There is a proposed loading dock located on the upper level for service to the Sporting Goods/Retail/Restaurant. These proposed buildings will abut and connect to the existing mall.

The existing ring road will be reconfigured with a new A.C. Pavement ring road that provides vehicular access to the proposed residential parking structure, retail parking structure, and proposed loading docks. It is anticipated that the existing ring road south of the redevelopment will be utilized for new utilities and/or utility re-routing. As such, there will be new A.C. Pavement within these trenching locations, and the existing ring road will be milled and overlaid to match the existing grades.

There is a proposed Paseo containing hardscape, softscape, and landscaping between the new buildings. This area will provide a place for pedestrians to lounge, walk and provides access between the different uses.

On the easterly side of the project site, east of the proposed Sporting Goods Store, the existing parking lot on the upper level will be reconfigured with a new A.C. Pavement Parking lot and access road to the retail parking structure.

New Utility services (electrical, gas, water, fire, sanitary sewer, storm roof drains) will be provided to each proposed building. Two new ADS Chamber systems are

proposed for water quality treatment and hydromodification.

11.2 Potential Stormwater Pollutants

Determine and list expected stormwater pollutants based on land uses and site activities. *Refer to Section 2.2.2 and Table 2.1 in the Technical Guidance Document (TGD) for guidance.*

Pollutants of Concern			
Pollutant	Check One for each: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	E ☒	N ☐	Residential Development, Commercial Development, Restaurants and uncovered parking lots
Nutrients	E ☒	N ☐	Residential Development, Commercial Development, Restaurants and uncovered parking lots
Heavy Metals	E ☐	N ☐	Commercial Development, Restaurants, Uncovered Parking Lots
Pathogens (Bacteria/Virus)	E ☒	N ☐	Residential Development, Commercial Development, Restaurants, uncovered parking lots
Pesticides	E ☒	N ☐	Residential Development, Commercial Development, Restaurants, uncovered parking lots
Oil and Grease	E ☒	N ☐	Residential Development, Commercial Development, Restaurants, uncovered parking lots
Toxic Organic Compounds	E ☒	N ☐	Commercial Development, uncovered parking lots
Trash and Debris	E ☒	N ☐	Residential Development, Commercial Development, Restaurants, parking lots

11.3 Hydrologic Conditions of Concern

Determine if streams located downstream from the project area are potentially susceptible to hydromodification impacts. *Refer to Section 2.2.3.1 in the Technical Guidance Document (TGD) for North Orange County or Section 2.2.3.2 for South Orange County.*

☐ No – Show map

☒ Yes – Describe applicable hydrologic conditions of concern below.

Per the Susceptibility Analysis performed by PACE, and Figure 1 “Susceptibility Analysis San Gabriel-Coyote Creek” in the TGD the project is located with a Potential Area of Erosion, Habitat, & Physical Structure Susceptibility.

Per Section 2.2.3.1 the project is required to:

- Reduce Post-development runoff volume for the 2-yr, 24-hr storm to less than 5 percent increase from the pre-development condition.
- Increase Post-development time of concentration to within 95% or greater than pre-development condition.

The methodology discussed in the Orange County Hydrology Manual (WinTR-55) was used to satisfy the requirements below:

- Reduce Peak Runoff Volume to less than 5% increase of the pre-developed condition
- Increase Time of Concentration to match the pre-developed condition
- Reduce Peak Flows to less than 10% increase of the pre-developed condition

See WinTR-55 Output in Attachment 1 herein. A summary of the results is provided below. See

Summary of Results

Hydromodification Summary			
2-yr, 24-hr Storm	Qpeak (cfs)	Runoff Volume (cf)	Time of Concentration (hr)
Pre-Development	23.10	107,122	0.100
Post-Development	23.99	117,754	0.123

Runoff Volume (cf):

$$(V_{2\text{-yr,POST}} / V_{2\text{-yr,PRE}}) \leq 1.05$$

$$\text{Raw Data: } (117,754 \text{ cf} / 107,122 \text{ cf}) = \mathbf{1.10 > 1.05}$$

$$\text{Chamber \#1 Sizing} = 40,445 \text{ cf}$$

$$\text{Chamber \#2 Sizing} = 12,056 \text{ cf}$$

$$\text{Total retained on-site} = 52,501 \text{ cf}$$

$$\text{Actual Runoff Volume in Post-Condition} = 117,754 \text{ cf} - 52,501 \text{ cf} = 65,253 \text{ cf}$$

$$\text{Accounting for Chamber System: } (65,253 \text{ cf} / 107,122 \text{ cf}) = \mathbf{0.61 < 1.05}$$

Time of Concentration (hr):

$$(T_{C_{2\text{-yr,PRE}}} / T_{C_{2\text{-yr,POST}}}) \leq 1.05$$

$$(0.100\text{hr} / 0.123\text{hr}) = \mathbf{0.81 \leq 1.05}$$

Peak Flow (cfs):

$$(Q_{2\text{-yr,POST}} / Q_{2\text{-yr,PRE}}) \leq 1.10$$

$$(23.99 \text{ cfs} / 23.10 \text{ cfs}) = \mathbf{1.04 \leq 1.10}$$

11.4 Post Development Drainage Characteristics

Describe post development drainage characteristics. *Refer to Section 2.2.4 in the Technical Guidance Document (TGD).*

In both the existing and proposed conditions there is essentially a lower level (westerly) and an upper level (easterly) that provide access to the different mall levels. The primary drainage pattern for the lower level is from Northeast to Southwest and the primary drainage patterns for the upper level is North to South.

In the existing condition the lower level (west) sheet flows to existing storm drain inlets and discharges to the public storm drain within Randolph Avenue. The proposed project maintains the existing drainage patterns in that the runoff is captured via storm drain inlets, conveyed to the proposed ADS Chamber System for infiltration, and overflows to the public storm drain within Randolph Avenue. This Lower Level is considered DMA #1 for the purposes of this report. See WQMP Exhibit in Section VI for reference.

In the existing condition the upper level (east) sheet flows to existing storm drain inlets and discharges to the private storm drain adjacent to State College Boulevard within the inner ring road of the Mall. The runoff is then conveyed south of the existing Cheesecake Factory and conveyed west to the public storm drain with Randolph Avenue. The proposed project maintains the existing drainage patterns in that the runoff is captured via storm drain inlets, conveyed to the proposed ADS Chamber System for infiltration, and overflows to the same inlet as the existing project site. As discussed above the runoff will be conveyed westerly via the private storm drain and connection to the existing public storm drain within Randolph Avenue, where it will join the overflow runoff from DMA #1.

From the public storm drain system within Randolph the stormwater runoff will be conveyed to the receiving waters for the project:

- Coyote Creek
- San Gabriel River Reach 1
- San Gabriel River Estuary
- San Pedro Bay

II.5 Property Ownership/Management

Describe property ownership/management. *Refer to Section 2.2.5 in the Technical Guidance Document (TGD).*

The affected properties are owned by Simon Property Group. BMP Maintenance and Management will be provided by Simon Property Group. There will be no storm drain infrastructure that will be transferred to public agencies.

Section III Site Description

III.1 Physical Setting

Fill out table with relevant information. *Refer to Section 2.3.1 in the Technical Guidance Document (TGD).*

Name of Planned Community/Planning Area (if applicable)	Precise Development (PD)
Location/Address	1065 Brea Mall
	Brea, California
General Plan Land Use Designation	Regional Commercial
Zoning	Major Shopping Center (CC)
Acreage of Project Site	17.04
Predominant Soil Type	Per Geotechnical Report (see Attachment 2) there were six boring drilled at the site and the subsurface soils consisted of a range of sands, silts, and clays along with combinations of each. Hydrologic Soil Group C/D

III.2 Site Characteristics

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.2 in the Technical Guidance Document (TGD).*

Site Characteristics	
Precipitation Zone	0.90 inches
Topography	As the existing site is developed the general topography is relatively flat with the exception of the sloped berm that separates the lower level parking area from the upper level parking areas. This berm is removed in the proposed condition. In the existing and proposed condition the westerly lower level (DMA #1) primarily slopes from Northeast to Southwest at gentle slopes between 1% and 5%. In the proposed condition the easterly upper level (DMA #2) primarily slopes from North to South at gentle slopes between 2%-5%.
Drainage Patterns/Connections	In both the existing and proposed conditions there is essentially a lower level (westerly) and an upper level (easterly) that provide access to the different mall levels. The primary drainage pattern for the lower level is from Northeast to Southwest and the primary drainage patterns for the upper level is North to South as discussed above. In the existing condition the lower level (west) sheet flows to existing storm drain inlets and discharges to the public storm drain within Randolph Avenue. The proposed project maintains the existing drainage patterns in that the runoff is captured via storm drain inlets, conveyed to the proposed ADS Chamber System for infiltration, and overflows to the public storm drain within Randolph Avenue. This Lower Level is considered DMA #1 for the purposes of this report. In the existing condition the upper level (east) sheet flows to existing storm drain inlets and discharges to the private storm drain adjacent

	to State College Boulevard within the inner ring road of the Mall. The runoff is then conveyed south of the existing Cheesecake Factory and conveyed west to the public storm drain with Randolph Avenue. The proposed project maintains the existing drainage patterns in that the runoff is captured via storm drain inlets, conveyed to the proposed ADS Chamber System for infiltration, and overflows to the same inlet as the existing project site.
Soil Type, Geology, and Infiltration Properties	Per the Geotechnical Report (Attachment 2) there are varying soil types throughout the project site. There were two infiltration tests performed at 10 feet below the ground surface. The first test (P1), near the westerly side of the proposed residential building, did not result in a measurable infiltration rate as the subsurface soils consisted of primarily sandy clay and silty clay. There is no proposed infiltration BMP within this soil group. The second test (P2), north of the proposed Fitness Center had a measured infiltration rate of 2.8 in/hr. The subsurface soils in this located consist primarily of poorly graded sand and sandy silt. Per the factor categories discussed in the Geotechnical Report, and Worksheet H included in Attachment 4, a Factor of Safety equal to 2.5 was applied for a design infiltration rate of 1.12 in/hr in this area. Chamber #1 is located within this soil group. Per the Boring Log (B6) in the Geotechnical Report the subsurface material near Chamber #2 consist of primarily san from a depth of 8.5ft to 13feet under the proposed Chamber System.
Hydrogeologic (Groundwater) Conditions	Per the Geotechnical Report Groundwater was encountered at a depth of 25-30ft below ground surface. As such, there will not be any infiltration restrictions because of groundwater. See also Worksheet I in Attachment 4.
Geotechnical Conditions (relevant to infiltration)	The proposed Chamber Systems were both placed within areas that infiltration rates are expected to be favorable. There is nothing within the Geotechnical Report (outside of measured infiltration rate at P1 – not near a proposed BMP) that recommends or states that infiltration should not be accommodated on the project site. See Attachment 4 “Infiltration BMP Feasibility Worksheet” for reference.
Off-Site Drainage	There is an existing parking lot to the north of DMA #2, which currently drains into DMA #2. The flows will follow existing drainage patterns and drain to the proposed basin at the south side of the site.

	As discussed previously the storm drain overflow pipe from DMA #1 will connect to the existing public storm drain system within Randolph Avenue near the westerly driveway. The storm drain overflow pipe from DMA #2 will connect to the existing private storm drain inlet near the Chamber System, where the overflow runoff will be conveyed to the existing private storm drain pipe within the ring road adjacent to State College Boulevard. The storm drain pipe continues south of the existing Cheesecake Factory and westerly towards the public storm drain connection within Randolph Avenue.
Utility and Infrastructure Information	The project also consists of new utilities within the ring road and paseo areas: • New Domestic Water Service for each building • New Irrigation Service for the lower level (utilize existing service for the upper level) • New Fire Loop, hydrants, and standpipe system within proposed Paseo area • New Sanitary Sewer Service to each building • New Dry Utilities (Electric, Gas) for each building

III.3 Watershed Description

Fill out table with relevant information and include information regarding BMP sizing, suitability, and feasibility, as applicable. *Refer to Section 2.3.3 in the Technical Guidance Document (TGD).*

Receiving Waters	Coyote Creek San Gabriel River Reach 1 San Gabriel River Estuary San Pedro Bay
303(d) Listed Impairments	Coyote Creek: Ammonia, Dissolved Copper, Diazinon, Indicator Bacteria, Lead, pH, Toxicity San Gabriel River Reach 1: Coliform Bacteria, pH San Gabriel River Estuary: Copper, Dioxin, Nickel, Dissolved Oxygen
Applicable TMDLs	Coyote Creek: Metals (Copper, Lead, Zinc) San Gabriel: Metals (Copper, Lead, Zinc), Selenium
Pollutants of Concern for the Project	Metals, Toxic Organic Compounds, Indicator Bacteria (Pathogens)
Environmentally Sensitive and Special Biological Significant Areas	Not Applicable, project is not located within an Environmentally Sensitive Area or Special Biological Significant Area. Also, runoff from the project discharges directly to an existing public storm drain line.

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

Describe project performance criteria. Several steps must be followed in order to determine what performance criteria will apply to a project. These steps include:

- If the project has an approved WIHMP or equivalent, then any watershed specific criteria must be used and the project can evaluate participation in the approved regional or sub-regional opportunities. (Please ask your assigned planner or plan checker regarding whether your project is part of an approved WIHMP or equivalent.)
- Determine applicable hydromodification control performance criteria. *Refer to Section 7.II-2.4.2.2 of the Model WQMP.*
- Determine applicable LID performance criteria. *Refer to Section 7.II-2.4.3 of the Model WQMP.*
- Determine applicable treatment control BMP performance criteria. *Refer to Section 7.II-3.2.2 of the Model WQMP.*
- Calculate the LID design storm capture volume for the project. *Refer to Section 7.II-2.4.3 of the Model WQMP.*

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?		YES ☐	NO ☒
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.	Not Applicable - A WIHMP has been developed for the Coyote Creek-San Gabriel River Watershed and has been submitted to the Executive Officer for approval, but has not yet been approved.		

Project Performance Criteria	
If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	For proposed projects within the North County permit area that may have an HCOC, each Priority Project proponent must determine the impact of the proposed development on the downstream hydrologic characteristics. The evaluation of potential impacts is based on the following for a two-year frequency storm event: • Increases in runoff volume; • Decreases in infiltration; • Changes in time of concentration; • Potential for increases in post development downstream erosion; and, • Potential for adverse downstream impacts on physical structure, aquatic and riparian habitat. A project does not have an HCOC if either of the following conditions is met: • The volumes and time of concentration of stormwater runoff for the post-development condition do not significantly exceed those of the predevelopment condition for a two-year frequency storm event (a difference of five percent or less is considered insignificant). • The site infiltrates at least the runoff from a two-year storm event. If a hydrologic condition of concern (HCOC) exists, priority projects shall implement onsite or regional hydromodification controls such that: • Post-development runoff volume for the two-year frequency storm does not exceed that of the predevelopment condition by more than five percent, and • Time of concentration of post-development runoff for the two-year storm event is not less than that for the predevelopment condition by more than five percent.
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	The following performance criteria for LID implementation are stated in both permits: • Priority Projects must infiltrate, harvest and use, evapotranspire, or biotreat/biofilter, the 85th percentile, 24-hour storm event (Design Capture Volume).

List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)	Not Applicable. Project proposes to infiltrate the full DCV and thus satisfies this treatment control performance criteria
Calculate LID design storm capture volume for Project.	$DCV = C * d * A * 43,560 \text{sf/ac} * 1/12 \text{in/ft}$ (Equation III.1) Where: DCV = runoff volume during the design storm event, cu-ft C = runoff coefficient = $(0.75 * \text{imp} + 0.15)$ imp = impervious fraction of drainage area (ranges from 0 to 1) d = storm depth (inches) A = tributary area (acres) Note that at the time of preparation of this Preliminary WQMP the proposed landscape areas have not been determined. As such, it is conservatively assumed that the entirety of the proposed improvements are 100% impervious (C=0.9). <u>Total Disturbed Area</u> $DCV = (0.9) * (0.9 \text{in}) * (17.04 \text{ac}) * (43,560 \text{sf/ac}) * (1/12 \text{in/ft}) = 50,103 \text{ cf}$ <u>DMA #1 Tributary Area</u> $DCV = (0.9) * (0.9 \text{in}) * (13.72 \text{ac}) * (43,560 \text{sf/ac}) * (1/12 \text{in/ft}) = 40,335 \text{ cf}$ Chamber Volume = 40,445 cf <u>Total Disturbed Area</u> $DCV = (0.9) * (0.9 \text{in}) * (4.09 \text{ac}) * (43,560 \text{sf/ac}) * (1/12 \text{in/ft}) = 12,014 \text{ cf}$ Chamber Volume = 12,056 cf

IV.2. Site Design and Drainage

Describe site design and drainage including

- A narrative of site design practices utilized or rationale for not using practices;
- A narrative of how site is designed to allow BMPs to be incorporated to the MEP
- A table of DMA characteristics and list of LID BMPs proposed in each DMA.
See subsequent Project Specific WQMP Summary Report in the following pages.
- Reference to the WQMP “BMP Exhibit.”
- Calculation of Design Capture Volume (DCV) for each drainage area.
- A listing of GIS coordinates for LID and Treatment Control BMPs.

Refer to Section 2.4.2 in the Technical Guidance Document (TGD).



City of Brea

Project Specific WQMP Summary Report

INSTRUCTIONS: Project applicant, please fill out and check all that apply.

Project Name: Brea Mall Expansion	Project Address: 1066 Brea Mall, Brea, CA 92821
WQMP Application Number (DS or CD): TBD	APN(s): 319-101-37
Watershed: Coyote Creek-San Gabriel River	Project Size (Acres): 17.04 (disturbed) 17.80 (treated)
New Development or Redevelopment: Redevelopment	Design Capture Volume (ft ³): 40,335 cf (DMA 1), 12,014cf (DMA 2)
Land Use Type (check one): ☐ Industrial (SIC Code): _____ ☐ Commercial (SIC Code): _____ ☒ Mixed Use ☐ Residential ☐ Municipal (i.e. CIP) ☐ Other (specify): _____	Total BMP Treatment Capacity (ft ³): 52,501 cf (combined) Hydromodification (Yes/No): Yes Owner/Company Name: Simon Property Group Owner Address: 225 West Washington Street, Indianapolis, IN 46204 Contact Name: Clif Poynter Contact Phone: (317) 263-7312 HOA/POA (Yes/No): No

LID BMP SUMMARY TABLE

Provide an itemized list of each LID BMP for each DMA proposed on the project. Expand table as needed.

LID BMP Description (i.e. HSC-1, BIO-2, include manufacturer and model number if possible)	DMA ID (as noted on BMP Plot Plan)	DMA Acres	DCV (indicate units)	BMP Treatment Capacity (indicate units)	BMP GPS Coordinates
1. INF-7 (ADS MC-4500)	DMA 1	13.72	40,335 cf	40,445 cf	33° 54' 47" N; 117° 53' 18" W
2. INF-7 (ADS MC-4500)	DMA 2	4.09	12,014 cf	12,056 cf	33° 54' 49" N; 117° 53' 11" W
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
TOTAL		17.81 ac	52,349 cf	52,501 cf	
Does BMP Capacity Exceed DCV (Y/N)?			Yes		

Non-Structural Source Control BMP's (check all that apply):

- | | |
|--|--|
| ☒ N1 Owner, Tenant, Occupant Education | ☐ N9 Hazardous Materials Disclosure |
| ☒ N2 Activity Restrictions | ☒ N10 Uniform Fire Code |
| ☒ N3 Common Area Landscape Mgmt | ☒ N11 Common Area Litter Control |
| ☒ N4 BMP Maintenance | ☒ N12 Employee Training |
| ☐ N5 Title 22 CCR Compliance | ☒ N13 Loading Dock Good Housekeeping |
| ☐ N6 Local Water Quality Permit | ☒ N14 Common Area Catch Basin Inspection |
| ☐ N7 Spill Contingency Plan | ☒ N15 Street Sweeping Private Streets & Parking Lots |
| ☐ N8 Underground Storage Tank | ☐ N16 Retail Gasoline Outlets |

Structural Source Control BMP's (check all that apply):

- | | |
|--|--|
| ☒ S1 Storm Drain System Stenciling/Signage | ☐ S8 Vehicle Wash Areas |
| ☐ S2 Outdoor Material Storage Areas | ☐ S9 Outdoor Process Areas |
| ☒ S3 Trash Storage Areas | ☐ S10 Equipment Wash Areas |
| ☒ S4 Efficient Irrigation Systems & Landscape Design | ☐ S11 Fueling Areas |
| ☒ S5 Protect Slopes & Channels | ☐ S12 Hillside Landscaping |
| ☒ S6 Loading Dock Areas | ☐ S13 Wash Water Controls for Food Prep Areas |
| ☒ S7 Maintenance Bays | ☐ S14 Community Car Wash Racks |

BMP Maintenance Self-Certification Form for the City of Brea

In addition to routine annual inspections conducted by the City for proper maintenance of post-construction stormwater control measures or Best Management Practices (BMPs) on the property, the City of Brea requires that the party responsible for maintenance of these BMPs receive proper orientation and training on their operations and maintenance. This form is to be completed by the owner representative and shall be made available to the City Authorized Inspector upon request. Should the maintenance provider or facility maintenance representative change at any time, the owner representative shall complete this form with the new responsible party for BMP maintenance.

Property Information	BMP O&M
Project Name: Brea Mall Expansion	Responsible Party: (Owner, management company or HOA/POA) Owner
Legal Owner of Record: Simon Property Group	Contact Name: Clif Poynter
Address: 225 West Washington Street Indianapolis, IN 46204	Address:
Telephone: (317) 263-7312	Telephone:
Email: Clif.Poynter@Simon.Com	Email:

As the party responsible for operation and maintenance of the BMPs specified in the approved Water Quality Management Plan (WQMP) for the subject property, I hereby certify under penalty of law that I, or persons under my supervision, are qualified and competent to carry out the inspection and maintenance the BMPs in a manner consistent with the approved WQMP Operation and Maintenance (O&M) Plan.

Maintenance Representative Signature

Date

As the owner representative of the Brea Mall Expansion of which a Water Quality Management Plan (WQMP) was approved by the City, I hereby certify under penalty of law that all BMPs contained within the approved Project WQMP have been maintained and inspected in accordance with the schedule and frequency outlined in the approved WQMP Operation and Maintenance (O&M) Plan. The maintenance activities and inspections conducted have been performed by qualified and knowledgeable individuals listed above. To the best of my knowledge, the information submitted is

true and accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and citations for violating water quality regulations.

Owner/Representative Signature

Date

DMA #1

DMA #1 is 597,559sf and consists of the “lower level” areas including the new A.C. Parking Lot, A.C. Ring Road, and Paseo Areas. The DMA also includes the footprints of the Residential, Fitness, Retail/Restaurant and Sporting Goods Buildings/Roofs. As discussed previously the landscape areas have not yet been determined. As such the impervious area is conservatively taken as 100%.

$$DCV = (0.9) * (0.9\text{in}) * (13.72\text{ac}) * (43,560\text{sf/ac}) * (1/12\text{in/ft}) = 40,335 \text{ cf}$$

The proposed DMA has multiple inlets within the Paseo and along the ring road to capture the storm drain runoff. These inlets are designed with inlet filters for pretreatment (see WQ-03) and are connected via a proposed storm drain pipe. The proposed roof drains will hard-tie directly into the proposed storm drain pipe. From there runoff will be conveyed to the proposed ADS Chamber System #1 as shown in the WQMP Site Plan Sheet WQ-01. The ADS Chamber System is located at 33°54'47"N; 117°53'18"W.

The Chamber System is sized for an area of 9,441sf and will accommodate a volume of 40,445cf, which is greater than the required volume of 40,335 cf for this DMA. Using the design infiltration rate of 1.12in/hr (FS=2.5) the drawdown was calculated to be:

$$(40,335\text{cf}) / [(1.12\text{in/hr}) * (1/12\text{ft/in}) * (9,441\text{sf infiltration footprint})] = \text{Drawdown} = \underline{45.78 \text{ hrs} < 48 \text{ hours}}$$

The chamber system is designed for full infiltration of the DCV. However, in a storm event greater than the design storm there is an overflow provided to the public main within Randolph Avenue. See Sheets WQ-01, WQ-02 and WQ-03 for more information.

DMA #2

DMA #2 is 177,984sf and consists of the “upper level” parking lot and sidewalk areas. This DMA contains a portion of the existing parking lot (97,336sf) that will be treated in lieu of treating a portion of the disturbed parking area (57,680sf). As such this DMA contains 39,656sf more area than is disturbed, which accounts for approximately 2,246cf larger DCV than required. As discussed previously the landscape areas have not yet been determined, as such the impervious area is conservatively taken as 100%.

$$DCV = (0.9) * (0.9\text{in}) * (34.09\text{ac}) * (43,560\text{sf/ac}) * (1/12\text{in/ft}) = 12,014 \text{ cf}$$

The new/existing parking lot areas drain southerly to the proposed valley gutter across the egress driveway and to the storm drain inlet along the south side of the new parking lot. This inlet is designed with an inlet filter for pretreatment (see WQ-05) and discharges to the proposed chamber system with a new storm drain pipe. ADS Chamber System #2 is shown in the WQMP Site Plan Sheet WQ-01. The Sporting Goods loading dock contains a new trench drain with inlet filter, that is routed to the proposed Underground Chamber System as well. The Chamber is located at 33°54'49"N; 117°53'11"W.

The Chamber System #2 is sized for an area of 2,805sf and will accommodate a volume of 12,056cf, which is greater than the required volume of 12,014cf for this DMA. Using the design infiltration rate of 1.12 in/hr (FS=2.5) the drawdown was calculated to be:

$$(12,014\text{cf}) / [(1.12\text{in/hr}) * (1/12\text{ft/in}) * (2,805\text{sf infiltration footprint})] = \text{Drawdown} = \underline{45.89\text{hrs} < 48 \text{ hours}}$$

The Chamber System is designed for full infiltration of the DCV. However, in a storm event greater than the design storm there is an overflow provided to the existing inlet that discharges to the private storm drain within the ring road. See Sheets WQ-01, WQ-04, and WQ-05 for more information.

IV.3 LID BMP Selection and Project Conformance Analysis

Each sub-section below documents that the proposed design features conform to the applicable project performance criteria via check boxes, tables, calculations, narratives, and/or references to worksheets. Refer to Section 2.4.2.3 in the Technical Guidance Document (TGD) for selecting LID BMPs and Section 2.4.3 in the Technical Guidance Document (TGD) for conducting conformance analysis with project performance criteria.

IV.3.1 Hydrologic Source Controls (HSCs)

If required HSCs are included, fill out applicable check box forms. If the retention criteria are otherwise met with other LID BMPs, include a statement indicating HSCs not required.

HSCs not required. Retention Criteria are met with the proposed ADS Chamber Systems.

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☐
Street trees (canopy interception)	☐
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable pavers, site design)	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐
Other:	☐

IV.3.2 Infiltration BMPs

Identify infiltration BMPs to be used in project. If design volume cannot be met, state why.

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Drywells	☐
INF-7 Subsurface infiltration galleries	☒
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Storm Capture Volume can be met with infiltration BMPs. If not, document how much can be met with infiltration and document why it is not feasible to meet the full volume with infiltration BMPs.

Chamber #1 (DMA #1)

DCV = 40,335 cf

Volume Provided = 40,445 cf (See Sheet WQ-02/WQ-03 for Details)

Drawdown Time = $(40,335 \text{ cf}) / [(1.12 \text{ in/hr}) * (1/12 \text{ ft/in}) * (9,441 \text{ sf infiltration footprint})] = 45.78 \text{ hrs} < 48 \text{ hours}$

Chamber #2 (DMA #2)

DCV = 12,014 cf

Volume Provided = 12,056 cf (See Sheet WQ-04/WQ-05 for Details)

Drawdown Time = $(12,014 \text{ cf}) / [(1.12 \text{ in/hr}) * (1/12 \text{ ft/in}) * (2,805 \text{ sf infiltration footprint})] = 45.89 \text{ hrs} < 48 \text{ hours}$

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, describe any evapotranspiration and/or rainwater harvesting BMPs included.

Not Applicable - Full DCV infiltrated

Name	Included?
All HSCs; See Section IV.3.1	☐
Surface-based infiltration BMPs	☐
Biotreatment BMPs	☐
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Storm Capture Volume can be met with evapotranspiration and/or rainwater harvesting BMPs in combination with infiltration BMPs. If not, document below how much can be met with either infiltration BMPs, evapotranspiration, rainwater harvesting BMPs, or a combination, and document why it is not feasible to meet the full volume with these BMP categories.

Not Applicable - Full DCV infiltrated

IV.3.4 Biotreatment BMPs

If the full Design Storm Capture Volume cannot be met with infiltration BMPs, and/or evapotranspiration and rainwater harvesting BMPs, describe biotreatment BMPs included. Include sections for selection, suitability, sizing, and infeasibility, as applicable.

Name	Included?
Bioretention with underdrains	☐
Stormwater planter boxes with underdrains	☐
Rain gardens with underdrains	☐
Constructed wetlands	☐
Vegetated swales	☐
Vegetated filter strips	☐
Proprietary vegetated biotreatment systems	☐
Wet extended detention basin	☐
Dry extended detention basins	☐
Other:	☐
Other:	☐

Show calculations below to demonstrate if the LID Design Storm Capture Volume can be met with infiltration, evapotranspiration, rainwater harvesting and/or biotreatment BMPs. If not, document how much can be met with either infiltration BMPs, evapotranspiration, rainwater harvesting BMPs, or a combination, and document why it is not feasible to meet the full volume with these BMP categories.

Not Applicable - Full DCV infiltrated

IV.3.5 Hydromodification Control BMPs

Describe hydromodification control BMPs. *See Section 5 of the Technical Guidance Document (TGD).* Include sections for selection, suitability, sizing, and infeasibility, as applicable. Detail compliance with Prior Conditions of Approval (if applicable). *The ADS Chamber Systems' function is twofold. They will provide treatment and infiltration of the full DCV, while also providing storage and retention to mitigate peak flows, increase time of concentration, and decrease runoff volume. See Attachment 1 for reference.*

Hydromodification Control BMPs	
BMP Name	BMP Description

IV.3.6 Regional/Sub-Regional LID BMPs

Describe regional/sub-regional LID BMPs in which the project will participate. *Refer to Section 7.II-2.4.3.2 of the Model WQMP.*

Regional/Sub-Regional LID BMPs
Not Applicable

IV.3.7 Treatment Control BMPs

Treatment control BMPs can only be considered if the project conformance analysis indicates that it is not feasible to retain the full design capture volume with LID BMPs. Describe treatment control BMPs including sections for selection, sizing, and infeasibility, as applicable.

Treatment Control BMPs	
BMP Name	BMP Description

IV.3.8 Non-structural Source Control BMPs

Fill out non-structural source control check box forms or provide a brief narrative explaining if non-structural source controls were not used.

Non-Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	
N2	Activity Restrictions	☒	☐	
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☐	☒	No Hazardous Materials Stored on-site.
N6	Local Industrial Permit Compliance	☐	☒	Not an Industrial Project
N7	Spill Contingency Plan	☐	☒	No Hazardous Materials Stored on-site.
N8	Underground Storage Tank Compliance	☐	☒	No Underground Storage Tanks proposed (i.e. no harvest and use)
N9	Hazardous Materials Disclosure Compliance	☐	☒	No Hazardous Materials Stored on-site.
N10	Uniform Fire Code Implementation	☒	☐	
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☒	☐	
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	Not a retail gasoline outlet.

IV.3.9 Structural Source Control BMPs

Fill out structural source control check box forms or provide a brief narrative explaining if structural source controls were not used.

Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
S1	Provide storm drain system stenciling and signage	☒	☐	
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	There are no proposed outdoor storage areas
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☒	☐	
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☒	☐	
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☐	
S6	Dock areas	☒	☐	
S7	Maintenance bays	☒	☐	
S8	Vehicle wash areas	☐	☒	
S9	Outdoor processing areas	☐	☒	
S10	Equipment wash areas	☐	☒	
S11	Fueling areas	☐	☒	
S12	Hillside landscaping	☐	☒	
S13	Wash water control for food preparation areas	☐	☒	
S14	Community car wash racks	☐	☒	

IV.4 Alternative Compliance Plan (If Applicable)

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the WQMP.*

This Section is Not Applicable to the Project.

IV.4.1 Water Quality Credits

Determine if water quality credits are applicable for the project. *Refer to Section 3.1 of the Model WQMP for description of credits and Appendix VI of the Technical Guidance Document (TGD) for calculation methods for applying water quality credits.*

Description of Proposed Project				
Project Types that Qualify for Water Quality Credits (Select all that apply):				
☐ Redevelopment projects that reduce the overall impervious footprint of the project site.	☐ Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.	☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).		
☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).	☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned		☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).	
☐ Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.	☐ Developments in a city center area.	☐ Developments in historic districts or historic preservation areas.	☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.	☐ In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.

Calculation of Water Quality Credits (if applicable)	This project has not taken into account any Water Quality Credits.
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IV.4.2 Alternative Compliance Plan Information

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the Model WQMP.*

Not Applicable

Section V Inspection / Maintenance Responsibility for BMPs

Fill out information in table below. Prepare and attach an Operation and Maintenance Plan. Identify the funding mechanism through which BMPs will be maintained. Inspection and maintenance records must be kept for a minimum of five years for inspection by the regulatory agencies. *Refer to Section 7.II 4.0 in the Model WQMP.*

See subsequent Operation and Maintenance Plan.

OPERATIONS AND MAINTENANCE (O&M) PLAN

PRELIMINARY WATER QUALITY MANAGEMENT PLAN

FOR

1065 BREA MALL

BREA, CA 92821

APN NUMBER: 319-101-37

LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF BREA, IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

ALL THAT CERTAIN REAL PROPERTY SITUATED IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL A:

PARCEL 3, IN THE CITY OF BREA, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS SHOWN ON A MAP FILED IN BOOK 139, PAGES 12 THROUGH 16, INCLUSIVE OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF ORANGE COUNTY, CALIFORNIA. EXCEPTING THEREFROM ALL OIL, GAS AND OTHER HYDROCARBON SUBSTANCES, MINERALS AND WATER UNDERLYING AT PLANE PARALLEL TO AND 500 FEET, MEASURED VERTICALLY DOWNWARD BELOW THE SURFACE OF SAID LAND, WHICH PORTION IS HEREINAFTER REFERRED TO AS "SUBSURFACE LAND", TOGETHER WITH RIGHTS OF WAY, EASEMENTS AND SERVITUDES IN AND THROUGH SUBSURFACE LAND FOR THE PURPOSE OF EXERCISING THE RIGHTS RESERVED, WHICH INCLUDE BUT ARE NOT LIMITED TO THE RIGHT TO PROSPECT, EXPLORE, MINE, DRILL, PRODUCE, TAKE, TREAT, STORE AND REMOVE ALL SUCH OIL, GAS AND OTHER HYDROCARBON SUBSTANCES, MINERALS AND WATER AND THE RIGHT TO INJECT IN AND REMOVE FROM SUBSURFACE LAND OIL, GAS, WATER OR OTHER FLUIDS FOR THE PURPOSES OF STORAGE, PRESSURE MAINTENANCE, AND/OR SECONDARY RECOVERY OF SUCH OIL, GAS AND OTHER HYDROCARBON SUBSTANCES AND OTHERWISE TO DRILL, COMPLETE AND MAINTAIN WELLS INTO AND THROUGH SUBSURFACE LANDS FROM SURFACE LOCATIONS OUTSIDE THE BOUNDARIES OF HEREIN DESCRIBED LANDS PROVIDED, HOWEVER, THAT THE RIGHTS RESERVED AND RETAINED DO NOT INCLUDE THE RIGHT TO ENTER UPON THE SURFACE OR WITHIN 500 FEET, MEASURED VERTICALLY DOWNWARD BELOW THE SURFACE OF SAID LAND, AS RESERVED BY UNION OIL COMPANY OF CALIFORNIA, A CALIFORNIA CORPORATION, IN DEED RECORDED JUNE 15, 1973 IN BOOK 10751, PAGE 299 OF OFFICIAL RECORDS.

PARCEL B:

NON-EXCLUSIVE EASEMENTS AS GRANTED AND LIMITED BY ARTICLE IV OF THE DOCUMENT ENTITLED "OPERATING AGREEMENT" RECORDED SEPTEMBER 1, 1976 IN BOOK 11874, PAGE 973; AS AMENDED BY INSTRUMENTS RECORDED OCTOBER 30, 1979 IN BOOK 13374, PAGE 419; JANUARY 26, 1984 AS INSTRUMENT NO. 84-037606; JANUARY 26, 1984 AS INSTRUMENT NO. 84-037607; JANUARY 26, 1984 AS INSTRUMENT NO. 84-037608; AND SEPTEMBER 15, 1992 AS INSTRUMENT NO. 92-616518, ALL OF OFFICIAL RECORDS OF SAID ORANGE COUNTY, FOR THE USE OF THE COMMON AREA AS THEREIN DEFINED.

APN: 319-101-37

Appendix A, Operations and Maintenance Plan

Page 1 of 15

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Non-Structural Source Control BMPs			
Yes	N1. Education for Property Owners, Tenants and Occupants Simon Property Group shall conduct orientation during the first four weeks of startup and as on-going. An awareness program will be established to inform all the employees of the impacts of dumping oil, antifreeze, paints, solvents or other potentially harmful chemicals into storm drain; the proper use (e.g., application methods, frequencies and precautions) and management of fertilizers, pesticides and herbicides in landscaping maintenance practices; the impacts of littering and improper water disposal.	• Ensure employees responsible for the maintenance of BMPs are familiar with the requirements of the WQMP. • All new employees trained within 1 month of hire. Annual retraining required.	Simon Property Group
Yes	N2. Activity Restrictions Simon Property Group shall conduct daily management of business activities. Simon Property Group will conduct orientation during the first four weeks of startup and as on-going. Each business activity is restricted under the City of Brea guidance, Conditions, Covenants and Restrictions (CC&Rs), and Conditions of Approval. • No vehicle maintenance activities including vehicle washing • Kitchen mats may not be hosed off outside. • Prohibition of discharge of hazardous waste to the storm drain system. • Prohibition of storage and handling of hazardous materials. • No outdoor storage.	<u>Inspection</u> • Check to ensure that all employees/tenants are adhering to activity restrictions and other restrictions outlined in this WQMP. Retrain/ reeducate as necessary. • Ongoing <u>Maintenance</u> • Provide refresher water quality training. • Annually and as necessary when employee(s) observed to be not adhering to activity restrictions and other restrictions outlined in the WQMP.	Simon Property Group

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	N3. Common Area Landscape Management Simon Property Group will ensure that landscape areas shall be maintained on a weekly basis through Grounds and Maintenance personnel and when new personnel are hired. Maintenance shall include: Plant vegetation that reduces water, fertilizer, herbicide, and pesticide use. Waste shall be disposed of by composting or at a permitted landfill and shall not be raked or blown into the street, gutter, or storm drains. Irrigation systems shall be inspected monthly for leaks. Leaks shall be repaired as soon as they are observed. Avoid over-watering of vegetation. If excessive runoff is observed, automatic timers shall be adjusted. Fertilizers, herbicides, and pesticides shall be used as directed on the label. If fertilizer is spilled on a paved surface it should be swept up immediately and placed in its container. Water shall not be used to clean fertilizer spills unless necessary and only after the area has been thoroughly cleaned using dry cleaning methods. Pesticides, herbicides, and fertilizers shall not be applied within 48 hours prior to rain or if wind speeds exceed 5 mph. For additional information, see Help Prevent Ocean Pollution - Proper Maintenance Practices for Your Business included in Section VII of this report. Also refer to the BMP Maintenance Responsibility /Frequency Matrix in Section V for details.	• Landscape maintenance will consist of trimming and replanting of vegetation (See SC-73 in Section VII), repair and maintenance of irrigation systems (See S4), and appropriate use of fertilizers and pesticides. • Landscape maintenance shall be performed on a weekly basis.	Simon Property Group

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	N4. BMP Maintenance Simon Property Group through its site and landscape maintenance contractors will be responsible for inspection and maintenance activities in landscape areas. Debris and other water pollutants will be controlled, contained and disposed of in a proper manner by the maintenance contractors hired by Simon Property Group. The site maintenance manager will maintain and inspect non-structural and structural BMPs on the site at least once a month. Each BMPs shall be inspected per required frequency of BMP suggested in the Maintenance Responsibility / Frequency Matrix included in Section VI.	Inspect the systems for signs of erosion. - Semi-annually, at minimum, or after each major (1/2") rain event. Maintenance - Remove sediment, and restore to design specifications. Add Riprap and slope protection as needed. - Provide training to employees within 1 month.	Simon Property Group
Yes	N10. Uniform Fire Code Implementation Compliance with Article 80 of the Uniform Fire Code enforced by fire protection agency.	See building plans for fire code implementation.	Simon Property Group
Yes	N11. Common Area Litter Control Simon Property Group through site maintenance contractor shall implement litter control procedures and management in the landscape and parking lot areas in order to prevent and reduce pollution of storm water runoff on a weekly basis. Waste containers located outside shall be provided with spill prevention features and emptied on a regular basis, but as a minimum on a weekly basis. SC-11 Spill Prevention, Control & Cleanup	<u>Inspection</u> - Inspect common areas daily for loose trash/litter. <u>Maintenance</u> - Pick up loose trash/litter and place in trash receptacles. - Mop trash enclosure weekly minimum, or more frequently if needed.	Simon Property Group

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	N12. Employee Training Simon Property Group shall conduct an employee training program and shall inform and train employees engaged in maintenance activities regarding the impacts of dumping oil, antifreeze, paints, solvents or other potentially harmful chemicals into storm sewer; the proper use (e.g., application methods, frequencies and precautions) and management of fertilizers, pesticides and herbicides in landscaping maintenance practice; the impacts of littering and improper water disposal. Employee training program shall be conducted on an ongoing basis and during the first month of startup period. This WQMP shall be a reference to be used for the program and an annual review of the provisions of the WQMP shall be done by each employee. If there are any changes of ownership on the site, a new owner shall be responsible once the ownership is transferred.	Water Quality Management Plan serves as the education for property owners, tenants, and occupants. • Provide water quality orientation to new employees, tenants, etc. • Within two weeks of hire.	Simon Property Group

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	N13. Housekeeping of Loading Docks There will not be pollutants entering the storm drain system from any loading areas. Simon Property Group shall maintain good housekeeping practices in the loading dock environment and keep the dock areas clean and free of debris. Loading areas shall be checked periodically to ensure containment of accumulated water and prevention of storm water run-on. See SD-31 in Section VII for more information.	<u>Inspection</u> • Inspect the loading dock area daily for loose trash/litter and sweep biweekly. • Any spills or broken containers shall be cleaned up immediately. <u>Maintenance</u> • Pick up loose trash/litter and place in trash receptacles. • Daily No wash water is to be discharged to the storm drain system.	Simon Property Group

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	N14. Common Area Catch Basin Inspection Simon Property Group shall be responsible for ensuring that the onsite catch basins, and overflow pipes shall be inspected and maintained once per year, at minimum. See SC-74 in Section VII for more information.	<u>Inspection</u> - Inspect the catch basin for obstructions/debris buildup and to ensure that it continues to function properly. - Four times per year, at minimum. <u>Maintenance</u> - Remove obstructions and clean debris and contaminants out of catch basin to ensure it continues to function properly. - As determined necessary during inspection. Cleaning shall take place prior to the onset of the rainy season (generally accepted as October 1st through April 30th).	Simon Property Group
Yes	N15. Street Sweeping Private Streets and Parking Lots Simon Property Group through its site maintenance contractor shall provide vacuum sweeping of parking lots on a weekly basis. In addition, the sweeping program will be intensified prior to the start of the rainy season around October 15 of every year to minimize water pollution during the "first flush" storm. Further BMPs and information are listed below: SC43-Parking/Storage Area Maintenance SC70-Landscape Maintenance	<u>Inspection</u> - Inspect the parking area daily for loose trash/litter and sweep weekly using sweeping contractor. <u>Maintenance</u> - Pick up loose trash/litter and place in trash receptacles. - Daily	Simon Property Group
Structural Source Control BMPs			

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	S1. Provide Storm Drain System Stenciling and Signage It is widely recognized that the use of storm drains and catch basins for illegal disposal of waste materials can introduce a significant quantity of pollutants into receiving waters. Contributing to this problem is the common misconception that storm drains and sanitary sewers are part of the same system and that materials dumped into storm drains will ultimately arrive at a waste water treatment facility. Stenciling catch basins by the owner will inform the public about non-point source pollution, highlighting the direct link between such basins and sensitive Orange County receiving waters and draws public attention to the fate of materials that are dumped into the storm drain system. The stencil will carry the message "NO DUMPING-DRAINS TO OCEAN". Repair of storm drain system stenciling and signage shall be performed regularly and at least three times a year or as many times a necessary during the storm seasons. SD13-Storm Drain Signage SC44-Drainage System Maintenance	<u>Inspection</u> • Inspect the legibility of storm drain signage. • Once per year, at a minimum. <u>Maintenance</u> • Replace storm drain signage as necessary to maintain legibility. • Catch basins/inlets must be restenciled, at minimum, every 5 years.	Simon Property Group

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	S3. Design Trash Enclosures to Reduce Pollutant Introduction Simon Property Group shall provide trash and waste storage areas through its contractors. Simon Property Group through its site maintenance contractor shall maintain daily. Trash dumpster shall be picked up at least once a week. Loose trash shall be picked up daily and shall be placed in containers periodically. The trash storage areas shall be inspected and maintained daily by the maintenance contractor in order to prevent overflowing dumpster and open lids. The trash container area shall contain trash bins with covers and trash area shall be roofed over in order to prevent rain from entering the bin to reduce water pollution. The bins will be provided with self-closing features and will be inspected on a regular basis as needed for the amount of trash generated. The design of the trash container area will include features such that drainage from adjoining roofs and pavements shall be diverted around the trash container areas. All trash container areas will be surrounded by walls and gates to prevent offsite transport of trash. All employees will be instructed to make sure that covers are kept closed and only opened at the time the trash is deposited. Trash and waste storage areas will be constructed to reduce pollution. It will be located outside the building and trash enclosure will be installed. SD32-Trash Storage Areas	See N11.	Simon Property Group

Appendix A, Operations and Maintenance Plan
Page 9 of 15

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	S4. Use Efficient Irrigation Systems and Landscape Design Projects shall design the timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the municipal storm drain system. (Limited exclusion: detached residential homes.) The following methods to reduce excessive irrigation runoff shall be considered, and incorporated on common areas of development and other areas where determined applicable and feasible by the Permittee: 1. Employing rain shutoff devices to prevent irrigation after precipitation. 2. Designing irrigation systems to each landscape area's specific water requirements. 3. Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines. 4. Implementing landscape plan consistent with County Water Conservation Resolution or city equivalent, which may include provision of water sensors, programmable irrigation times (for short cycles), etc. 5. The timing and application methods of irrigation water shall be designed to minimize the runoff of excess irrigation water into the municipal storm drain system. 6. Employing other comparable, equally effective, methods to reduce irrigation water runoff. 7. Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider other design features, such as: •Use mulches (such as wood chips or shredded wood products) in planter areas without ground cover to minimize sediment in runoff. •Install appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant material where possible and/or as recommended by the landscape architect. •Leave a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible. •Choose plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth. Irrigation practices shall comply with local and statewide ordinances related to irrigation efficiency. See SD-12 in Section VII for more information.	<u>Inspection</u> • Inspect irrigation equipment for leaks and check timers. • Inspect landscaped areas to ensure vegetation is not being over or under watered. • Monthly. <u>Maintenance</u> • Repair leaks and adjust timers and irrigation heads. • As necessary to maintain proper operation of equipment and to avoid over and under watering of vegetation and excessive runoff from vegetated areas.	Simon Property Group

BMP Applicable? Yes/No	BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Yes	S6. Loading Dock Areas See SD-31 in Section VII for more information.	Loading /unloading dock areas shall include the following: 1. Cover loading dock areas, or design drainage to preclude run-on and runoff, unless the material loaded and unloaded at the docks does not have potential to contribute to stormwater pollution, and this use is ensured for the life of the facility. 2. Direct connections to the municipal storm drain system from below grade loading docks (truck wells) or similar structures are prohibited. Stormwater can be discharged through a permitted connection to the storm drain system with a treatment control BMP applicable to the use. 3. Other comparable and equally effective features that prevent unpermitted discharges to the municipal storm drain system. 4. Housekeeping of loading docks shall be consistent with N13. See CASQA Stormwater Handbook Section 3.2.8 for additional information.	Simon Property Group

BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Low Impact Development BMPs		
Hydrologic Source Control BMP # 1 Not applicable		
Hydrologic Source Control BMP # 2 Not applicable		
Miscellaneous BMP # 1 Drop Inlet	Inspect for standing water. If standing water stands within the inlet between storms and does not drain within 48 hours after rainfall, maintenance of inlet is required. Remove any possible trash or blockage from the inlet, or perform storm drain jetting for maintenance. Inspect inlet for trash and debris accumulation in the drop inlet. If trash and debris have accumulated, it must be removed from the drop inlet and disposed of properly.	Simon Property Group
Miscellaneous BMP # 2 Inlet Stenciling	Review condition of stencil yearly, repaint as needed	Simon Property Group

BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
LID BMP # 1 ADS Infiltration Chamber #1 & #2	Step 1 - Inspect Isolator Row for Sediment A. Inspection Ports i. Remove lid from floor box frame ii. Remove cap from Inspection Riser iii. Using a flashlight and a stadia rod, measure depth of sediment and record results on maintenance log. iv. If sediment is at, or above, 3 inch depth, proceed to Step 2. If not, proceed to Step 3. B. All Isolator Rows i. Remove cover from manhole at upstream end of isolator row ii. Using a flashlight, inspect down isolator row through outlet pipe (mirrors on poles or cameras may be used to avoid a confined space entry; follow OSHA regulations for confined space entry if entering manhole) iii. If sediment is at or above the lower row of sidewall holes (approximately 3 inches) proceed to Step 2. If not proceed to Step 3. Step 2 - Clean out Isolator Row using the JetVac Process A. A fixed culvert cleaning nozzle with rear facing nozzle spread of 45 inches or more is preferable B. Apply multiple passes of JerVac until backflush water is clean C. Vacuum manhole sump as required Step 3 – Replace all Caps, lids and covers, record observations and actions Step 4 – Inspect and clean basins and manholes upstream of the ADS System	Simon Property Group (Inspections shall take place every 6 months during the first year of operation. Adjust the inspection interval based on previous observations of sediment accumulation and high water elevations; conduct jetting and vactoring only when inspections show that maintenance is necessary)

Treatment Control BMPs		
Treatment Control BMP # 1 Not applicable		
Pre-Treatment/Gross Solids Removal BMPs		
BMP Name and BMP Implementation, Maintenance and Inspection Procedures	Implementation, Maintenance, and Inspection Frequency and Schedule	Person or Entity with Operation & Maintenance Responsibility
Pre-Treatment BMP # 1 Bio Clean Grate Inlet Skimmer Box	Inspections should occur following any rain event greater than ½" or at four times per year minimum. 1. Empty the sediment bag if more than half filled with sediment and debris, or as directed. 2. Remove the grate and lift from drainage structure. 3. Dispose of sediment or debris as directed by the Engineer or Maintenance contract. 4. An industrial vacuum can be used to collect sediment. 5. Remove caked on silt from sediment bag and flush with Medium spray with optimal filtration. 6. Replace bag if torn or punctured to >½" diameter on lower half of bag.	Simon Property Group

Pre-Treatment BMP #2 FloGard Trench Drain Insert Filter	Inspections should occur following any rain event greater than ½" of at four times per year minimum. 1. The trench drain grate(s) shall be removed and set to one side. 2. The service shall commence with collection and removal of sediment and debris (litter, leaves, papers, cans, etc.). 3. The trench drain shall be visually inspected for defects and possible illegal dumping. If illegal dumping has occurred, the proper authorities and property owner representative shall be notified as soon as practicable. 4. Using an industrial vacuum, the collected materials shall be removed from the filter liner. (Note: DPS uses a truck-mounted vacuum for servicing FloGard LoPro Trench Drain Filters.) 5. When all of the collected materials have been removed, the filter assembly shall be removed from the drainage inlet. The outer filter liner shall be removed from the filter assembly and filter medium pouches shall be removed by unsnapping the tether from the interior ring and sent to one side. The filter liner, PVC body and fittings shall be inspected for continued serviceability. Minor damage or defects found shall be corrected on the spot and a notation made on the Maintenance Record. More extensive deficiencies that affect the efficiency of the filter (torn liner, etc.), if approved by the customer representative, will be corrected and a quote submitted to the representative along with the Maintenance Record. 6. The filter liner and filter medium pouches shall be inspected for defects and continued serviceability and replaced as necessary and the pouch tethers re-attached to the PVC body interior ring. 7. The grate(s) shall be replaced.	Simon Property Group
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Required Permits

No permits are required.

Forms to Record BMP Implementation, Maintenance, and Inspection

The form that will be used to record implementation, maintenance, and inspection of BMPs is attached.

Recordkeeping

All records must be maintained for at least five (5) years and must be made available for review upon request.

Attachments

Implementation, Maintenance, and Inspection Form

RECORD OF BMP IMPLEMENTATION, MAINTENANCE, AND INSPECTION

Today's Date:

**Name of Person Performing Activity
(Printed):**

Signature:

BMP Name (As Shown in O&M Plan)	Brief Description of Implementation, Maintenance, and Inspection Activity Performed

Section VI BMP Exhibit (Site Plan)

VI.1 BMP Exhibit (Site Plan)

Include a BMP Exhibit (Site Plan), at a size no less than 24" by 36," which includes the following minimum information:

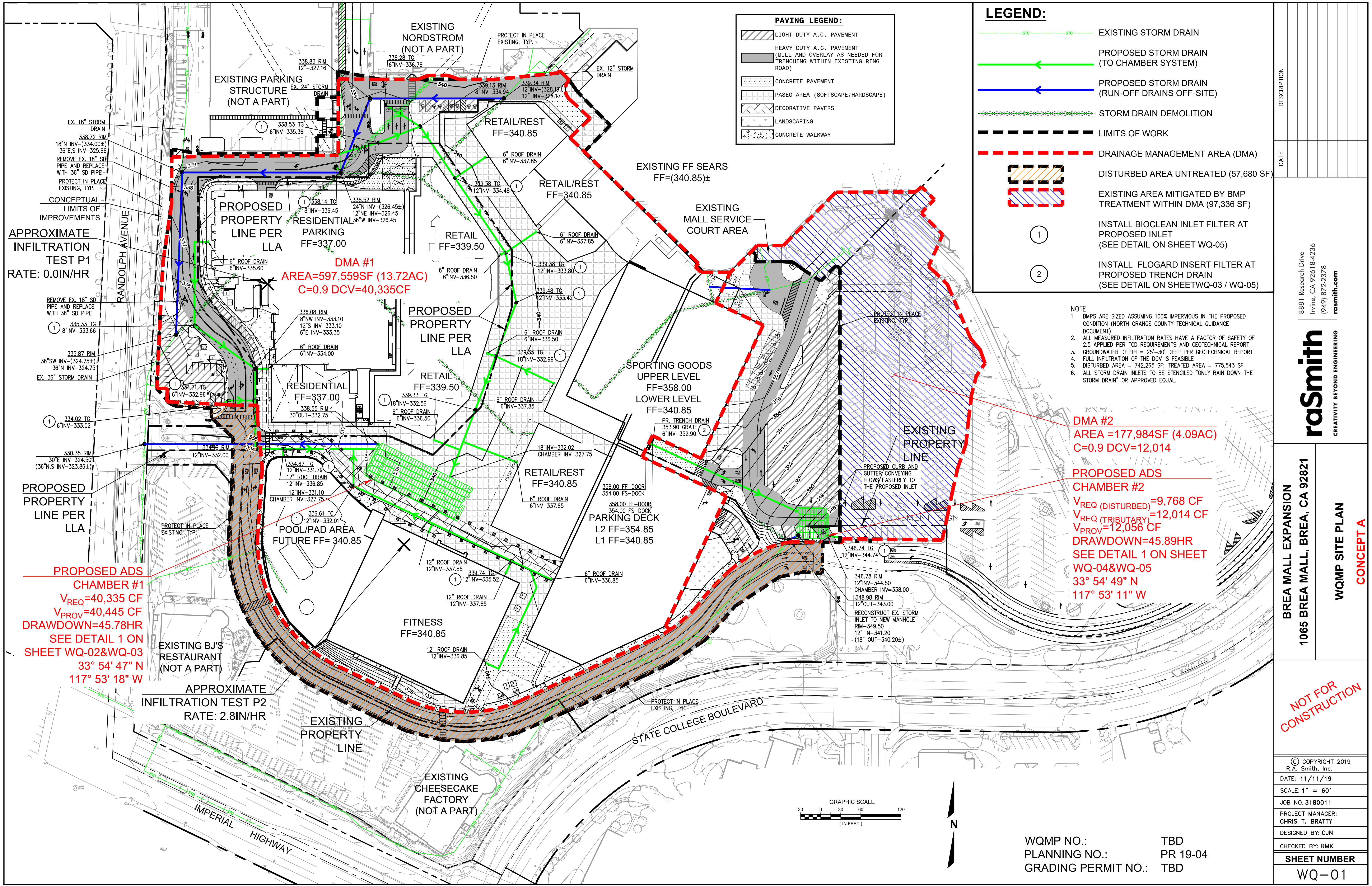
- Insert in the title block (lower right hand corner) of BMP Exhibit: the WQMP Number (assigned by staff) and the grading/building or Planning Application permit numbers
- Project location (address, tract/lot number(s), etc.)
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural BMP locations
- Drainage delineations and flow information
- Delineate the area being treated by each structural BMP
- GIS coordinates for LID and Treatment Control BMPs
- Drainage connections
- BMP details
- Preparer name and stamp

Please do not include any areas outside of the project area or any information not related to drainage or water quality. The approved BMP Exhibit (Site Plan) shall be submitted as a plan sheet on all grading and building plan sets submitted for plan check review and approval. The BMP Exhibit shall be at the same size as the rest of the plan sheets in the submittal and shall have an approval stamp and signature prior to plan check submittal.

VI.2 Submittal and Recordation of Water Quality Management Plan

Following approval of the Final Project-Specific WQMP, three copies of the approved WQMP (including BMP Exhibit, Operations and Maintenance (O&M) Plan, and Appendices) shall be submitted. In addition, these documents shall be submitted in a PDF format.

Each approved WQMP (including BMP Exhibit, Operations and Maintenance (O&M) Plan, and Appendices) shall be recorded in the Orange County Clerk-Recorder's Office, prior to close-out of grading and/or building permit. Educational Materials are not required to be included.



PAVING LEGEND:

- LIGHT DUTY A.C. PAVEMENT
- HEAVY DUTY A.C. PAVEMENT (MILL AND OVERLAY AS NEEDED FOR TRENCHING WITHIN EXISTING RING ROAD)
- CONCRETE PAVEMENT
- PASEO AREA (SOFTSCAPE/HARDSCAPE)
- DECORATIVE PAVERS
- LANDSCAPING
- CONCRETE WALKWAY

LEGEND:

- EXISTING STORM DRAIN
- PROPOSED STORM DRAIN (TO CHAMBER SYSTEM)
- PROPOSED STORM DRAIN (RUN-OFF DRAINS OFF-SITE)
- STORM DRAIN DEMOLITION
- LIMITS OF WORK
- DRAINAGE MANAGEMENT AREA (DMA)
- DISTURBED AREA UNTREATED (57,680 SF)
- EXISTING AREA MITIGATED BY BMP TREATMENT WITHIN DMA (97,336 SF)
- INSTALL BIOCLEAN INLET FILTER AT PROPOSED INLET (SEE DETAIL ON SHEET WQ-05)
- INSTALL FLOGARD INSERT FILTER AT PROPOSED TRENCH DRAIN (SEE DETAIL ON SHEET WQ-03 / WQ-05)

NOTE:
1. BMPs are sized assuming 100% IMPERVIOUS IN THE PROPOSED CONDITION (NORTH ORANGE COUNTY TECHNICAL GUIDANCE DOCUMENT)
2. ALL MEASURED INFILTRATION RATES HAVE A FACTOR OF SAFETY OF 2.5 APPLIED PER TGD REQUIREMENTS AND GEOTECHNICAL REPORT
3. GROUNDWATER DEPTH = 25'-30" DEEP PER GEOTECHNICAL REPORT
4. FULL INFILTRATION OF THE DCV IS FEASIBLE
5. DISTURBED AREA = 742,265 SF; TREATED AREA = 775,543 SF
6. ALL STORM DRAIN INLETS TO BE STENCILED "ONLY RAIN DOWN THE STORM DRAIN" OR APPROVED EQUAL.

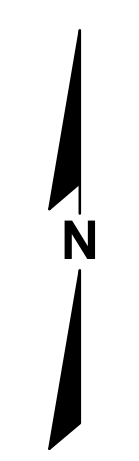
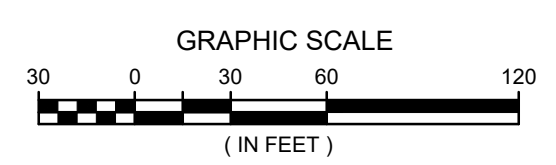
DMA #2
AREA = 177,984SF (4.09AC)
C=0.9 DCV=12,014

PROPOSED ADS CHAMBER #2
V_{REQ} (DISTURBED) = 9,768 CF
V_{REQ} (TRIBUTARY) = 12,014 CF
V_{PROV} = 12,056 CF
DRAWDOWN = 45.89HR
SEE DETAIL 1 ON SHEET WQ-04&WQ-05
33° 54' 49" N
117° 53' 11" W

PROPOSED ADS CHAMBER #1
V_{REQ} = 40,335 CF
V_{PROV} = 40,445 CF
DRAWDOWN = 45.78HR
SEE DETAIL 1 ON SHEET WQ-02&WQ-03
33° 54' 47" N
117° 53' 18" W

DESCRIPTION	DATE
8881 Research Drive Irvine, CA 92618-4236 (949) 872-2378 rasmith.com	
raSmith CREATIVITY BEYOND ENGINEERING	
BREA MALL EXPANSION 1065 BREA MALL, BREA, CA 92821	
WQMP SITE PLAN CONCEPT A	
NOT FOR CONSTRUCTION	
© COPYRIGHT 2019 R.A. Smith, Inc. DATE: 11/11/19 SCALE: 1" = 60' JOB NO. 3180011 PROJECT MANAGER: CHRIS T. BRATY DESIGNED BY: CJN CHECKED BY: RMK	
SHEET NUMBER WQ-01	

WQMP NO.: TBD
PLANNING NO.: PR 19-04
GRADING PERMIT NO.: TBD





Brea Mall West California

STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH MC-4500 OR APPROVED EQUAL.
- CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRD'00 BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
 - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.56 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
 - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRD'00 BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET, THE 10 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
 - STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

- STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS.
STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm) MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANIFOLD SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

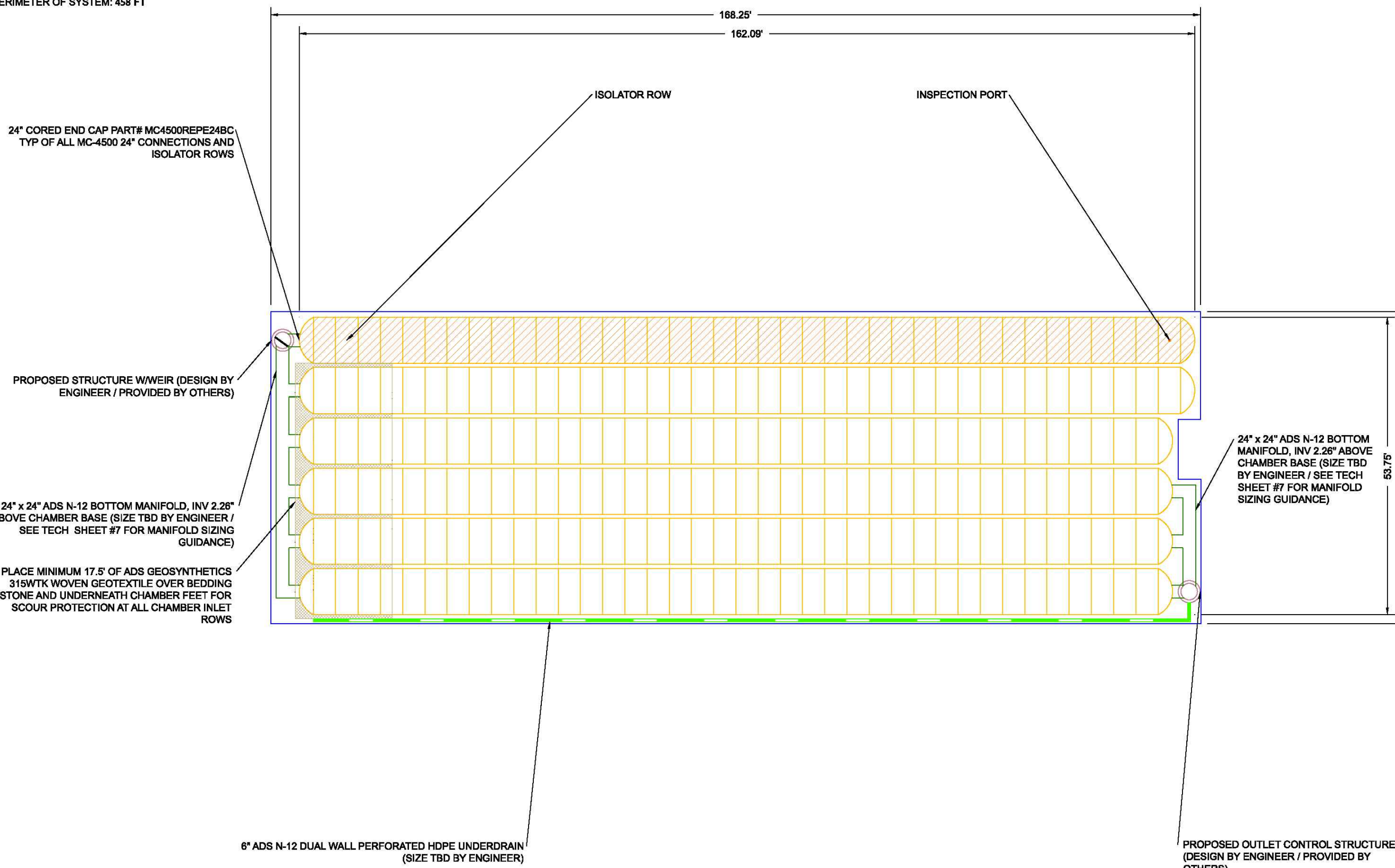
- STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER Tired LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-862-2664 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

CONCEPTUAL LAYOUT
(230) STORMTECH MC-4500 CHAMBERS
(12) STORMTECH MC-4500 END CAPS
INSTALLED WITH 12" COVER STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 46446 CF
AREA OF SYSTEM: 9441 FT²
PERIMETER OF SYSTEM: 458 FT

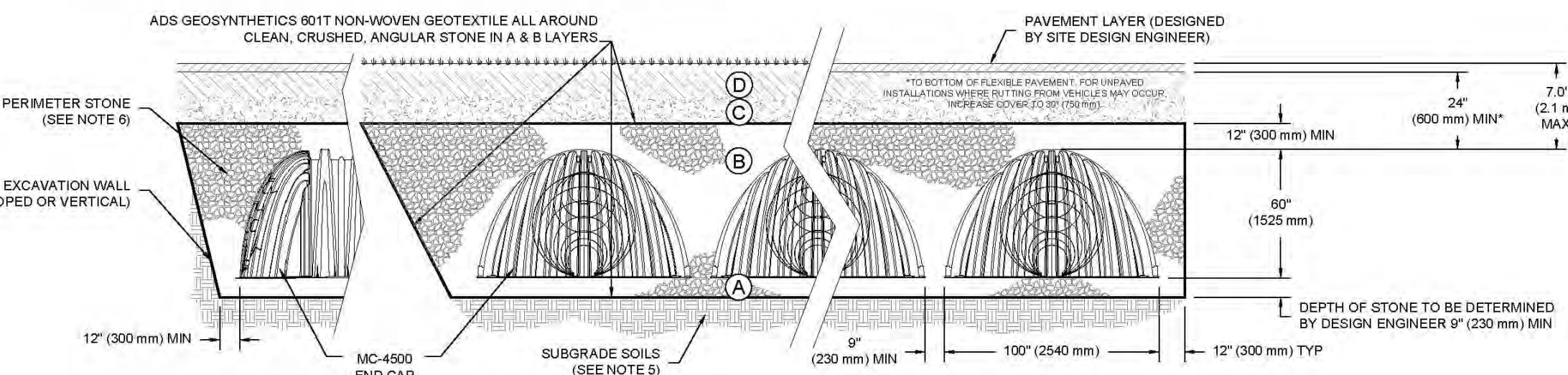
COMPUTER GENERATED CONCEPTUAL LAYOUT - NOT FOR CONSTRUCTION



ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE (B LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M145 ¹ A-1, A-2, A-4, A-5 OR AASHTO M43 ¹ 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 96% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 90% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M43 ¹ 3, 4	NO COMPACTION REQUIRED.
A	FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	AASHTO M43 ¹ 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. ^{1,2}

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



NOTES:

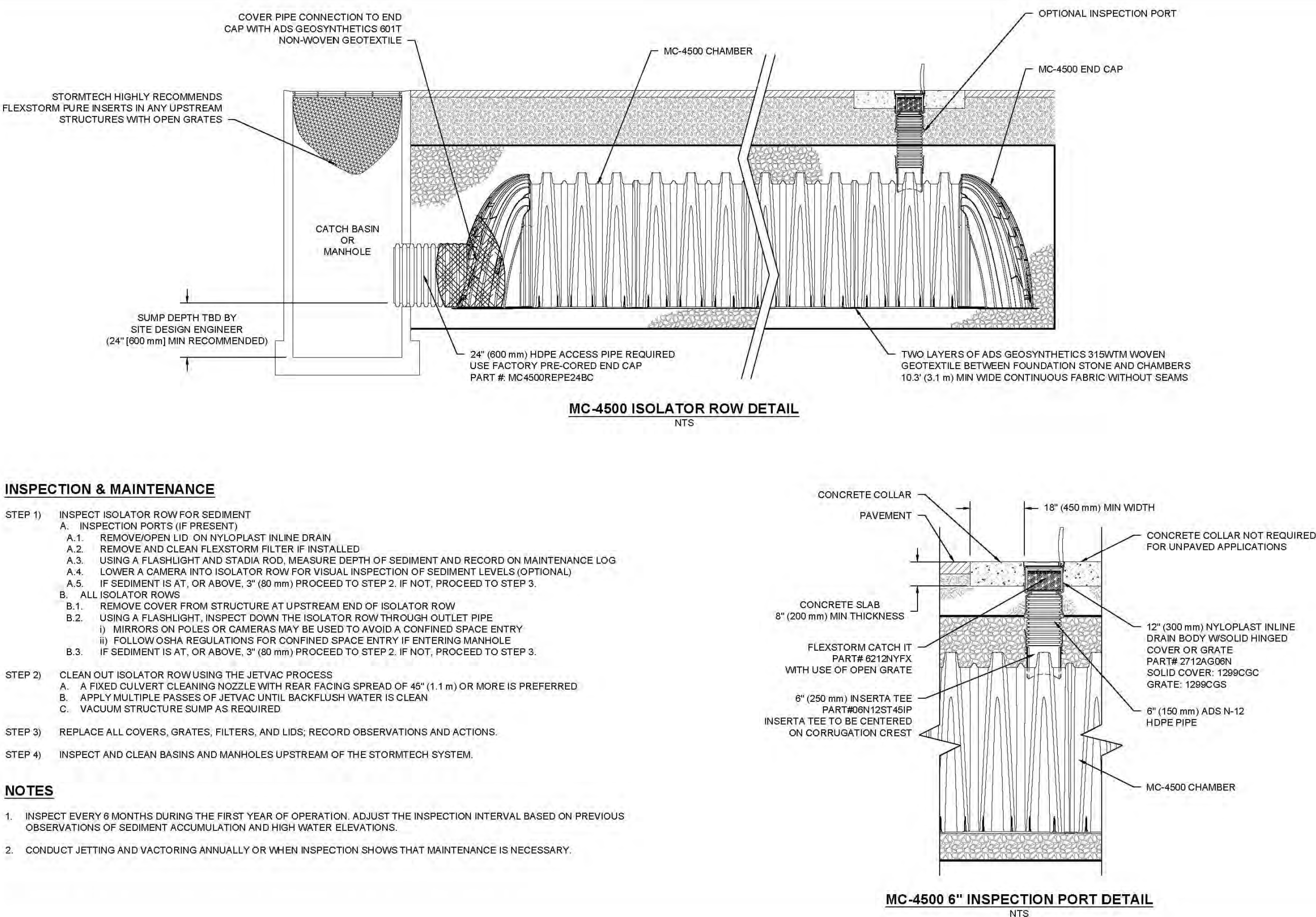
- MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- THE "SITE DESIGN ENGINEER" REFERS TO THE ENGINEER RESPONSIBLE FOR THE DESIGN AND LAYOUT OF THE STORMTECH CHAMBERS FOR THIS PROJECT.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
 - REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
 - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
 - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
 - LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
 - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
- REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
 - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
 - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
 - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
 - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
 - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
 - VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS, RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

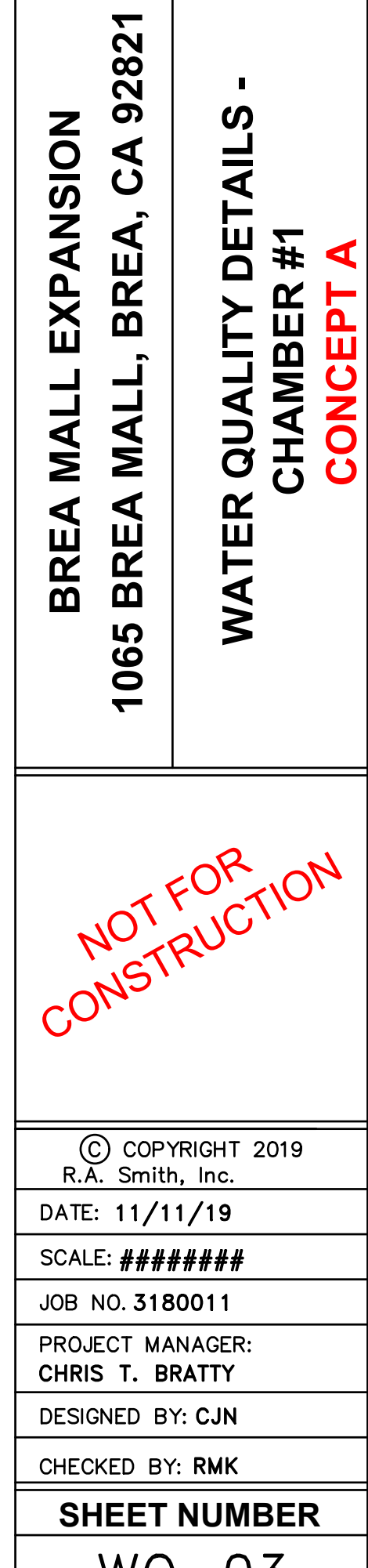
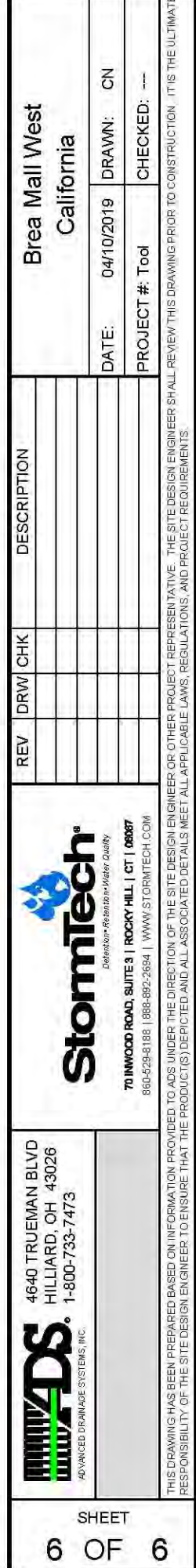
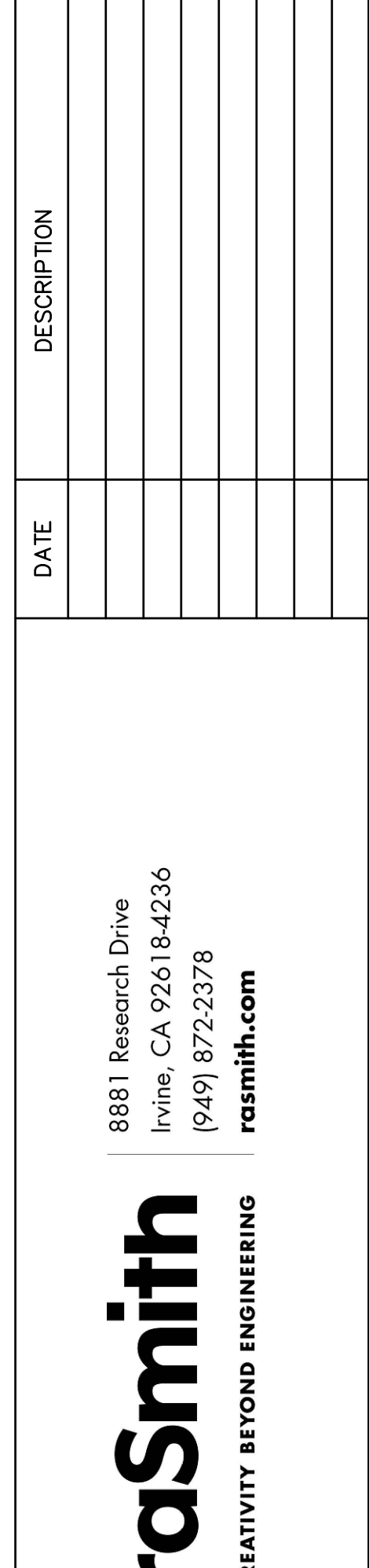
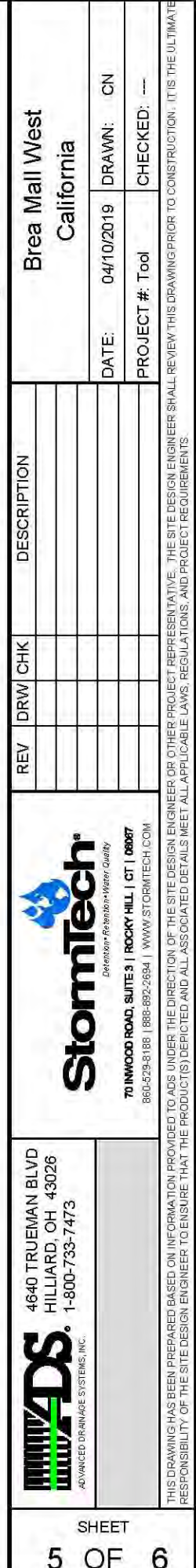
- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



BREA MALL EXPANSION
1065 BREA MALL, BREA, CA 92821

WATER QUALITY DETAILS -
CHAMBER #1
CONCEPT A

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R.A. Smith, Inc.
DATE: 11/11/19
SCALE: #####
JOB NO. 3180011
PROJECT MANAGER:
CHRIS T. BRATTY
DESIGNED BY: CJN
CHECKED BY: RMK
SHEET NUMBER
WQ-02





Brea Mall East

Brea, California

STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH MC-4500 OR APPROVED EQUAL.
- CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRD'D BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
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 - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.56 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
 - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRD'D BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET, THE 50 YEAR CRISP MODULUS DATA SPECIFIED IN ASTM F2418 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
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- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

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- STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
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STORMTECH RECOMMENDS 3 BACKFILL METHODS:
 - STONESHOOTER LOCATED OFF THE CHAMBER BED.
 - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
 - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
- INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4"-2" (20-50 mm) MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
- STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
- STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANIFOLD SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
 - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
 - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
 - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

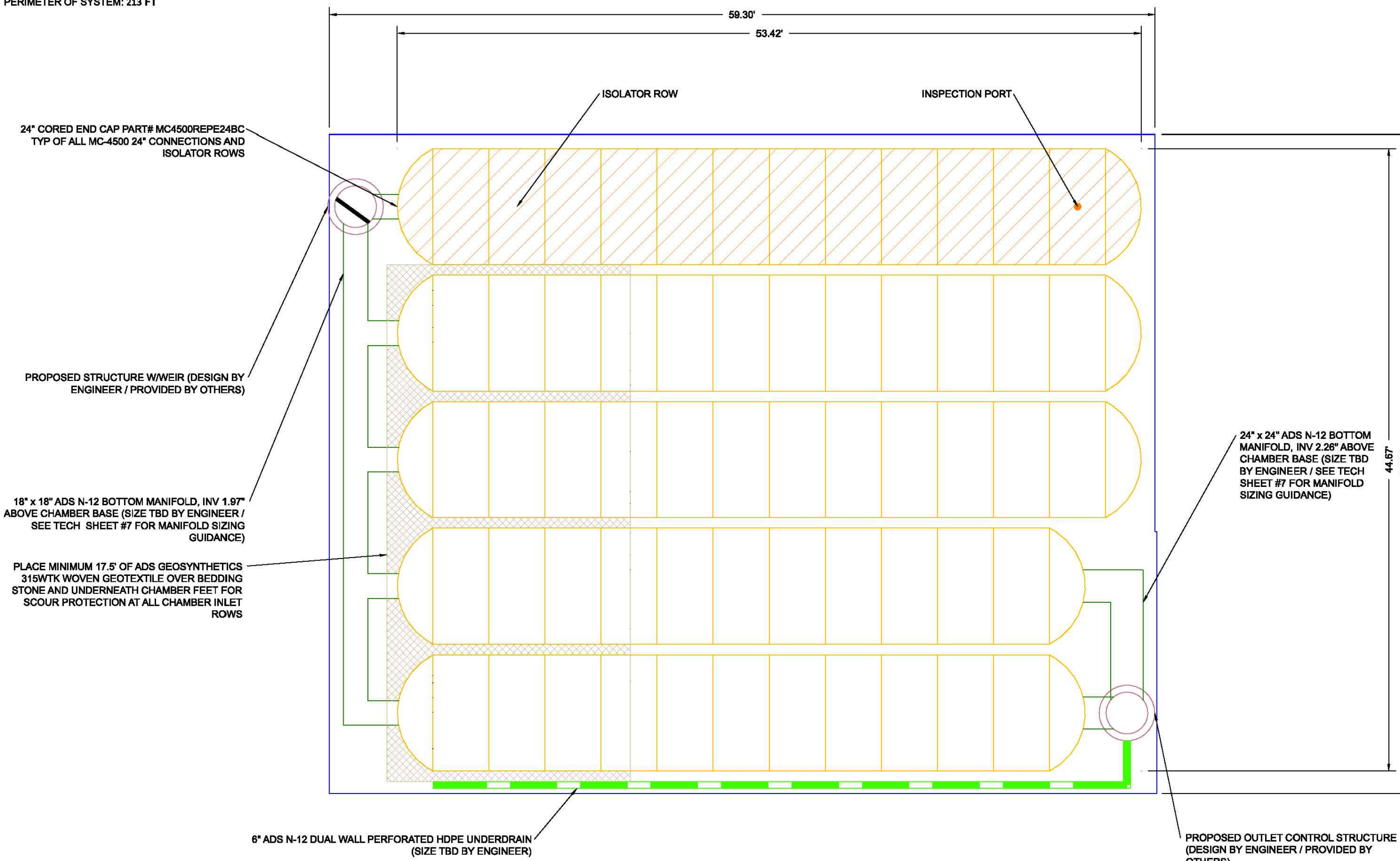
USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-822-2684 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

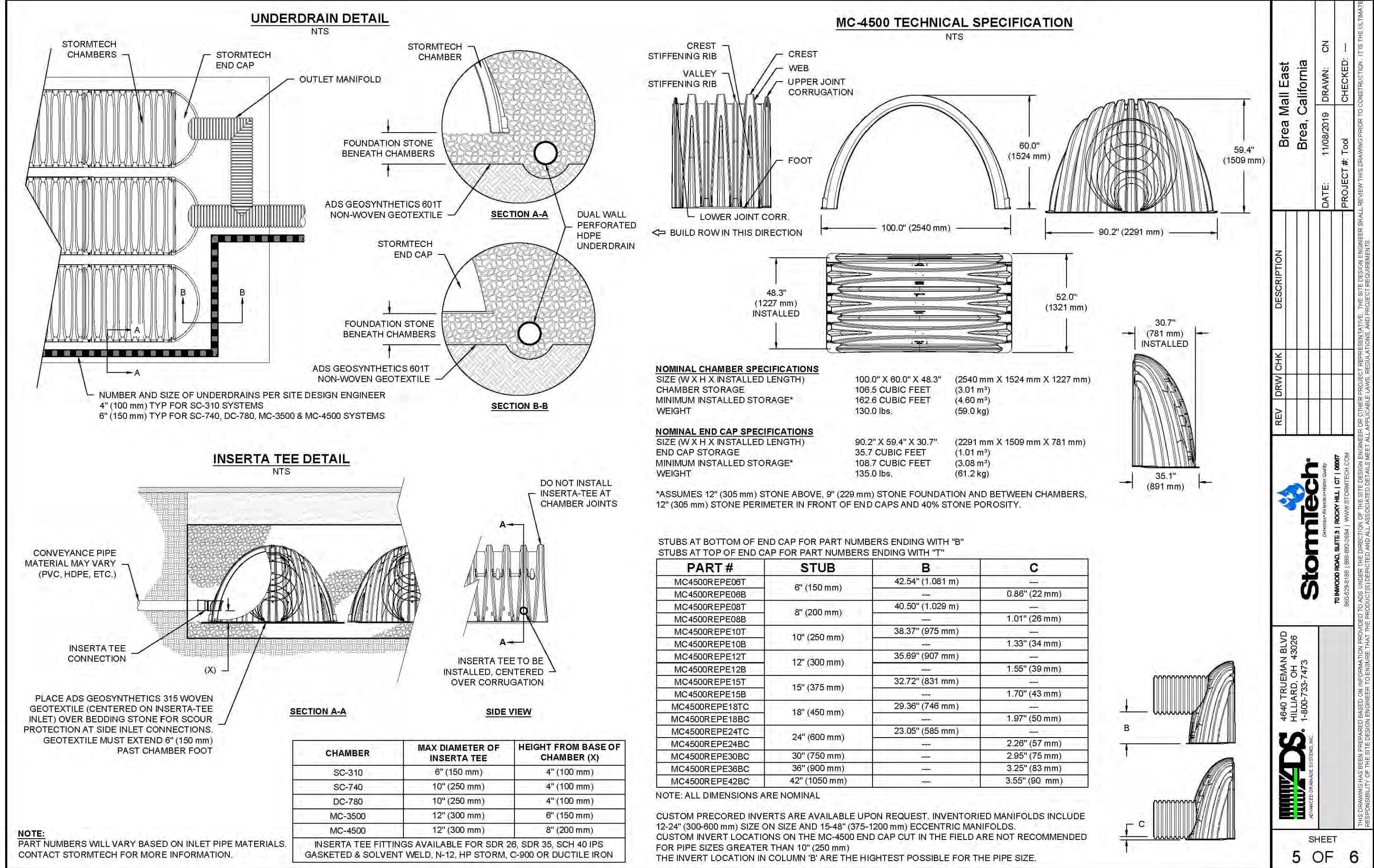
CONCEPTUAL LAYOUT

(38) STORMTECH MC-4500 CHAMBERS
(10) STORMTECH MC-4500 END CAPS
INSTALLED WITH 12" COVER STONE, 40% STONE VOID
INSTALLED SYSTEM VOLUME: 12066 CF
AREA OF SYSTEM: 2805 FT²
PERIMETER OF SYSTEM: 213 FT

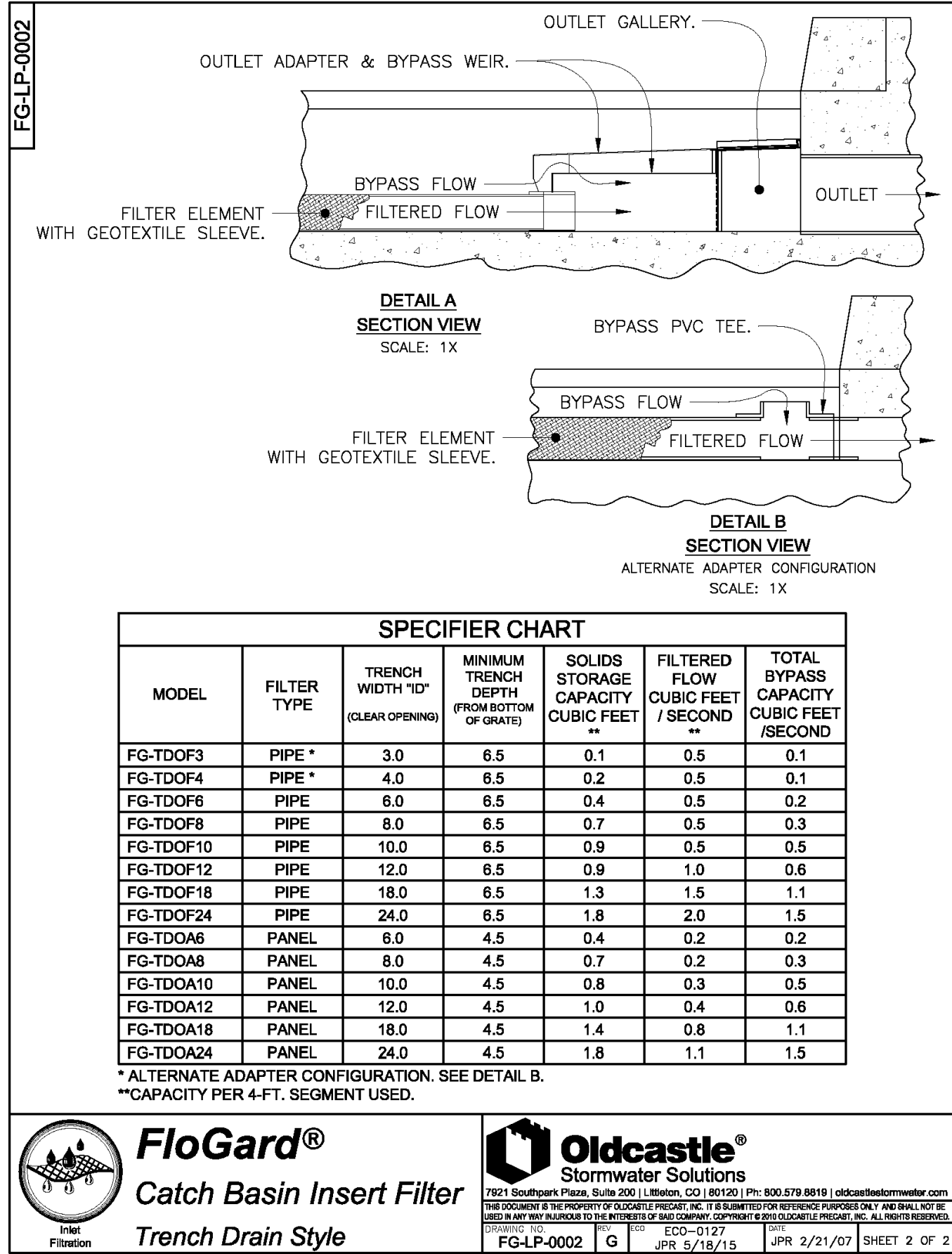
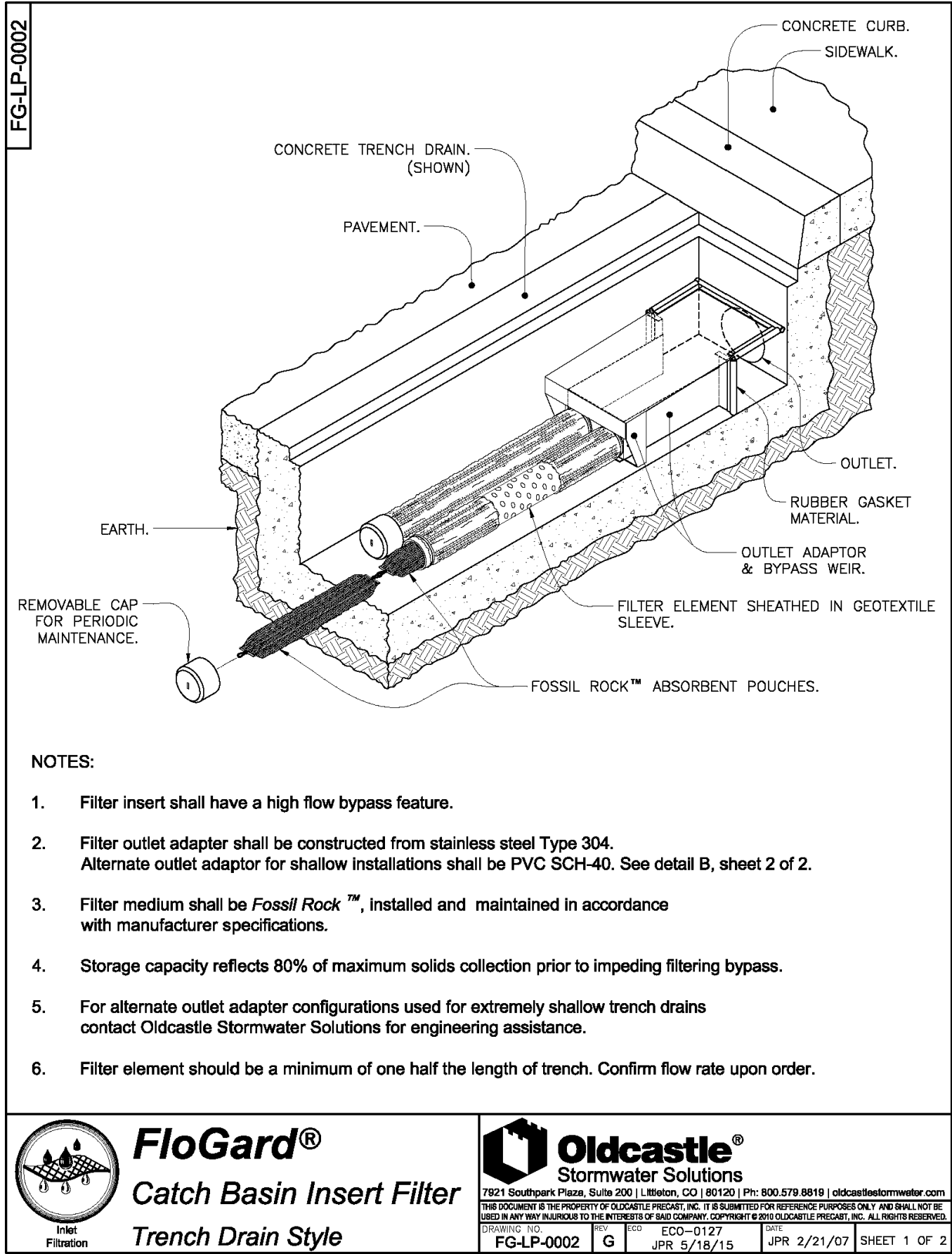
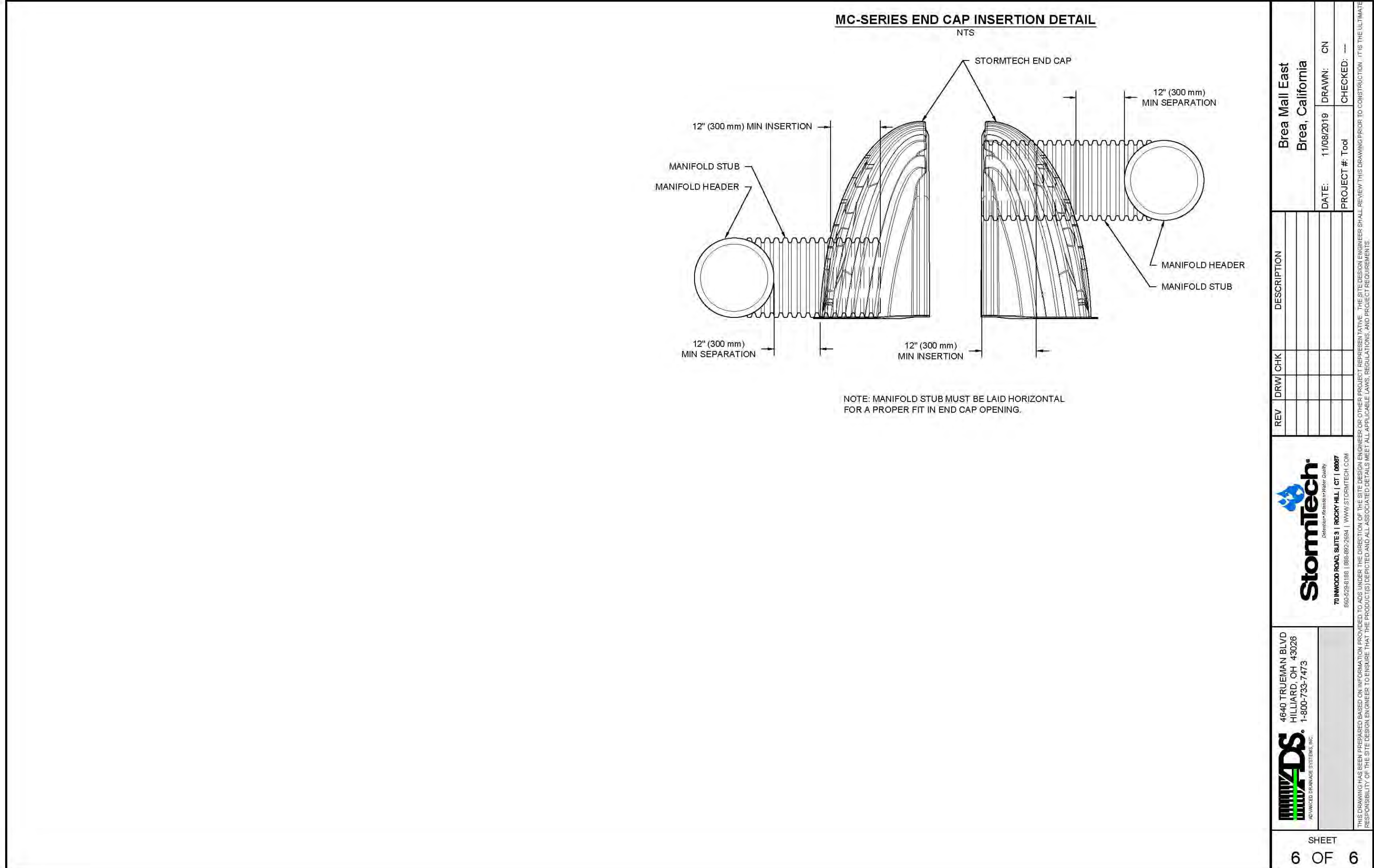
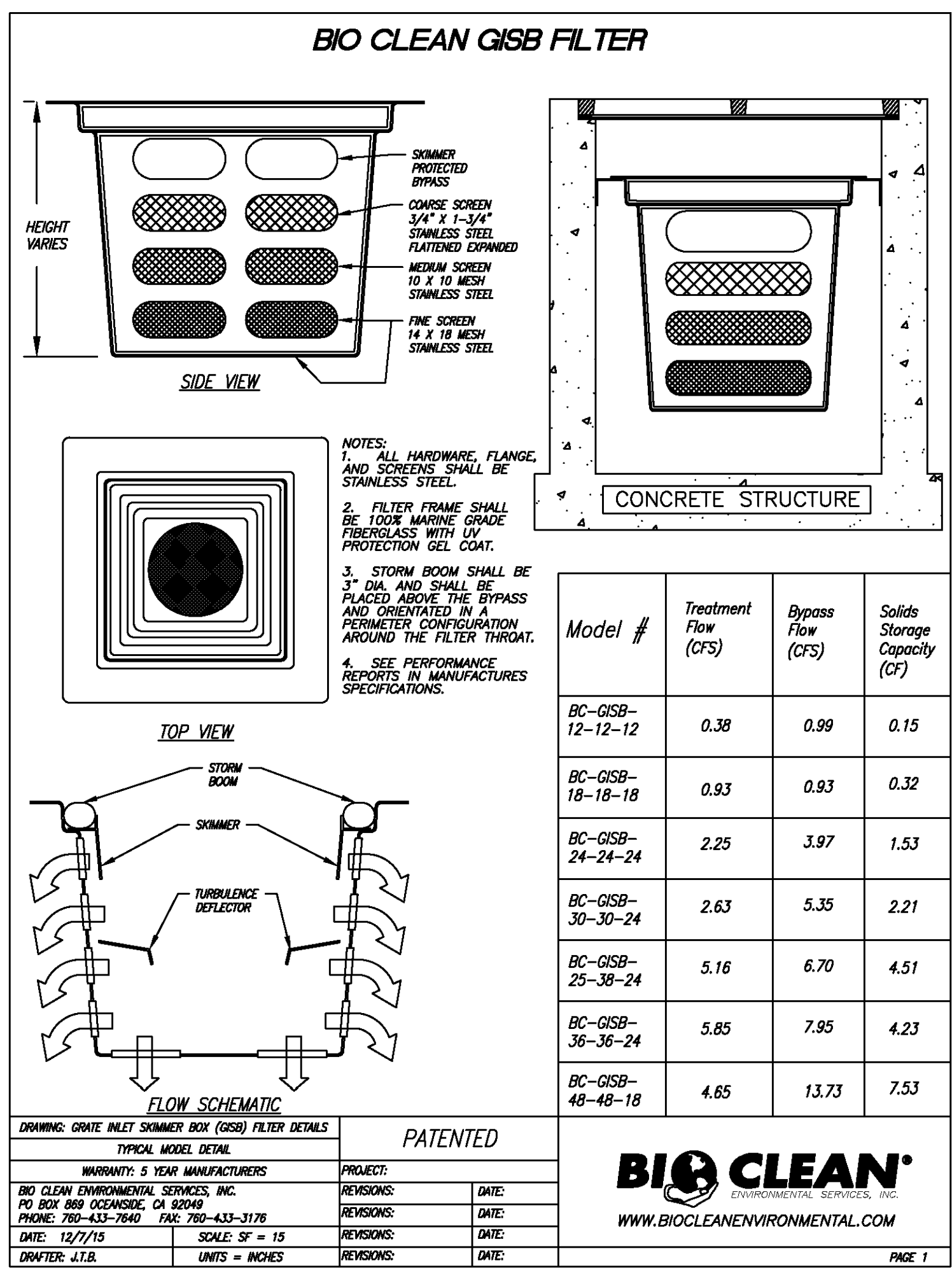
COMPUTER GENERATED CONCEPTUAL LAYOUT - NOT FOR CONSTRUCTION



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Brea Mall East Brea, California	DATE: 11/08/2019	DRAWN: CN	CHECKED: —
DESCRIPTION	REV	DRW	CHK
Stormtech	1	1	1
4640 TRUMAN BLVD HILLIARD, OH 43026 1-800-735-7473	5	OF	6



Section VII Educational Materials

Refer to the Orange County Stormwater Program (ocwatersheds.com) for a library of materials available. Please only attach the educational materials specifically applicable to this project. Other materials specific to the project may be included as well and must be attached.

Education Materials			
Residential Material (http://www.ocwatersheds.com)	Check If Applicable	Business Material (http://www.ocwatersheds.com)	Check If Applicable
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☒
Household Tips	☐	Other Material	Check If Attached
Proper Disposal of Household Hazardous Waste	☐		
Recycle at Your Local Used Oil Collection Center (North County)	☐	INF-7 Underground Infiltration	☒
Recycle at Your Local Used Oil Collection Center (Central County)	☐	SC-11 Spill Prevention, Control & Cleanup	☒
Recycle at Your Local Used Oil Collection Center (South County)	☐	SC-43 Parking / Storage Area	☒
Tips for Maintaining a Septic Tank System	☐	SC-70 Road and Street Maintenance	☒
Responsible Pest Control	☐	SC-73 Landscape Maintenance	☒
Sewer Spill	☐	SC-74 Drainage System Maintenance	☒
Tips for the Home Improvement Projects	☐	SD-12 Efficient Irrigation	☒
Tips for Horse Care	☐	SD-13 Storm Drain Signage	☒
Tips for Landscaping and Gardening	☐	SD-31 Maintenance Bays and Docks	☒
Tips for Pet Care	☐	SD-32 Trash and Storage Areas	☒
Tips for Pool Maintenance	☐		
Tips for Residential Pool, Landscape and Hardscape Drains	☐		
Tips for Projects Using Paint	☐		☐

INF-7: Underground Infiltration

Underground infiltration is a vault or chamber with an open bottom that used to store runoff and percolate into the subsurface. A number of vendors offer proprietary infiltration products that allow for similar or enhanced rates of infiltration and subsurface storage while offering durable prefrabricated structures. There are many varieties of proprietary infiltration BMPs that can be used for roads and parking lots, parks and open spaces, single and multi-family residential, or mixed-use and commercial uses.

Also known as:

- *Infiltration vault*
- *Recharge vault*



Underground Infiltration

Source: <http://www.contech-cpi.com>

Feasibility Screening Considerations

- Infiltration bays shall pass infeasible screening criteria to be considered for use.
- Underground infiltration galleries pose a potential risk of groundwater contamination; pretreatment should be used.

Opportunity Criteria

- Soils are adequate for infiltration or can be amended to provide an adequate infiltration rate.
- Appropriate for sites with limited surface space.
- Can be placed beneath roads, parking lots, parks, and athletic fields.
- Potential for groundwater contamination can be mitigated through isolation of pollutant sources, pretreatment of inflow, and/or demonstration of adequate treatment capacity of underlying soils.
- Infiltration is into native soil, or depth of engineered fill is ≤ 5 feet from the bottom of the facility to native material and infiltration into fill is approved by a geotechnical professional.
- Tributary area land uses include mixed-use and commercial, single-family and multi-family, roads and parking lots, and parks and open spaces. High pollutant land uses should not be tributary to infiltration BMPs.

OC-Specific Design Criteria and Considerations

- ☐ Placement of BMPs should observe geotechnical recommendations with respect to geological hazards (e.g. landslides, liquefaction zones, erosion, etc.) and set-backs (e.g., foundations, utilities, roadways, etc.)
- ☐ Minimum separation to mounded seasonally high groundwater of 10 feet shall be observed.
- ☐ Minimum pretreatment should be provided upstream of the infiltration facility, and water bypassing pretreatment should not be directed to the facility.
- ☐ Underground infiltration should not be used for drainage areas with high sediment production potential unless preceded by full treatment control with a BMP effective for sediment removal.
- ☐ Design infiltration rate should be determined as described in [Appendix VII](#).
- ☐ Inspection ports or similar design features shall be provided to verify continued system performance and identify need for major maintenance.

- ☐ For infiltration facilities beneath roads and parking areas, structural requirements should meet H-20 load requirements.

Computing Underground Infiltration Device Size

Underground infiltration devices vary by design and by proprietary designs. The sizing method selected for use must be based on the BMP type it most strongly resembles.

- For underground infiltration devices with open pore volume (e.g., vaults, crates, pipe sections, etc), sizing will be most similar to infiltration basins.
- For underground infiltration devices with pore space (e.g., aggregate reservoirs), sizing will be most similar to permeable pavement.

Additional References for Design Guidance

- Los Angeles Unified School District (LAUSD) Stormwater Technical Manual, Chapter 5:
http://www.laschools.org/employee/design/fs-studies-and-reports/download/white_paper_report_material/Storm_Water_Technical_Manual_2009-opt-red.pdf?version_id=76975850

***Preventing water
pollution at your
commercial/industrial site***

Clean beaches and healthy creeks, rivers, bays and ocean are important to Orange County. However, many landscape and building maintenance activities can lead to water pollution if you're not careful. Paint, chemicals, plant clippings and other materials can be blown or washed into storm drains that flow to the ocean. Unlike water in sanitary sewers (from sinks and toilets), water in storm drains is not treated before entering our waterways.

You would never pour soap or fertilizers into the ocean, so why would you let them enter the storm drains? Follow these easy tips to help prevent water pollution.

Some types of industrial facilities are required to obtain coverage under the State General Industrial Permit. For more information visit: www.swrcb.ca.gov/stormwater/industrial.html



For more information,
please call the
Orange County Stormwater Program
at **1-877-89-SPILL** (1-877-897-7455)
or visit
www.ocwatersheds.com

To report a spill,
call the
**Orange County 24-Hour
Water Pollution Problem
Reporting Hotline**
at **1-877-89-SPILL** (1-877-897-7455).

For emergencies, dial 911.



Printed on Recycled Paper

Help Prevent Ocean Pollution:

Proper Maintenance Practices for Your Business



**The Ocean Begins
at Your Front Door**



Proper Maintenance Practices for your Business

Landscape Maintenance

- Compost grass clippings, leaves, sticks and other vegetation, or dispose of it at a permitted landfill or in green waste containers. Do not dispose of these materials in the street, gutter or storm drain.
- Irrigate slowly and inspect the system for leaks, overspraying and runoff. Adjust automatic timers to avoid overwatering.
- Follow label directions for the use and disposal of fertilizers and pesticides.
- Do not apply pesticides or fertilizers if rain is expected within 48 hours or if wind speeds are above 5 mph.
- Do not spray pesticides within 100 feet of waterways.
- Fertilizers should be worked into the soil rather than dumped onto the surface.
- If fertilizer is spilled on the pavement or sidewalk, sweep it up immediately and place it back in the container.

Building Maintenance

- Never allow washwater, sweepings or sediment to enter the storm drain.
- Sweep up dry spills and use cat litter, towels or similar materials to absorb wet spills. Dispose of it in the trash.
- If you wash your building, sidewalk or parking lot, you **must** contain the water. Use a shop vac to collect the water and contact your city or sanitation agency for proper disposal information. Do not let water enter the street, gutter or storm drain.
- Use drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of materials in the trash.
- Use a ground cloth or oversized tub for mixing paint and cleaning tools.
- Use a damp mop or broom to clean floors.
- Cover dumpsters to keep insects, animals, rainwater and sand from entering. Keep the area around the dumpster clear of trash and debris. Do not overfill the dumpster.

- Call your trash hauler to replace leaking dumpsters.
- Do not dump any toxic substance or liquid waste on the pavement, the ground, or near a storm drain. Even materials that seem harmless such as latex paint or biodegradable cleaners can damage the environment.
- Recycle paints, solvents and other materials. For more information about recycling and collection centers, visit www.oclandfills.com.
- Store materials indoors or under cover and away from storm drains.
- Use a construction and demolition recycling company to recycle lumber, paper, cardboard, metals, masonry, carpet, plastic, pipes, drywall, rocks, dirt, and green waste. For a listing of construction and demolition recycling locations in your area, visit www.ciwmb.ca.gov/recycle.
- Properly label materials. Familiarize employees with Material Safety Data Sheets.

NEVER DISPOSE
OF ANYTHING
IN THE STORM
DRAIN.



Spill Prevention, Control & Cleanup SC-11



Photo Credit: Geoff Brosseau

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Many activities that occur at an industrial or commercial site have the potential to cause accidental or illegal spills. Preparation for accidental or illegal spills, with proper training and reporting systems implemented, can minimize the discharge of pollutants to the environment.

Spills and leaks are one of the largest contributors of stormwater pollutants. Spill prevention and control plans are applicable to any site at which hazardous materials are stored or used. An effective plan should have spill prevention and response procedures that identify potential spill areas, specify material handling procedures, describe spill response procedures, and provide spill clean-up equipment. The plan should take steps to identify and characterize potential spills, eliminate and reduce spill potential, respond to spills when they occur in an effort to prevent pollutants from entering the stormwater drainage system, and train personnel to prevent and control future spills.

Approach

Pollution Prevention

- Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
- Develop a Spill Prevention Control and Countermeasure (SPCC) Plan. The plan should include:

Targeted Constituents

Sediment	
Nutrients	
Trash	
Metals	☒
Bacteria	
Oil and Grease	☒
Organics	☒



SC-11 Spill Prevention, Control & Cleanup

- Description of the facility, owner and address, activities and chemicals present
 - Facility map
 - Notification and evacuation procedures
 - Cleanup instructions
 - Identification of responsible departments
 - Identify key spill response personnel
- Recycle, reclaim, or reuse materials whenever possible. This will reduce the amount of process materials that are brought into the facility.

Suggested Protocols (including equipment needs)

Spill Prevention

- Develop procedures to prevent/mitigate spills to storm drain systems. Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures.
- If consistent illegal dumping is observed at the facility:
 - Post “No Dumping” signs with a phone number for reporting illegal dumping and disposal. Signs should also indicate fines and penalties applicable for illegal dumping.
 - Landscaping and beautification efforts may also discourage illegal dumping.
 - Bright lighting and/or entrance barriers may also be needed to discourage illegal dumping.
- Store and contain liquid materials in such a manner that if the tank is ruptured, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters, or groundwater.
- If the liquid is oil, gas, or other material that separates from and floats on water, install a spill control device (such as a tee section) in the catch basins that collects runoff from the storage tank area.
- Routine maintenance:
 - Place drip pans or absorbent materials beneath all mounted taps, and at all potential drip and spill locations during filling and unloading of tanks. Any collected liquids or soiled absorbent materials must be reused/recycled or properly disposed.
 - Store and maintain appropriate spill cleanup materials in a location known to all near the tank storage area; and ensure that employees are familiar with the site’s spill control plan and/or proper spill cleanup procedures.
 - Sweep and clean the storage area monthly if it is paved, *do not hose down the area to a storm drain.*

Spill Prevention, Control & Cleanup SC-11

- Check tanks (and any containment sumps) daily for leaks and spills. Replace tanks that are leaking, corroded, or otherwise deteriorating with tanks in good condition. Collect all spilled liquids and properly dispose of them.
- Label all containers according to their contents (e.g., solvent, gasoline).
- Label hazardous substances regarding the potential hazard (corrosive, radioactive, flammable, explosive, poisonous).
- Prominently display required labels on transported hazardous and toxic materials (per US DOT regulations).
- Identify key spill response personnel.

Spill Control and Cleanup Activities

- Follow the Spill Prevention Control and Countermeasure Plan.
- Clean up leaks and spills immediately.
- Place a stockpile of spill cleanup materials where it will be readily accessible (e.g., near storage and maintenance areas).
- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste. Physical methods for the cleanup of dry chemicals include the use of brooms, shovels, sweepers, or plows.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Chemical cleanups of material can be achieved with the use of adsorbents, gels, and foams. Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.

Reporting

- Report spills that pose an immediate threat to human health or the environment to the Regional Water Quality Control Board.
- Federal regulations require that any oil spill into a water body or onto an adjoining shoreline be reported to the National Response Center (NRC) at 800-424-8802 (24 hour).
- Report spills to local agencies, such as the fire department; they can assist in cleanup.
- Establish a system for tracking incidents. The system should be designed to identify the following:
 - Types and quantities (in some cases) of wastes
 - Patterns in time of occurrence (time of day/night, month, or year)

SC-11 Spill Prevention, Control & Cleanup

- Mode of dumping (abandoned containers, “midnight dumping” from moving vehicles, direct dumping of materials, accidents/spills)
- Responsible parties

Training

- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills:
 - The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur.
 - Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Employees should be educated about aboveground storage tank requirements. Employees responsible for aboveground storage tanks and liquid transfers should be thoroughly familiar with the Spill Prevention Control and Countermeasure Plan and the plan should be readily available.
- Train employees to recognize and report illegal dumping incidents.

Other Considerations (Limitations and Regulations)

- A Spill Prevention Control and Countermeasure Plan (SPCC) is required for facilities that are subject to the oil pollution regulations specified in Part 112 of Title 40 of the Code of Federal Regulations or if they have a storage capacity of 10,000 gallons or more of petroleum. (Health and Safety Code 6.67)
- State regulations also exist for storage of hazardous materials (Health & Safety Code Chapter 6.95), including the preparation of area and business plans for emergency response to the releases or threatened releases.
- Consider requiring smaller secondary containment areas (less than 200 sq. ft.) to be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.

Requirements

Costs (including capital and operation & maintenance)

- Will vary depending on the size of the facility and the necessary controls.
- Prevention of leaks and spills is inexpensive. Treatment and/or disposal of contaminated soil or water can be quite expensive.

Maintenance (including administrative and staffing)

- This BMP has no major administrative or staffing requirements. However, extra time is needed to properly handle and dispose of spills, which results in increased labor costs.

Spill Prevention, Control & Cleanup SC-11

Supplemental Information

Further Detail of the BMP

Reporting

Record keeping and internal reporting represent good operating practices because they can increase the efficiency of the facility and the effectiveness of BMPs. A good record keeping system helps the facility minimize incident recurrence, correctly respond with appropriate cleanup activities, and comply with legal requirements. A record keeping and reporting system should be set up for documenting spills, leaks, and other discharges, including discharges of hazardous substances in reportable quantities. Incident records describe the quality and quantity of non-stormwater discharges to the storm sewer. These records should contain the following information:

- Date and time of the incident
- Weather conditions
- Duration of the spill/leak/discharge
- Cause of the spill/leak/discharge
- Response procedures implemented
- Persons notified
- Environmental problems associated with the spill/leak/discharge

Separate record keeping systems should be established to document housekeeping and preventive maintenance inspections, and training activities. All housekeeping and preventive maintenance inspections should be documented. Inspection documentation should contain the following information:

- The date and time the inspection was performed
- Name of the inspector
- Items inspected
- Problems noted
- Corrective action required
- Date corrective action was taken

Other means to document and record inspection results are field notes, timed and dated photographs, videotapes, and drawings and maps.

Aboveground Tank Leak and Spill Control

Accidental releases of materials from aboveground liquid storage tanks present the potential for contaminating stormwater with many different pollutants. Materials spilled, leaked, or lost from

SC-11 Spill Prevention, Control & Cleanup

tanks may accumulate in soils or on impervious surfaces and be carried away by stormwater runoff.

The most common causes of unintentional releases are:

- Installation problems
- Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves)
- External corrosion and structural failure
- Spills and overfills due to operator error
- Leaks during pumping of liquids or gases from truck or rail car to a storage tank or vice versa

Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code. Practices listed below should be employed to enhance the code requirements:

- Tanks should be placed in a designated area.
- Tanks located in areas where firearms are discharged should be encapsulated in concrete or the equivalent.
- Designated areas should be impervious and paved with Portland cement concrete, free of cracks and gaps, in order to contain leaks and spills.
- Liquid materials should be stored in UL approved double walled tanks or surrounded by a curb or dike to provide the volume to contain 10 percent of the volume of all of the containers or 110 percent of the volume of the largest container, whichever is greater. The area inside the curb should slope to a drain.
- For used oil or dangerous waste, a dead-end sump should be installed in the drain.
- All other liquids should be drained to the sanitary sewer if available. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Accumulated stormwater in petroleum storage areas should be passed through an oil/water separator.

Maintenance is critical to preventing leaks and spills. Conduct routine inspections and:

- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator error.
- Check for failure of piping system (pipes, pumps, flanger, coupling, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.

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- Visually inspect new tank or container installation for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Frequently relocate accumulated stormwater during the wet season.
- Periodically conduct integrity testing by a qualified professional.

Vehicle Leak and Spill Control

Major spills on roadways and other public areas are generally handled by highly trained Hazmat teams from local fire departments or environmental health departments. The measures listed below pertain to leaks and smaller spills at vehicle maintenance shops.

In addition to implementing the spill prevention, control, and clean up practices above, use the following measures related to specific activities:

Vehicle and Equipment Maintenance

- Perform all vehicle fluid removal or changing inside or under cover to prevent the run-on of stormwater and the runoff of spills.
- Regularly inspect vehicles and equipment for leaks, and repair immediately.
- Check incoming vehicles and equipment (including delivery trucks, and employee and subcontractor vehicles) for leaking oil and fluids. Do not allow leaking vehicles or equipment onsite.
- Always use secondary containment, such as a drain pan or drop cloth, to catch spills or leaks when removing or changing fluids.
- Immediately drain all fluids from wrecked vehicles.
- Store wrecked vehicles or damaged equipment under cover.
- Place drip pans or absorbent materials under heavy equipment when not in use.
- Use adsorbent materials on small spills rather than hosing down the spill.
- Remove the adsorbent materials promptly and dispose of properly.
- Promptly transfer used fluids to the proper waste or recycling drums. Don't leave full drip pans or other open containers lying around.
- Oil filters disposed of in trashcans or dumpsters can leak oil and contaminate stormwater. Place the oil filter in a funnel over a waste oil recycling drum to drain excess oil before disposal. Oil filters can also be recycled. Ask your oil supplier or recycler about recycling oil filters.

SC-11 Spill Prevention, Control & Cleanup

- Store cracked batteries in a non-leaking secondary container. Do this with all cracked batteries, even if you think all the acid has drained out. If you drop a battery, treat it as if it is cracked. Put it into the containment area until you are sure it is not leaking.

Vehicle and Equipment Fueling

- Design the fueling area to prevent the run-on of stormwater and the runoff of spills:
 - Cover fueling area if possible.
 - Use a perimeter drain or slope pavement inward with drainage to a sump.
 - Pave fueling area with concrete rather than asphalt.
- If dead-end sump is not used to collect spills, install an oil/water separator.
- Install vapor recovery nozzles to help control drips as well as air pollution.
- Discourage “topping-off” of fuel tanks.
- Use secondary containment when transferring fuel from the tank truck to the fuel tank.
- Use adsorbent materials on small spills and general cleaning rather than hosing down the area. Remove the adsorbent materials promptly.
- Carry out all Federal and State requirements regarding underground storage tanks, or install above ground tanks.
- Do not use mobile fueling of mobile industrial equipment around the facility; rather, transport the equipment to designated fueling areas.
- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Train employees in proper fueling and cleanup procedures.

Industrial Spill Prevention Response

For the purposes of developing a spill prevention and response program to meet the stormwater regulations, facility managers should use information provided in this fact sheet and the spill prevention/response portions of the fact sheets in this handbook, for specific activities. The program should:

- Integrate with existing emergency response/hazardous materials programs (e.g., Fire Department)
- Develop procedures to prevent/mitigate spills to storm drain systems
- Identify responsible departments
- Develop and standardize reporting procedures, containment, storage, and disposal activities, documentation, and follow-up procedures
- Address spills at municipal facilities, as well as public areas

Spill Prevention, Control & Cleanup SC-11

- Provide training concerning spill prevention, response and cleanup to all appropriate personnel

References and Resources

California's Nonpoint Source Program Plan <http://www.swrcb.ca.gov/nps/index.html>

Clark County Storm Water Pollution Control Manual
<http://www.co.clark.wa.us/pubworks/bmpman.pdf>

King County Storm Water Pollution Control Manual <http://dnr.metrokc.gov/wlr/dss/spcm.htm>

Santa Clara Valley Urban Runoff Pollution Prevention Program <http://www.scvurppp.org>

The Stormwater Managers Resource Center <http://www.stormwatercenter.net/>

Description

Outside process equipment operations and maintenance can contaminate stormwater runoff. Activities, such as grinding, painting, coating, sanding, degreasing or parts cleaning, landfills and waste piles, solid waste treatment and disposal, are examples of process operations that can lead to contamination of stormwater runoff. Source controls for outdoor process equipment operations and maintenance include reducing the amount of waste created, enclosing or covering all or some of the equipment, installing secondary containment, and training employees.

Approach

Pollution Prevention

- Perform the activity during dry periods.
- Use non-toxic chemicals for maintenance and minimize or eliminate the use of solvents.

Suggested Protocols

- Consider enclosing the activity in a building and connecting the floor drains to the sanitary sewer.
- Cover the work area with a permanent roof if possible.
- Minimize contact of stormwater with outside process equipment operations through berming and drainage routing (run-on prevention). If possible, connect process equipment area to public sewer or facility wastewater treatment system. Some municipalities require that secondary containment areas be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.
- Dry clean the work area regularly.

Training

- Train employees to perform the activity during dry periods only or substituting benign materials for more toxic ones.
- Train employee and contractors in proper techniques for spill containment and cleanup. Employees should have the tools and knowledge to immediately begin cleaning up a spill should one occur.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	✓
Nutrients	
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓



SC-32 Outdoor Equipment Operations

- Have employees trained in emergency spill cleanup procedures present when dangerous waste, liquid chemicals, or other wastes are delivered.
- Place a stockpile of spill cleanup materials where it will be readily accessible.
- Prevent operator errors by using engineering safe guards and thus reducing accidental releases of pollutant.
- Inspect storage areas regularly for leaks or spills. Also check for structural failure, spills and overfills due to operator error, and/or failure of piping system.

Other Considerations

- Providing cover may be expensive.
- Space limitations may preclude enclosing some equipment.
- Storage sheds often must meet building and fire code requirements.

Requirements

Costs

Costs vary depending on the complexity of the operation and the amount of control necessary for stormwater pollution control.

Maintenance

- Conduct routine preventive maintenance, including checking process equipment for leaks.
- Clean the storm drain system regularly.

Supplemental Information

Further Detail of the BMP

Hydraulic/Treatment Modifications

If stormwater becomes polluted, it should be captured and treated. If you do not have your own process wastewater treatment system, consider discharging to the public sewer system. Use of the public sewer might be allowed under the following conditions:

- If the activity area is very small (less than a few hundred square feet), the local sewer authority may be willing to allow the area to remain uncovered with the drain connected to the public sewer.
- It may be possible under unusual circumstances to connect a much larger area to the public sewer, as long as the rate of stormwater discharges does not exceed the capacity of the wastewater treatment plant. The stormwater could be stored during the storm and then transferred to the public sewer when the normal flow is low, such as at night.

Industries that generate large volumes of process wastewater typically have their own treatment system and corresponding permit. These industries have the discretion to use their wastewater treatment system to treat stormwater within the constraints of their permit requirements for process treatment. It may also be possible for the industry to discharge the stormwater directly to an effluent outfall without treatment as long as the total loading of the discharged process

water and stormwater does not exceed the loading had a stormwater treatment device been used. This could be achieved by reducing the loading from the process wastewater treatment system. Check with your Regional Water Quality Control Board or local sewerage agency, as this option would be subject to permit constraints and potentially regular monitoring.

References and Resources

California's Nonpoint Source Program Plan <http://www.swrcb.ca.gov/nps/index.html>

Clark County Storm Water Pollution Control Manual
<http://www.co.clark.wa.us/pubworks/bmpman.pdf>

King County Storm Water Pollution Control Manual <http://dnr.metrokc.gov/wlr/dss/spcm.htm>

Santa Clara Valley Urban Runoff Pollution Prevention Program <http://www.scvurppp.org>

The Stormwater Managers Resource Center <http://www.stormwatercenter.net>

Parking/Storage Area Maintenance SC-43



Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The protocols in this fact sheet are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

The goal of this program is to ensure stormwater pollution prevention practices are considered when conducting activities on or around parking areas and storage areas to reduce potential for pollutant discharge to receiving waters. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook)
- Keep accurate maintenance logs to evaluate BMP implementation.

Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	
Trash	✓
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓



SC-43 Parking/Storage Area Maintenance

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low quantities.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Discharge soapy water remaining in mop or wash buckets to the sanitary sewer through a sink, toilet, clean-out, or wash area with drain.

Controlling Litter

- Post “No Littering” signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel, and dispose of litter in the trash.

Surface Cleaning

- Use dry cleaning methods (e.g., sweeping, vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system if possible.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- Follow the procedures below if water is used to clean surfaces:
 - Block the storm drain or contain runoff.
 - Collect and pump wash water to the sanitary sewer or discharge to a pervious surface. Do not allow wash water to enter storm drains.
 - Dispose of parking lot sweeping debris and dirt at a landfill.
- Follow the procedures below when cleaning heavy oily deposits:
 - Clean oily spots with absorbent materials.
 - Use a screen or filter fabric over inlet, then wash surfaces.

Parking/Storage Area Maintenance SC-43

- Do not allow discharges to the storm drain.
- Vacuum/pump discharges to a tank or discharge to sanitary sewer.
- Appropriately dispose of spilled materials and absorbents.

Surface Repair

- Preheat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination from contacting stormwater runoff.
- Cover and seal nearby storm drain inlets where applicable (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.
- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of parking facilities and stormwater conveyance systems associated with parking facilities on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up fluid spills immediately with absorbent rags or material.
- Dispose of spilled material and absorbents properly.

Other Considerations

Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

SC-43 Parking/Storage Area Maintenance

Requirements

Costs

Cleaning/sweeping costs can be quite large. Construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot regularly to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities regularly to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination from contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Only use only as much water as is necessary for dust control to avoid runoff.

References and Resources

California's Nonpoint Source Program Plan <http://www.swrcb.ca.gov/nps/index.html>

Clark County Storm Water Pollution Control Manual
<http://www.co.clark.wa.us/pubworks/bmpman.pdf>

King County Storm Water Pollution Control Manual <http://dnr.metrokc.gov/wlr/dss/spcm.htm>

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA). <http://www.basmaa.org/>

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program <http://www.scvurppp.org>

The Storm Water Managers Resource Center <http://www.stormwatercenter.net/>



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☒
Nutrients	
Trash	☒
Metals	☒
Bacteria	
Oil and Grease	☒
Organics	☒
Oxygen Demanding	☒

Description

Streets, roads, and highways are significant sources of pollutants in stormwater discharges, and operation and maintenance (O&M) practices, if not conducted properly, can contribute to the problem. Stormwater pollution from roadway and bridge maintenance should be addressed on a site-specific basis. Use of the procedures outlined below, that address street sweeping and repair, bridge and structure maintenance, and unpaved roads will reduce pollutants in stormwater.

Approach

Pollution Prevention

- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal)
- Recycle paint and other materials whenever possible.
- Enlist the help of citizens to keep yard waste, used oil, and other wastes out of the gutter.

Suggested Protocols

Street Sweeping and Cleaning

- Maintain a consistent sweeping schedule. Provide minimum monthly sweeping of curbed streets.
- Perform street cleaning during dry weather if possible.



- Avoid wet cleaning or flushing of street, and utilize dry methods where possible.
- Consider increasing sweeping frequency based on factors such as traffic volume, land use, field observations of sediment and trash accumulation, proximity to water courses, etc. For example:
 - Increase the sweeping frequency for streets with high pollutant loadings, especially in high traffic and industrial areas.
 - Increase the sweeping frequency just before the wet season to remove sediments accumulated during the summer.
 - Increase the sweeping frequency for streets in special problem areas such as special events, high litter or erosion zones.
- Maintain cleaning equipment in good working condition and purchase replacement equipment as needed. Old sweepers should be replaced with new technologically advanced sweepers (preferably regenerative air sweepers) that maximize pollutant removal.
- Operate sweepers at manufacturer requested optimal speed levels to increase effectiveness.
- To increase sweeping effectiveness consider the following:
 - Institute a parking policy to restrict parking in problematic areas during periods of street sweeping.
 - Post permanent street sweeping signs in problematic areas; use temporary signs if installation of permanent signs is not possible.
 - Develop and distribute flyers notifying residents of street sweeping schedules.
- Regularly inspect vehicles and equipment for leaks, and repair immediately.
- If available use vacuum or regenerative air sweepers in the high sediment and trash areas (typically industrial/commercial).
- Keep accurate logs of the number of curb-miles swept and the amount of waste collected.
- Dispose of street sweeping debris and dirt at a landfill.
- Do not store swept material along the side of the street or near a storm drain inlet.
- Keep debris storage to a minimum during the wet season or make sure debris piles are contained (e.g. by berming the area) or covered (e.g. with tarps or permanent covers).

Street Repair and Maintenance

Pavement marking

- Schedule pavement marking activities for dry weather.

- Develop paint handling procedures for proper use, storage, and disposal of paints.
- Transfer and load paint and hot thermoplastic away from storm drain inlets.
- Provide drop cloths and drip pans in paint mixing areas.
- Properly maintain application equipment.
- Street sweep thermoplastic grindings. Yellow thermoplastic grindings may require special handling as they may contain lead.
- Paints containing lead or tributyltin are considered a hazardous waste and must be disposed of properly.
- Use water based paints whenever possible. If using water based paints, clean the application equipment in a sink that is connected to the sanitary sewer.
- Properly store leftover paints if they are to be kept for the next job, or dispose of properly.

Concrete installation and repair

- Schedule asphalt and concrete activities for dry weather.
- Take measures to protect any nearby storm drain inlets and adjacent watercourses, prior to breaking up asphalt or concrete (e.g. place sand bags around inlets or work areas).
- Limit the amount of fresh concrete or cement mortar mixed, mix only what is needed for the job.
- Store concrete materials under cover, away from drainage areas. Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- Return leftover materials to the transit mixer. Dispose of small amounts of hardened excess concrete, grout, and mortar in the trash.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile, or dispose in the trash.
- When making saw cuts in pavement, use as little water as possible and perform during dry weather. Cover each storm drain inlet completely with filter fabric or plastic during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site. Alternatively, a small onsite vacuum may be used to pick up the slurry as this will prohibit slurry from reaching storm drain inlets.
- Wash concrete trucks off site or in designated areas on site designed to preclude discharge of wash water to drainage system.

Patching, resurfacing, and surface sealing

- Schedule patching, resurfacing and surface sealing for dry weather.
- Stockpile materials away from streets, gutter areas, storm drain inlets or watercourses. During wet weather, cover stockpiles with plastic tarps or berm around them if necessary to prevent transport of materials in runoff.
- Pre-heat, transfer or load hot bituminous material away from drainage systems or watercourses.
- Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and maintenance holes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from covered maintenance holes and storm drain inlets when the job is complete.
- Prevent excess material from exposed aggregate concrete or similar treatments from entering streets or storm drain inlets. Designate an area for clean up and proper disposal of excess materials.
- Use only as much water as necessary for dust control, to avoid runoff.
- Sweep, never hose down streets to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Equipment cleaning maintenance and storage

- Inspect equipment daily and repair any leaks. Place drip pans or absorbent materials under heavy equipment when not in use.
- Perform major equipment repairs at the corporation yard, when practical.
- If refueling or repairing vehicles and equipment must be done onsite, use a location away from storm drain inlets and watercourses.
- Clean equipment including sprayers, sprayer paint supply lines, patch and paving equipment, and mud jacking equipment at the end of each day. Clean in a sink or other area (e.g. vehicle wash area) that is connected to the sanitary sewer.

*Bridge and Structure Maintenance**Paint and Paint Removal*

- Transport paint and materials to and from job sites in containers with secure lids and tied down to the transport vehicle.
- Do not transfer or load paint near storm drain inlets or watercourses.

- Test and inspect spray equipment prior to starting to paint. Tighten all hoses and connections and do not overfill paint container.
- Plug nearby storm drain inlets prior to starting painting where there is significant risk of a spill reaching storm drains. Remove plugs when job is completed.
- If sand blasting is used to remove paint, cover nearby storm drain inlets prior to starting work.
- Perform work on a maintenance traveler or platform, or use suspended netting or tarps to capture paint, rust, paint removing agents, or other materials, to prevent discharge of materials to surface waters if the bridge crosses a watercourse. If sanding, use a sander with a vacuum filter bag.
- Capture all clean-up water, and dispose of properly.
- Recycle paint when possible (e.g. paint may be used for graffiti removal activities). Dispose of unused paint at an appropriate household hazardous waste facility.

Grffiti Removal

- Schedule graffiti removal activities for dry weather.
- Protect nearby storm drain inlets prior to removing graffiti from walls, signs, sidewalks, or other structures needing graffiti abatement. Clean up afterwards by sweeping or vacuuming thoroughly, and/or by using absorbent and properly disposing of the absorbent.
- When graffiti is removed by painting over, implement the procedures under Painting and Paint Removal above.
- Direct runoff from sand blasting and high pressure washing (with no cleaning agents) into a landscaped or dirt area. If such an area is not available, filter runoff through an appropriate filtering device (e.g. filter fabric) to keep sand, particles, and debris out of storm drains.
- If a graffiti abatement method generates wash water containing a cleaning compound (such as high pressure washing with a cleaning compound), plug nearby storm drains and vacuum/pump wash water to the sanitary sewer.
- Consider using a waterless and non-toxic chemical cleaning method for graffiti removal (e.g. gels or spray compounds).

Repair Work

- Prevent concrete, steel, wood, metal parts, tools, or other work materials from entering storm drains or watercourses.
- Thoroughly clean up the job site when the repair work is completed.
- When cleaning guardrails or fences follow the appropriate surface cleaning methods (depending on the type of surface) outlined in SC-71 Plaza & Sidewalk Cleaning fact sheet.

- If painting is conducted, follow the painting and paint removal procedures above.
- If graffiti removal is conducted, follow the graffiti removal procedures above.
- If construction takes place, see the Construction Activity BMP Handbook.
- Recycle materials whenever possible.

Unpaved Roads and Trails

- Stabilize exposed soil areas to prevent soil from eroding during rain events. This is particularly important on steep slopes.
- For roadside areas with exposed soils, the most cost-effective choice is to vegetate the area, preferably with a mulch or binder that will hold the soils in place while the vegetation is establishing. Native vegetation should be used if possible.
- If vegetation cannot be established immediately, apply temporary erosion control mats/blankets; a comma straw, or gravel as appropriate.
- If sediment is already eroded and mobilized in roadside areas, temporary controls should be installed. These may include: sediment control fences, fabric-covered triangular dikes, gravel-filled burlap bags, biobags, or hay bales staked in place.

Non-Stormwater Discharges

Field crews should be aware of non-stormwater discharges as part of their ongoing street maintenance efforts.

- Refer to SC-10 Non-Stormwater Discharges
- Identify location, time and estimated quantity of discharges.
- Notify appropriate personnel.

Training

- Train employees regarding proper street sweeping operation and street repair and maintenance.
- Instruct employees and subcontractors to ensure that measures to reduce the stormwater impacts of roadway/bridge maintenance are being followed.
- Require engineering staff and/or consulting A/E firms to address stormwater quality in new bridge designs or existing bridge retrofits.
- Use a training log or similar method to document training.
- Train employees on proper spill containment and clean up, and in identifying non-stormwater discharges.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Densely populated areas or heavily used streets may require parking regulations to clear streets for cleaning.
- No currently available conventional sweeper is effective at removing oil and grease. Mechanical sweepers are not effective at removing finer sediments.
- Limitations may arise in the location of new bridges. The availability and cost of land and other economic and political factors may dictate where the placement of a new bridge will occur. Better design of the bridge to control runoff is required if it is being placed near sensitive waters.

Requirements

Costs

- The maintenance of local roads and bridges is already a consideration of most community public works or transportation departments. Therefore, the cost of pollutant reducing management practices will involve the training and equipment required to implement these new practices.
- The largest expenditures for street sweeping programs are in staffing and equipment. The capital cost for a conventional street sweeper is between \$60,000 and \$120,000. Newer technologies might have prices approaching \$180,000. The average useful life of a conventional sweeper is about four years, and programs must budget for equipment replacement. Sweeping frequencies will determine equipment life, so programs that sweep more often should expect to have a higher cost of replacement.
- A street sweeping program may require the following.
 - Sweeper operators, maintenance, supervisory, and administrative personnel are required.
 - Traffic control officers may be required to enforce parking restrictions.
 - Skillful design of cleaning routes is required for program to be productive.
 - Arrangements must be made for disposal of collected wastes.

- If investing in newer technologies, training for operators must be included in operation and maintenance budgets. Costs for public education are small, and mostly deal with the need to obey parking restrictions and litter control. Parking tickets are an effective reminder to obey parking rules, as well as being a source of revenue.

Maintenance

- Not applicable

Supplemental Information***Further Detail of the BMP******Street sweeping***

There are advantages and disadvantages to the two common types of sweepers. The best choice depends on your specific conditions. Many communities find it useful to have a compliment of both types in their fleet.

Mechanical Broom Sweepers - More effective at picking up large debris and cleaning wet streets. Less costly to purchase and operate. Create more airborne dust.

Vacuum Sweepers - More effective at removing fine particles and associated heavy metals. Ineffective at cleaning wet streets. Noisier than mechanical broom sweepers which may restrict areas or times of operation. May require an advance vehicle to remove large debris.

Street Flushers - Not affected by biggest interference to cleaning, parked cars. May remove finer sediments, moving them toward the gutter and stormwater inlets. For this reason, flushing fell out of favor and is now used primarily after sweeping. Flushing may be effective for combined sewer systems. Presently street flushing is not allowed under most NPDES permits.

Cross-Media Transfer of Pollutants

The California Air Resources Board (ARB) has established state ambient air quality standards including a standard for respirable particulate matter (less than or equal to 10 microns in diameter, symbolized as PM₁₀). In the effort to sweep up finer sediments to remove attached heavy metals, municipalities should be aware that fine dust, that cannot be captured by the sweeping equipment and becomes airborne, could lead to issues of worker and public safety.

Bridges

Bridges that carry vehicular traffic generate some of the more direct discharges of runoff to surface waters. Bridge scupper drains cause a direct discharge of stormwater into receiving waters and have been shown to carry relatively high concentrations of pollutants. Bridge maintenance also generates wastes that may be either directly deposited to the water below or carried to the receiving water by stormwater. The following steps will help reduce the stormwater impacts of bridge maintenance:

- Site new bridges so that significant adverse impacts to wetlands, sensitive areas, critical habitat, and riparian vegetation are minimized.

- Design new bridges to avoid the use of scupper drains and route runoff to land for treatment control. Existing scupper drains should be cleaned on a regular basis to avoid sediment/debris accumulation.
- Reduce the discharge of pollutants to surface waters during maintenance by using suspended traps, vacuums, or booms in the water to capture paint, rust, and paint removing agents. Many of these wastes may be hazardous. Properly dispose of this waste by referring to CA21 (Hazardous Waste Management) in the Construction Handbook.
- Train employees and subcontractors to reduce the discharge of wastes during bridge maintenance.

De-icing

- Do not over-apply deicing salt and sand, and routinely calibrate spreaders.
- Near reservoirs, restrict the application of deicing salt and redirect any runoff away from reservoirs.
- Consider using alternative deicing agents (less toxic, biodegradable, etc.).

References and Resources

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Orange County Stormwater Program

http://www.ocwatersheds.com/stormwater/swp_introduction.asp

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Santa Clara Valley Urban Runoff Pollution Prevention Program. 2001. Fresh Concrete and Mortar Application Best Management Practices for the Construction Industry. June.

Santa Clara Valley Urban Runoff Pollution Prevention Program. 2001. Roadwork and Paving Best Management Practices for the Construction Industry. June.

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Roadway and Bridge Maintenance. On-line http://www.epa.gov/npdes/menuofbmeps/poll_13.htm



Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

Approach

Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.
- Choose low water using flowers, trees, shrubs, and groundcover.
- Consider alternative landscaping techniques such as naturescaping and xeriscaping.
- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.

Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☒
Nutrients	☒
Trash	☒
Metals	
Bacteria	
Oil and Grease	
Organics	
Oxygen Demanding	☒



- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clippings on the lawn when mowing. Grass clippings decompose quickly and release valuable nutrients back into the lawn).

Suggested Protocols***Mowing, Trimming, and Weeding***

- Whenever possible use mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Performing mowing at optimal times. Mowing should not be performed if significant rain events are predicted.
- Mulching mowers may be recommended for certain flat areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this fact sheet).
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements, and possible conflicts between preserving vegetation and the resulting maintenance needs.
- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.

- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- Ensure that there is no runoff from the landscaped area(s) if re-claimed water is used for irrigation.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly or pulse irrigate to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
 - Mulching can be used to prevent weeds where turf is absent, fencing installed to keep rodents out, and netting used to keep birds and insects away from leaves and fruit.
 - Visible insects can be removed by hand (with gloves or tweezers) and placed in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water or in some cases vacuumed off of larger plants.
 - Store-bought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.
 - Slugs can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
 - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
 - Small mammals and birds can be excluded using fences, netting, tree trunk guards.
 - Beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seed head weevils, and spiders that prey on detrimental pest species can be promoted.
- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a California qualified pesticide applicator.
- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the agency's IPM Policy, SOPs, and BMPs, and the latest IPM techniques.

- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. All public agency employees who apply pesticides and herbicides in “agricultural use” areas such as parks, golf courses, rights-of-way and recreation areas should be properly certified in accordance with state regulations. Contracts for landscape maintenance should include similar requirements.
- All employees who handle pesticides should be familiar with the most recent material safety data sheet (MSDS) files.
- Municipalities do not have the authority to regulate the use of pesticides by school districts, however the California Healthy Schools Act of 2000 (AB 2260) has imposed requirements on California school districts regarding pesticide use in schools. Posting of notification prior to the application of pesticides is now required, and IPM is stated as the preferred approach to pest management in schools.

Requirements

Costs

Additional training of municipal employees will be required to address IPM techniques and BMPs. IPM methods will likely increase labor cost for pest control which may be offset by lower chemical costs.

Maintenance

Not applicable

Supplemental Information***Further Detail of the BMP******Waste Management***

Composting is one of the better disposal alternatives if locally available. Most municipalities either have or are planning yard waste composting facilities as a means of reducing the amount of waste going to the landfill. Lawn clippings from municipal maintenance programs as well as private sources would probably be compatible with most composting facilities

Contractors and Other Pesticide Users

Municipal agencies should develop and implement a process to ensure that any contractor employed to conduct pest control and pesticide application on municipal property engages in pest control methods consistent with the IPM Policy adopted by the agency. Specifically, municipalities should require contractors to follow the agency's IPM policy, SOPs, and BMPs; provide evidence to the agency of having received training on current IPM techniques when feasible; provide documentation of pesticide use on agency property to the agency in a timely manner.

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http://ladpw.org/wmd/npdes/model_links.cfm

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Photo Credit: Geoff Brosseau

Objectives

- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff that may contain certain pollutants. Maintaining catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Approach

Suggested Protocols

Catch Basins/Inlet Structures

- Municipal staff should regularly inspect facilities to ensure the following:
 - Immediate repair of any deterioration threatening structural integrity.
 - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
 - Stenciling of catch basins and inlets (see SC-75 Waste Handling and Disposal).
- Clean catch basins, storm drain inlets, and other conveyance structures in high pollutant load areas just before the wet season to remove sediments and debris accumulated during the summer.

Targeted Constituents

Sediment	☒
Nutrients	☒
Trash	☒
Metals	☒
Bacteria	☒
Oil and Grease	☒
Organics	☒
Oxygen Demanding	☒



SC-74 Drainage System Maintenance

- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Record the amount of waste collected.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed of. Do not dewater near a storm drain or stream.
- Except for small communities with relatively few catch basins that may be cleaned manually, most municipalities will require mechanical cleaners such as eductors, vacuums, or bucket loaders.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect flushed effluent and pump to the sanitary sewer for treatment.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge from cleaning a storm drain pump station or other facility to reach the storm drain system.
- Conduct quarterly routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.
- Sample collected sediments to determine if landfill disposal is possible, or illegal discharges in the watershed are occurring.

Open Channel

- Consider modification of storm channel characteristics to improve channel hydraulics, to increase pollutant removals, and to enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a stream or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies

(SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS

Illicit Connections and Discharges

- During routine maintenance of conveyance system and drainage structures field staff should look for evidence of illegal discharges or illicit connections:
 - Is there evidence of spills such as paints, discoloring, etc.
 - Are there any odors associated with the drainage system
 - Record locations of apparent illegal discharges/illicit connections
 - Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of up gradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
 - Once the origin of flow is established, require illicit discharger to eliminate the discharge.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as “Dump No Waste Drains to Stream” stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
 - Illegal dumping hot spots
 - Types and quantities (in some cases) of wastes
 - Patterns in time of occurrence (time of day/night, month, or year)
 - Mode of dumping (abandoned containers, “midnight dumping” from moving vehicles, direct dumping of materials, accidents/spills)
 - Responsible parties
- Post “No Dumping” signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

SC-74 Drainage System Maintenance

- The State Department of Fish and Game has a hotline for reporting violations called Cal TIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).
- The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Only properly trained individuals are allowed to handle hazardous materials/wastes.
- Train municipal employees from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report illegal dumping.
- Train municipal employees and educate businesses, contractors, and the general public in proper and consistent methods for disposal.
- Train municipal staff regarding non-stormwater discharges (See SC-10 Non-Stormwater Discharges).

Spill Response and Prevention

- Refer to SC-11, Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Cleanup activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and disposal of flushed effluent to sanitary sewer may be prohibited in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Private property access rights may be needed to track illegal discharges up gradient.

- Requirements of municipal ordinance authority for suspected source verification testing for illicit connections necessary for guaranteed rights of entry.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget. A careful study of cleaning effectiveness should be undertaken before increased cleaning is implemented. Catch basin cleaning costs are less expensive if vacuum street sweepers are available; cleaning catch basins manually can cost approximately twice as much as cleaning the basins with a vacuum attached to a sweeper.
- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary. Encouraging reporting of illicit discharges by employees can offset costs by saving expense on inspectors and directing resources more efficiently. Some programs have used funds available from “environmental fees” or special assessment districts to fund their illicit connection elimination programs.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Identifying illicit discharges requires teams of at least two people (volunteers can be used), plus administrative personnel, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Requires technical staff to detect and investigate illegal dumping violations, and to coordinate public education.

Supplemental Information

Further Detail of the BMP

Storm Drain flushing

Sanitary sewer flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in sanitary sewer systems. The same principles that make sanitary sewer flushing effective can be used to flush storm drains. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as to an open channel, to another point where flushing will be initiated, or over to the sanitary sewer and on to the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents “plug flow” discharges of concentrated pollutant loadings and sediments. The deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to

cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce the impacts of stormwater pollution, a second inflatable device, placed well downstream, may be used to re-collect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to re-collect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75 percent for organics and 55-65 percent for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm drain flushing.

Flow Management

Flow management has been one of the principal motivations for designing urban stream corridors in the past. Such needs may or may not be compatible with the stormwater quality goals in the stream corridor.

Downstream flood peaks can be suppressed by reducing through flow velocity. This can be accomplished by reducing gradient with grade control structures or increasing roughness with boulders, dense vegetation, or complex banks forms. Reducing velocity correspondingly increases flood height, so all such measures have a natural association with floodplain open space. Flood elevations laterally adjacent to the stream can be lowered by increasing through flow velocity.

However, increasing velocity increases flooding downstream and inherently conflicts with channel stability and human safety. Where topography permits, another way to lower flood elevation is to lower the level of the floodway with drop structures into a large but subtly excavated bowl where flood flows are allowed to spread out.

Stream Corridor Planning

Urban streams receive and convey stormwater flows from developed or developing watersheds. Planning of stream corridors thus interacts with urban stormwater management programs. If local programs are intended to control or protect downstream environments by managing flows delivered to the channels, then it is logical that such programs should be supplemented by management of the materials, forms, and uses of the downstream riparian corridor. Any proposal for stream alteration or management should be investigated for its potential flow and stability effects on upstream, downstream, and laterally adjacent areas. The timing and rate of flow from various tributaries can combine in complex ways to alter flood hazards. Each section of channel is unique, influenced by its own distribution of roughness elements, management activities, and stream responses.

Flexibility to adapt to stream features and behaviors as they evolve must be included in stream reclamation planning. The amenity and ecology of streams may be enhanced through the landscape design options of 1) corridor reservation, 2) bank treatment, 3) geomorphic restoration, and 4) grade control.

Corridor reservation - Reserving stream corridors and valleys to accommodate natural stream meandering, aggradation, degradation, and over bank flows allows streams to find their own form and generate less ongoing erosion. In California, open stream corridors in recent urban developments have produced recreational open space, irrigation of streamside plantings, and the aesthetic amenity of flowing water.

Bank treatment - The use of armoring, vegetative cover, and flow deflection may be used to influence a channel's form, stability, and biotic habitat. To prevent bank erosion, armoring can be done with rigid construction materials, such as concrete, masonry, wood planks and logs, riprap, and gabions. Concrete linings have been criticized because of their lack of provision of biotic habitat. In contrast, riprap and gabions make relatively porous and flexible linings. Boulders, placed in the bed reduce velocity and erosive power.

Riparian vegetation can stabilize the banks of streams that are at or near a condition of equilibrium. Binding networks of roots increase bank shear strength. During flood flows, resilient vegetation is forced into erosion-inhibiting mats. The roughness of vegetation leads to lower velocity, further reducing erosive effects. Structural flow deflection can protect banks from erosion or alter fish habitat. By concentrating flow, a deflector causes a pool to be scoured in the bed.

Geomorphic restoration – Restoration refers to alteration of disturbed streams so their form and behavior emulate those of undisturbed streams. Natural meanders are retained, with grading to gentle slopes on the inside of curves to allow point bars and riffle-pool sequences to develop. Trees are retained to provide scenic quality, biotic productivity, and roots for bank stabilization, supplemented by plantings where necessary.

A restorative approach can be successful where the stream is already approaching equilibrium. However, if upstream urbanization continues new flow regimes will be generated that could disrupt the equilibrium of the treated system.

Grade Control - A grade control structure is a level shelf of a permanent material, such as stone, masonry, or concrete, over which stream water flows. A grade control structure is called a sill, weir, or drop structure, depending on the relation of its invert elevation to upstream and downstream channels.

A sill is installed at the preexisting channel bed elevation to prevent upstream migration of nick points. It establishes a firm base level below which the upstream channel can not erode.

A weir or check dam is installed with invert above the preexisting bed elevation. A weir raises the local base level of the stream and causes aggradation upstream. The gradient, velocity, and erosive potential of the stream channel are reduced. A drop structure lowers the downstream invert below its preexisting elevation, reducing downstream gradient and velocity. Weirs and drop structure control erosion by dissipating energy and reducing slope velocity.

When carefully applied, grade control structures can be highly versatile in establishing human and environmental benefits in stabilized channels. To be successful, application of grade control structures should be guided by analysis of the stream system both upstream and downstream from the area to be reclaimed.

Examples

The California Department of Water Resources began the Urban Stream Restoration Program in 1985. The program provides grant funds to municipalities and community groups to implement stream restoration projects. The projects reduce damages from streambank and watershed instability and floods while restoring streams' aesthetic, recreational, and fish and wildlife values.

In Buena Vista Park, upper floodway slopes are gentle and grassed to achieve continuity of usable park land across the channel of small boulders at the base of the slopes.

The San Diego River is a large, vegetative lined channel, which was planted in a variety of species to support riparian wildlife while stabilizing the steep banks of the floodway.

References and Resources

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United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Storm Drain System Cleaning. On line:
http://www.epa.gov/npdes/menuofbmps/poll_16.htm



Design Objectives

- ☒ Maximize Infiltration
- ☒ Provide Retention
- ☒ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.



- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
 - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
 - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
 - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
 - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of “redevelopment” must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under “designing new installations” above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☒ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include “NO DUMPING



– DRAINS TO OCEAN” and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of “redevelopment”, then the requirements stated under “designing new installations” above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner’s association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.
- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Outdoor Liquid Container Storage SC-31



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize

Description

Accidental releases of materials from above ground liquid storage tanks, drums, and dumpsters present the potential for contaminating stormwaters with many different pollutants. Tanks may store many potential stormwater runoff pollutants, such as gasoline, aviation gas, diesel fuel, kerosene, oils, greases, lubricants and other distilled, blended and refined products derived from crude petroleum. Materials spilled, leaked, or lost from storage tanks may accumulate in soils or on other surfaces and be carried away by rainfall runoff. These source controls apply to containers located outside of a building used to temporarily store liquid materials and include installing safeguards against accidental releases, installing secondary containment, conducting regular inspections, and training employees in standard operating procedures and spill cleanup techniques.

Approach

Pollution Prevention

- Educate employees about pollution prevention measures and goals.
- Keep an accurate, up-to-date inventory of the materials delivered and stored on-site.
- Try to keep chemicals in their original containers, and keep them well labeled.

Suggested Protocols

General

- Develop an operations plan that describes procedures for loading and/or unloading. Refer to SC-30 – Outdoor

Targeted Constituents

Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓



Outdoor Liquid Container Storage SC-31

- Raise the containers off the ground by use of pallet or similar method, with provisions for spill control.
- Contain the material in such a manner that if the container leaks or spills, the contents will not discharge, flow, or be washed into the storm drainage system, surface waters or groundwater.
- Place drip pans or absorbent materials beneath all mounted container taps, and at all potential drip and spill locations during filling and unloading of containers. Any collected liquids or soiled absorbent materials must be reused/recycled or properly disposed.
- Ensure that any underground or aboveground storage tanks are designed and managed in accordance with applicable regulations, identified as a potential pollution source, and have secondary containment such as a berm or dike with an impervious surface.

Inspection

- Provide regular inspections:
 - Inspect storage areas regularly for leaks or spills.
 - Conduct routine inspections and check for external corrosion of material containers. Also check for structural failure, spills and overfills due to operator error, failure of piping system.
 - Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa.
 - Visually inspect new tank or container installations for loose fittings, poor welding, and improper or poorly fitted gaskets.
 - Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
 - Replace containers that are leaking, corroded, or otherwise deteriorating with ones in good condition. If the liquid chemicals are corrosive, containers made of compatible materials must be used instead of metal drums.
 - New or secondary containers must be labeled with the product name and hazards.

Training

- Train employee (e.g., fork lift operators) and contractors in proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.
- Train employees in proper storage measures.
- Use a training log or similar method to document training.

SC-31 Outdoor Liquid Container Storage

Loading/Unloading of Materials for more detailed BMP information pertaining to loading and unloading of liquids.

- Protect materials from rainfall, run-on, runoff, and wind dispersal:
 - Cover the storage area with a roof.
 - Minimize stormwater run-on by enclosing the area or building a berm around it.
 - Use a “doghouse” structure for storage of liquid containers.
 - Use covered dumpsters for waste product containers.
- Employ safeguards against accidental releases:
 - Provide overflow protection devices to warn operator or automatic shut down transfer pumps.
 - Provide protection guards (bollards) around tanks and piping to prevent damage from a vehicle or forklift.
 - Provide clear tagging or labeling, and restrict access to valves to reduce human error.
- Berm or surround tank or container with secondary containment system, including dikes, liners, vaults, or double walled tanks.
- Be aware and ready to address the fact that some municipalities require secondary containment areas to be connected to the sanitary sewer, prohibiting any hard connections to the storm drain.
- Contact the appropriate regulatory agency regarding environmental compliance for facilities with “spill ponds” designed to intercept, treat, and/or divert spills.
- Have registered and specifically trained professional engineers identify and correct potential problems such as loose fittings, poor welding, and improper or poorly fitted gaskets for newly installed tank systems.

Storage Areas

- Provide storage tank piping located below product level with a shut-off valve at the tank; ideally this valve should be an automatic shear valve with the shut-off located inside the tank.
- Provide barriers such as posts or guardrails, where tanks are exposed, to prevent collision damage with vehicles.
- Provide secure storage to prevent vandalism-caused contamination.
- Place tight-fitting lids on all containers.
- Enclose or cover the containers where they are stored.

SC-31 Outdoor Liquid Container Storage

Spill Response and Prevention

- Keep your Spill Prevention Control and Countermeasure (SPCC) Plan up-to-date.
- Have an emergency plan, equipment, and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Have employees trained in emergency spill cleanup procedures present when dangerous waste, liquid chemicals, or other wastes are delivered.
- Prevent operator errors by using engineering safeguards and thus reducing accidental releases of pollutants.
- Store and maintain appropriate spill cleanup materials in a location near the tank storage area and known to all.

Other Considerations

- Storage sheds often must meet building and fire code requirements.
- The local fire district must be consulted for limitations on clearance of roof covers over containers used to store flammable materials.
- All specific standards set by Federal and State laws concerning the storage of oil and hazardous materials must be met.
- Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code.
- Storage of oil and hazardous materials must meet specific Federal and State standards including:
 - Spill Prevention Control and Countermeasure Plan (SPCC) Plan
 - Secondary containment
 - Integrity and leak detection monitoring
 - Emergency preparedness plans

Requirements

Costs

Costs will vary depending on the size of the facility and the necessary controls, such as berms or safeguards against accidental controls.

Maintenance

- Conduct weekly inspection.
- Sweep and clean the storage area regularly if it is paved, do not hose down the area to a storm drain.

Outdoor Liquid Container Storage SC-31

Supplemental Information

The most common causes of unintentional releases are:

- Installation problems
- Failure of piping systems (pipes, pumps, flanges, couplings, hoses, and valves)
- External corrosion and structural failure
- Spills and overfills due to operator error
- Leaks during pumping of liquids or gases from truck or rail car to a storage tank or vice versa

Further Detail of the BMP

Aboveground Tank Leak and Spill Control

Storage of reactive, ignitable, or flammable liquids should comply with the Uniform Fire Code and the National Electric Code. Practices listed below should be employed to enhance the code requirements:

- Tanks should be placed in a designated area.
- Tanks located in areas where firearms are discharged should be encapsulated in concrete or the equivalent.
- Designated areas should be paved with Portland cement concrete, free of cracks and gaps, and impervious in order to contain leaks and spills,
- Liquid materials should be stored in UL approved double walled tanks or surrounded by a curb or dike to provide the volume to contain 10% of the volume of all of the containers or 110% of the volume of the largest container, whichever is greater. The area inside the curb should slope to a drain.
- For used oil or dangerous waste, a dead-end sump should be installed in the drain.
- All other liquids should be drained to the sanitary sewer if available. The drain must have a positive control such as a lock, valve, or plug to prevent release of contaminated liquids.
- Accumulated stormwater in petroleum storage areas should be passed through an oil/water separator

Maintenance is critical to preventing leaks and spills. Conduct routine weekly inspections and:

- Check for external corrosion and structural failure.
- Check for spills and overfills due to operator error.
- Check for failure of piping system (pipes, pumps, flanger, coupling, hoses, and valves).
- Check for leaks or spills during pumping of liquids or gases from truck or rail car to a storage facility or vice versa

SC-31 Outdoor Liquid Container Storage

- Inspect new tank or container installation visually for loose fittings, poor welding, and improper or poorly fitted gaskets.
- Inspect tank foundations, connections, coatings, and tank walls and piping system. Look for corrosion, leaks, cracks, scratches, and other physical damage that may weaken the tank or container system.
- Frequently release accumulated stormwater during the wet season.
- Have periodic integrity testing conducted by a qualified professional.

Container Management

- To limit the possibility of stormwater pollution, containers used to store dangerous waste or other liquids should be kept inside the building unless this is impractical due to site constraints. If the containers are placed outside, the following procedures should be employed:
 - Dumpsters used to store items awaiting transfer to a landfill should be placed in a lean-to structure or otherwise covered. Dumpsters shall be kept in good condition without corrosion or leaky seams.
 - Garbage dumpsters shall be replaced if they are deteriorating to the point where leakage is occurring. Dumpsters should be kept undercover to prevent the entry of stormwater. Employees should be made aware of the importance of keeping the dumpsters covered and free from leaks.
 - Waste container drums should be kept in an area such as a service bay. If drums are kept outside, they must be stored in a lean-to type structure, shed or walk-in container to keep rainfall from reaching the drums.

Dikes

One of the best protective measures against contamination of stormwater is diking. Containment dikes are berms or retaining walls that are designed to hold spills. Diking is an effective pollution prevention measure for above ground storage tanks and railcar or tank truck loading and unloading areas. The dike surrounds the area of concern and holds the spill, keeping spill materials separated from the stormwater side of the dike area. Diking can be used in any industrial or municipal facility, but it is most commonly used for controlling large spills or releases from liquid storage areas and liquid transfer areas.

- For single-wall tanks, containment dikes should be large enough to hold the contents of the storage tank for the facility plus rain water.
- For trucks, diked areas should be capable of holding an amount equal to the volume of the tank truck compartment. Diked construction material should be strong enough to safely hold spilled materials.
- Dike materials can consist of earth, concrete, synthetic materials, metal, or other impervious materials.
- Strong acids or bases may react with metal containers, concrete, and some plastics.

Outdoor Liquid Container Storage SC-31

- Where strong acids or bases are stored, alternative dike materials should be considered. More active organic chemicals may need certain special liners for dikes.
- Dikes may also be designed with impermeable materials to increase containment capabilities.
- Dikes should be inspected during or after significant storms or spills to check for washouts or overflows.
- Regular checks of containment dikes to insure the dikes are capable of holding spills should be conducted.
- Inability of a structure to retain stormwater, dike erosion, soggy areas, or changes in vegetation indicate problems with dike structures. Damaged areas should be patched and stabilized immediately.
- Earthen dikes may require special maintenance of vegetation such as mulching and irrigation.

Curbing

Curbing is a barrier that surrounds an area of concern. Curbing is similar to containment diking in the way that it prevents spills and leaks from being released into the environment. Curbing is usually small scaled and does not contain large spills like diking. Curbing is common at many facilities in small areas where handling and transfer of liquid materials occur. Curbing can redirect contaminated stormwater away from the storage area. It is useful in areas where liquid materials are transferred from one container to another. Asphalt is a common material used for curbing; however, curbing materials can include earth, concrete, synthetic materials, metal, or other impenetrable materials.

- Spilled materials should be removed immediately from curbed areas to allow space for future spills.
- Curbs should have manually-controlled pump systems rather than common drainage systems for collection of spilled materials.
- The curbed area should be inspected regularly to clear clogging debris.
- Maintenance should also be conducted frequently to prevent overflow of any spilled materials as curbed areas are designed only for smaller spills.
- Curbing has the following advantages:
 - Excellent run-on control
 - Inexpensive
 - Ease of installment
 - Provides option to recycle materials spilled in curb areas
 - Common industry practice

SC-31 Outdoor Liquid Container Storage

Examples

The “doghouse” design has been used to store small liquid containers. The roof and flooring design prevent contact with direct rain or runoff. The doghouse has two solid structural walls and two canvas covered walls. The flooring is wire mesh about secondary containment. The unit has been used successfully at Lockheed Missile and Space Company in Sunnyvale.

References and Resources

California’s Nonpoint Source Program Plan <http://www.swrcb.ca.gov/nps/index.html>

Clark County Storm Water Pollution Control Manual
<http://www.co.clark.wa.us/pubworks/bmpman.pdf>

King County Storm Water Pollution Control Manual <http://dnr.metrokc.gov/wlr/dss/spcm.htm>

Santa Clara Valley Urban Runoff Pollution Prevention Program <http://www.scvurppp.org>

The Storm Water Managers Resource Center <http://www.stormwatercenter.net/>

Description

Trash storage areas are areas where a trash receptacle (s) are located for use as a repository for solid wastes. Stormwater runoff from areas where trash is stored or disposed of can be polluted. In addition, loose trash and debris can be easily transported by water or wind into nearby storm drain inlets, channels, and/or creeks. Waste handling operations that may be sources of stormwater pollution include dumpsters, litter control, and waste piles.

Approach

This fact sheet contains details on the specific measures required to prevent or reduce pollutants in stormwater runoff associated with trash storage and handling. Preventative measures including enclosures, containment structures, and impervious pavements to mitigate spills, should be used to reduce the likelihood of contamination.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Design requirements for waste handling areas are governed by Building and Fire Codes, and by current local agency ordinances and zoning requirements. The design criteria described in this fact sheet are meant to enhance and be consistent with these code and ordinance requirements. Hazardous waste should be handled in accordance with legal requirements established in Title 22, California Code of Regulation.

Wastes from commercial and industrial sites are typically hauled by either public or commercial carriers that may have design or access requirements for waste storage areas. The design criteria in this fact sheet are recommendations and are not intended to be in conflict with requirements established by the waste hauler. The waste hauler should be contacted prior to the design of your site trash collection areas. Conflicts or issues should be discussed with the local agency.

Designing New Installations

Trash storage areas should be designed to consider the following structural or treatment control BMPs:

- Design trash container areas so that drainage from adjoining roofs and pavement is diverted around the area(s) to avoid run-on. This might include berming or grading the waste handling area to prevent run-on of stormwater.
- Make sure trash container areas are screened or walled to prevent off-site transport of trash.

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- ☒ Contain Pollutants
- Collect and Convey



- Use lined bins or dumpsters to reduce leaking of liquid waste.
- Provide roofs, awnings, or attached lids on all trash containers to minimize direct precipitation and prevent rainfall from entering containers.
- Pave trash storage areas with an impervious surface to mitigate spills.
- Do not locate storm drains in immediate vicinity of the trash storage area.
- Post signs on all dumpsters informing users that hazardous materials are not to be disposed of therein.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define “redevelopment” in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of “redevelopment” must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under “designing new installations” above should be followed.

Additional Information***Maintenance Considerations***

The integrity of structural elements that are subject to damage (i.e., screens, covers, and signs) must be maintained by the owner/operator. Maintenance agreements between the local agency and the owner/operator may be required. Some agencies will require maintenance deed restrictions to be recorded of the property title. If required by the local agency, maintenance agreements or deed restrictions must be executed by the owner/operator before improvement plans are approved.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

The Ocean Begins at Your Front Door



M-129

Follow these simple steps to help reduce water pollution:

Household Activities

- Do not rinse spills with water. Use dry cleanup methods such as applying cat litter or another absorbent material, sweep and dispose of in the trash. Take items such as used or excess batteries, oven cleaners, automotive fluids, painting products and cathode ray tubes, like TVs and computer monitors, to a Household Hazardous Waste Collection Center (HHWCC).
- For a HHWCC near you call (714) 834-6752 or visit www.oclandfills.com.
- Do not hose down your driveway, sidewalk or patio to the street, gutter or storm drain. Sweep up debris and dispose of it in the trash.

Automotive

- Take your vehicle to a commercial car wash whenever possible. If you wash your vehicle at home, choose soaps, cleaners, or detergents labeled non-toxic, phosphate-free or biodegradable. Vegetable and citrus-based products are typically safest for the environment.
- Do not allow washwater from vehicle washing to drain into the street, gutter or storm drain. Excess washwater should be disposed of in the sanitary sewer (through a sink or toilet) or onto an absorbent surface like your lawn.
- Monitor your vehicles for leaks and place a pan under leaks. Keep your vehicles well maintained to stop and prevent leaks.
- Never pour oil or antifreeze in the street, gutter or storm drain. Recycle these substances at a service station, a waste oil collection center or used oil recycling center. For the nearest Used Oil Collection Center call 1-800-CLEANUP or visit www.1800cleanup.org.

Pool Maintenance

- Pool and spa water must be dechlorinated and free of excess acid, alkali or color to be allowed in the street, gutter or storm drain.
- When it is not raining, drain dechlorinated pool and spa water directly into the sanitary sewer.
- Some cities may have ordinances that do not allow pool water to be disposed of in the storm drain. Check with your city.

Landscape and Gardening

- Do not over-water. Water your lawn and garden by hand to control the amount of water you use or set irrigation systems to reflect seasonal water needs. If water flows off your yard onto your driveway or sidewalk, your system is over-watering. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of waste by composting, hauling it to a permitted landfill, or as green waste through your city's recycling program.
- Follow directions on pesticides and fertilizer, (measure, do not estimate amounts) and do not use if rain is predicted within 48 hours.
- Take unwanted pesticides to a HHWCC to be recycled. For locations and hours of HHWCC, call (714) 834-6752 or visit www.oclandfills.com.

Trash

- Place trash and litter that cannot be recycled in securely covered trash cans.
- Whenever possible, buy recycled products.
- Remember: Reduce, Reuse, Recycle.

Pet Care

- Always pick up after your pet. Flush waste down the toilet or dispose of it in the trash. Pet waste, if left outdoors, can wash into the street, gutter or storm drain.
- If possible, bathe your pets indoors. If you must bathe your pet outside, wash it on your lawn or another absorbent/permeable surface to keep the washwater from entering the street, gutter or storm drain.
- Follow directions for use of pet care products and dispose of any unused products at a HHWCC.

Common Pollutants

Home Maintenance

- Detergents, cleaners and solvents
- Oil and latex paint
- Swimming pool chemicals
- Outdoor trash and litter

Lawn and Garden

- Pet and animal waste
- Pesticides
- Clippings, leaves and soil
- Fertilizer

Automobile

- Oil and grease
- Radiator fluids and antifreeze
- Cleaning chemicals
- Brake pad dust

The Ocean Begins at Your Front Door



Never allow pollutants to enter the street, gutter or storm drain!

Did You Know?

- Most people believe that the largest source of water pollution in urban areas comes from specific sources such as factories and sewage treatment plants. In fact, the largest source of water pollution comes from city streets, neighborhoods, construction sites and parking lots. This type of pollution is sometimes called “non-point source” pollution.
- There are two types of non-point source pollution: stormwater and urban runoff pollution.
- Stormwater runoff results from rainfall. When rainstorms cause large volumes of water to rinse the urban landscape, picking up pollutants along the way.
- Urban runoff can happen any time of the year when excessive water use from irrigation, vehicle washing and other sources carries trash, lawn clippings and other urban pollutants into storm drains.

Where Does It Go?

- Anything we use outside homes, vehicles and businesses – like motor oil, paint, pesticides, fertilizers and cleaners – can be blown or washed into storm drains.
- A little water from a garden hose or rain can also send materials into storm drains.
- Storm drains are separate from our sanitary sewer systems; unlike water in sanitary sewers (from sinks or toilets), water in storm drains is not treated before entering our waterways.

Sources of Non-Point Source Pollution

- Automotive leaks and spills.
- Improper disposal of used oil and other engine fluids.
- Metals found in vehicle exhaust, weathered paint, rust, metal plating and tires.
- Pesticides and fertilizers from lawns, gardens and farms.
- Improper disposal of cleaners, paint and paint removers.
- Soil erosion and dust debris from landscape and construction activities.
- Litter, lawn clippings, animal waste, and other organic matter.
- Oil stains on parking lots and paved surfaces.



The Effect on the Ocean



Non-point source pollution can have a serious impact on water quality in Orange County. Pollutants from the storm drain system can harm marine life

as well as coastal and wetland habitats. They can also degrade recreation areas such as beaches, harbors and bays.

Stormwater quality management programs have been developed throughout Orange County to educate and encourage the public to protect water quality, monitor runoff in the storm drain system, investigate illegal dumping and maintain storm drains.

Support from Orange County residents and businesses is needed to improve water quality and reduce urban runoff pollution. Proper use and disposal of materials will help stop pollution before it reaches the storm drain and the ocean.



For More Information

Orange County Stormwater Program

California Environmental Protection Agency

www.calepa.ca.gov

- **Air Resources Board**
www.arb.ca.gov
- **Department of Pesticide Regulation**
www.cdpr.ca.gov
- **Department of Toxic Substances Control**
www.dtsc.ca.gov
- **Integrated Waste Management Board**
www.ciwmb.ca.gov
- **Office of Environmental Health Hazard Assessment**
www.oehha.ca.gov
- **State Water Resources Control Board**
www.waterboards.ca.gov

Earth 911 - Community-Specific Environmental Information 1-800-cleanup or visit www.1800cleanup.org

Health Care Agency's Ocean and Bay Water Closure and Posting Hotline
(714) 433-6400 or visit www.ocbeachinfo.com

Integrated Waste Management Dept. of Orange County (714) 834-6752 or visit www.oclandfills.com for information on household hazardous waste collection centers, recycling centers and solid waste collection

O.C. Agriculture Commissioner
(714) 447-7100 or visit www.ocagcomm.com

Stormwater Best Management Practice Handbook
Visit www.cabmphpandbooks.com

UC Master Gardener Hotline
(714) 708-1646 or visit www.uccemg.com

The Orange County Stormwater Program has created and moderates an electronic mailing list to facilitate communications, take questions and exchange ideas among its users about issues and topics related to stormwater and urban runoff and the implementation of program elements. To join the list, please send an email to ocstormwaterinfo-join@list.ocwatersheds.com

Aliso Viejo	(949)	425-2535
Anaheim Public Works Operations	(714)	765-6860
Brea Engineering.	(714)	990-7666
Buena Park Public Works	(714)	562-3655
Costa Mesa Public Services.	(714)	754-5323
Cypress Public Works.	(714)	229-6740
Dana Point Public Works.	(949)	248-3584
Fountain Valley Public Works	(714)	593-4441
Fullerton Engineering Dept..	(714)	738-6853
Garden Grove Public Works	(714)	741-5956
Huntington Beach Public Works	(714)	536-5431
Irvine Public Works.	(949)	724-6315
La Habra Public Services.	(562)	905-9792
La Palma Public Works	(714)	690-3310
Laguna Beach Water Quality.	(949)	497-0378
Laguna Hills Public Services	(949)	707-2650
Laguna Niguel Public Works	(949)	362-4337
Laguna Woods Public Works.	(949)	639-0500
Lake Forest Public Works	(949)	461-3480
Los Alamitos Community Dev..	(562)	431-3538
Mission Viejo Public Works	(949)	470-3056
Newport Beach, Code & Water		
Quality Enforcement	(949)	644-3215
Orange Public Works.	(714)	532-6480
Placentia Public Works	(714)	993-8245
Rancho Santa Margarita	(949)	635-1800
San Clemente Environmental Programs	(949)	361-6143
San Juan Capistrano Engineering	(949)	234-4413
Santa Ana Public Works	(714)	647-3380
Seal Beach Engineering	(562)	431-2527 x317
Stanton Public Works.	(714)	379-9222 x204
Tustin Public Works/Engineering.	(714)	573-3150
Villa Park Engineering	(714)	998-1500
Westminster Public Works/Engineering	(714)	898-3311 x446
Yorba Linda Engineering	(714)	961-7138
Orange County Stormwater Program	(877)	897-7455
Orange County 24-Hour		
Water Pollution Problem Reporting Hotline		
1-877-89-SPILL (1-877-897-7455)		

On-line Water Pollution Problem Reporting Form

www.ocwatersheds.com



Attachment 1 – Hydromodification (WinTR-55 Output)

WinTR-55 Current Data Description

--- Identification Data ---

User: CJN Date: 11/8/2019
 Project: Brea Mall Units: English
 SubTitle: Pre-Development Areal Units: Acres
 State: California
 County: Orange
 Filename: C:\Users\cjn\AppData\Roaming\WinTR-55\191108 Brea Mall Pre-Development.w55

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
West-1		Outlet	11.14	96	0.1
East-2		Outlet	6.67	97	0.1

Total area: 17.81 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	5.78	.0

Storm Data Source: User-provided custom storm data
 Rainfall Distribution Type: Type I
 Dimensionless Unit Hydrograph: <standard>

CJN

Brea Mall
Pre-Development
Orange County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	5.78	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

CJN

Brea Mall
Pre-Development
Orange County, California

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period 2-Yr (cfs)
------------------------------------	--

SUBAREAS

West-1	14.20
--------	-------

East-2	8.91
--------	------

REACHES

OUTLET	23.10
--------	-------

CJN

Brea Mall
Pre-Development
Orange County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs) (hr)
------------------------------------	---

SUBAREAS

West-1	14.20 9.93
--------	---------------

East-2	8.91 9.92
--------	--------------

REACHES

OUTLET	23.10
--------	-------

CJN

Brea Mall
Pre-Development
Orange County, California

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
West-1	11.14	0.100	96	Outlet	
East-2	6.67	0.100	97	Outlet	

Total Area:	17.81 (ac)				

CJN

Brea Mall
Pre-Development
Orange County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)

West-1							
SHALLOW	277	0.0100	0.025				0.038
CHANNEL	65	0.1271	0.012	0.79	3.14	18.056	0.001
CHANNEL	390	0.0025	0.012	7.07	9.42	5.159	0.021
Time of Concentration							0.1
							=====
East-2							
SHALLOW	600	0.0200	0.025				0.058
Time of Concentration							0.1
							=====

CJN

Brea Mall
Pre-Development
Orange County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
West-1	Open space; grass cover > 75% (good)	C	.79	74
	Paved parking lots, roofs, driveways	C	10.35	98
	Total Area / Weighted Curve Number		11.14 =====	96 ==
East-2	Open space; grass cover > 75% (good)	C	.3	74
	Paved parking lots, roofs, driveways	C	6.37	98
	Total Area / Weighted Curve Number		6.67 =====	97 ==

WinTR-20 Printed Page File
TR20.inp

Beginning of Input Data List

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Brea Mall
Pre-Development

0 0 0.05

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

STREAM REACH:

STORM ANALYSIS:

2-Yr 2.05 Type I 2

STRUCTURE RATING:

GLOBAL OUTPUT:

2 0.05 YYYYN YYYYNN

WinTR-20 Printed Page File

End of Input Data List

Brea Mall
Pre-Development

Name of printed page file:
TR20.out

STORM 2-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
West-1	0.017		1.621		9.93	14.20	815.42

Line Start Time (hr)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	Flow (cfs)	Rate (cfs)	Rate (csm)
3.001	0.05	0.05	0.05	0.05	0.05	0.05	0.05
3.046	0.05	0.05	0.05	0.06	0.06	0.06	0.06
3.090	0.06	0.06	0.06	0.06	0.06	0.06	0.06
3.134	0.06	0.06	0.06	0.06	0.06	0.06	0.06
3.178	0.07	0.07	0.07	0.07	0.07	0.07	0.07
3.222	0.07	0.07	0.07	0.07	0.07	0.07	0.07
3.267	0.07	0.07	0.07	0.07	0.08	0.08	0.08
3.311	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.355	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.399	0.08	0.09	0.09	0.09	0.09	0.09	0.09
3.443	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3.488	0.09	0.09	0.09	0.09	0.10	0.10	0.10
3.532	0.10	0.10	0.10	0.10	0.10	0.10	0.10
3.576	0.10	0.10	0.10	0.10	0.10	0.10	0.10
3.620	0.10	0.11	0.11	0.11	0.11	0.11	0.11
3.665	0.11	0.11	0.11	0.11	0.11	0.11	0.11
3.709	0.11	0.11	0.11	0.11	0.12	0.12	0.12
3.753	0.12	0.12	0.12	0.12	0.12	0.12	0.12
3.797	0.12	0.12	0.12	0.12	0.12	0.12	0.12
3.841	0.13	0.13	0.13	0.13	0.13	0.13	0.13
3.886	0.13	0.13	0.13	0.13	0.13	0.13	0.13
3.930	0.13	0.13	0.13	0.14	0.14	0.14	0.14
3.974	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.018	0.14	0.14	0.14	0.14	0.14	0.15	0.15
4.062	0.15	0.15	0.15	0.15	0.15	0.15	0.15
4.107	0.15	0.15	0.15	0.15	0.15	0.15	0.15
4.151	0.15	0.15	0.15	0.16	0.16	0.16	0.16
4.195	0.16	0.16	0.16	0.16	0.16	0.16	0.16
4.239	0.16	0.16	0.16	0.16	0.16	0.16	0.16
4.283	0.16	0.17	0.17	0.17	0.17	0.17	0.17
4.328	0.17	0.17	0.17	0.17	0.17	0.17	0.17
4.372	0.17	0.17	0.17	0.17	0.17	0.17	0.18
4.416	0.18	0.18	0.18	0.18	0.18	0.18	0.18
4.460	0.18	0.18	0.18	0.18	0.18	0.18	0.18

4.505	0.18	0.18	0.18	0.18	0.18	0.18	0.19
4.549	0.19	0.19	0.19	0.19	0.19	0.19	0.19
4.593	0.19	0.19	0.19	0.19	0.19	0.19	0.19
4.637	0.19	0.19	0.19	0.19	0.19	0.20	0.20
4.681	0.20	0.20	0.20	0.20	0.20	0.20	0.20
4.726	0.20	0.20	0.20	0.20	0.20	0.20	0.20

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Brea Mall
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Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
4.770	0.20	0.20	0.20	0.20	0.20	0.21	0.21
4.814	0.21	0.21	0.21	0.21	0.21	0.21	0.21
4.858	0.21	0.21	0.21	0.21	0.21	0.21	0.21
4.902	0.21	0.21	0.21	0.21	0.22	0.22	0.22
4.947	0.22	0.22	0.22	0.22	0.22	0.22	0.22
4.991	0.22	0.22	0.22	0.22	0.22	0.22	0.22
5.035	0.22	0.22	0.22	0.22	0.22	0.23	0.23
5.079	0.23	0.23	0.23	0.23	0.23	0.23	0.23
5.123	0.23	0.23	0.23	0.23	0.23	0.23	0.23
5.168	0.23	0.23	0.23	0.23	0.23	0.23	0.23
5.212	0.24	0.24	0.24	0.24	0.24	0.24	0.24
5.256	0.24	0.24	0.24	0.24	0.24	0.24	0.24
5.300	0.24	0.24	0.24	0.24	0.24	0.24	0.24
5.345	0.25	0.25	0.25	0.25	0.25	0.25	0.25
5.389	0.25	0.25	0.25	0.25	0.25	0.25	0.25
5.433	0.25	0.25	0.25	0.25	0.25	0.25	0.25
5.477	0.25	0.26	0.26	0.26	0.26	0.26	0.26
5.521	0.26	0.26	0.26	0.26	0.26	0.26	0.26
5.566	0.26	0.26	0.26	0.26	0.26	0.26	0.26
5.610	0.26	0.26	0.26	0.26	0.27	0.27	0.27
5.654	0.27	0.27	0.27	0.27	0.27	0.27	0.27
5.698	0.27	0.27	0.27	0.27	0.27	0.27	0.27
5.742	0.27	0.27	0.27	0.27	0.27	0.27	0.28
5.787	0.28	0.28	0.28	0.28	0.28	0.28	0.28
5.831	0.28	0.28	0.28	0.28	0.28	0.28	0.28
5.875	0.28	0.28	0.28	0.28	0.28	0.28	0.28
5.919	0.29	0.29	0.29	0.29	0.29	0.29	0.29
5.963	0.29	0.29	0.29	0.29	0.29	0.29	0.29
6.008	0.29	0.29	0.29	0.29	0.29	0.29	0.29
6.052	0.29	0.30	0.30	0.30	0.30	0.30	0.30
6.096	0.30	0.30	0.30	0.30	0.30	0.30	0.30
6.140	0.31	0.31	0.31	0.31	0.31	0.31	0.31
6.185	0.32	0.32	0.32	0.32	0.32	0.32	0.32
6.229	0.32	0.32	0.32	0.33	0.33	0.33	0.33
6.273	0.33	0.33	0.33	0.34	0.34	0.34	0.34
6.317	0.34	0.34	0.34	0.34	0.34	0.34	0.35
6.361	0.35	0.35	0.35	0.35	0.35	0.35	0.35
6.406	0.36	0.36	0.36	0.36	0.36	0.36	0.36
6.450	0.36	0.37	0.37	0.37	0.37	0.37	0.37
6.494	0.37	0.38	0.38	0.38	0.38	0.38	0.38
6.538	0.38	0.38	0.38	0.39	0.39	0.39	0.39
6.582	0.39	0.39	0.39	0.39	0.40	0.40	0.40
6.627	0.40	0.40	0.40	0.40	0.40	0.41	0.41
6.671	0.41	0.41	0.41	0.41	0.42	0.42	0.42
6.715	0.42	0.42	0.42	0.42	0.42	0.43	0.43
6.759	0.43	0.43	0.43	0.43	0.43	0.44	0.44
6.803	0.44	0.44	0.44	0.44	0.44	0.44	0.44
6.848	0.45	0.45	0.45	0.45	0.45	0.45	0.45
6.892	0.46	0.46	0.46	0.46	0.46	0.46	0.46
6.936	0.46	0.47	0.47	0.47	0.47	0.47	0.47
6.980	0.48	0.48	0.48	0.48	0.48	0.48	0.48

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STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
7.025	0.48	0.49	0.49	0.49	0.49	0.49	0.49
7.069	0.49	0.49	0.50	0.50	0.50	0.50	0.50
7.113	0.50	0.50	0.50	0.50	0.50	0.50	0.51
7.157	0.51	0.51	0.51	0.51	0.51	0.51	0.51
7.201	0.51	0.51	0.51	0.51	0.51	0.51	0.52
7.246	0.52	0.52	0.52	0.52	0.52	0.52	0.52
7.290	0.52	0.52	0.52	0.52	0.53	0.53	0.53
7.334	0.53	0.53	0.53	0.53	0.53	0.53	0.53
7.378	0.53	0.54	0.54	0.54	0.54	0.54	0.54
7.422	0.54	0.54	0.54	0.54	0.54	0.54	0.54
7.467	0.54	0.55	0.55	0.55	0.55	0.55	0.55
7.511	0.55	0.55	0.55	0.55	0.55	0.55	0.55
7.555	0.55	0.56	0.56	0.56	0.56	0.56	0.56
7.599	0.56	0.56	0.56	0.56	0.56	0.56	0.56
7.643	0.56	0.57	0.57	0.57	0.57	0.57	0.57
7.688	0.57	0.57	0.57	0.57	0.57	0.57	0.57
7.732	0.57	0.57	0.58	0.58	0.58	0.58	0.58
7.776	0.58	0.58	0.58	0.58	0.58	0.58	0.58
7.820	0.59	0.59	0.59	0.59	0.59	0.59	0.59
7.865	0.59	0.59	0.59	0.59	0.59	0.60	0.60
7.909	0.60	0.60	0.60	0.60	0.60	0.60	0.60
7.953	0.60	0.60	0.60	0.60	0.60	0.61	0.61
7.997	0.61	0.61	0.61	0.61	0.61	0.61	0.61
8.041	0.62	0.62	0.62	0.62	0.63	0.63	0.63
8.086	0.64	0.64	0.64	0.64	0.64	0.65	0.65
8.130	0.65	0.66	0.66	0.67	0.67	0.68	0.68
8.174	0.69	0.69	0.70	0.70	0.71	0.71	0.71
8.218	0.72	0.72	0.72	0.73	0.73	0.74	0.74
8.262	0.75	0.76	0.76	0.77	0.77	0.78	0.78
8.307	0.78	0.79	0.79	0.79	0.80	0.80	0.81

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Mall

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Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
8.351	0.82	0.82	0.83	0.83	0.84	0.85	0.85
8.395	0.85	0.86	0.86	0.87	0.87	0.87	0.88
8.439	0.88	0.89	0.89	0.90	0.91	0.91	0.92
8.483	0.92	0.93	0.93	0.94	0.94	0.94	0.95
8.528	0.95	0.96	0.96	0.97	0.97	0.98	0.99
8.572	0.99	1.00	1.00	1.01	1.01	1.02	1.02
8.616	1.02	1.03	1.03	1.04	1.04	1.05	1.05
8.660	1.06	1.07	1.07	1.08	1.08	1.09	1.09
8.705	1.10	1.10	1.10	1.11	1.11	1.12	1.12
8.749	1.13	1.13	1.14	1.15	1.15	1.16	1.16
8.793	1.17	1.17	1.17	1.18	1.18	1.19	1.19
8.837	1.20	1.20	1.21	1.21	1.22	1.23	1.23
8.881	1.24	1.24	1.25	1.25	1.25	1.26	1.26
8.926	1.27	1.27	1.28	1.28	1.29	1.30	1.30
8.970	1.31	1.32	1.32	1.33	1.33	1.33	1.34
9.014	1.34	1.35	1.35	1.36	1.37	1.37	1.38
9.058	1.39	1.40	1.41	1.42	1.43	1.43	1.44
9.102	1.44	1.45	1.45	1.46	1.47	1.48	1.48
9.147	1.50	1.51	1.52	1.53	1.54	1.55	1.56
9.191	1.57	1.58	1.59	1.59	1.60	1.61	1.61
9.235	1.62	1.63	1.64	1.66	1.67	1.68	1.69

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Brea Mall
Pre-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time	-----	-----	-----	-----	-----	-----	-----
(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.279	1.70	1.71	1.72	1.73	1.74	1.75	1.75
9.323	1.76	1.77	1.78	1.79	1.80	1.81	1.83
9.368	1.84	1.85	1.86	1.87	1.88	1.89	1.90
9.412	1.90	1.91	1.92	1.93	1.94	1.95	1.96
9.456	1.97	1.99	2.00	2.01	2.02	2.03	2.04
9.500	2.05	2.06	2.07	2.09	2.12	2.16	2.21
9.545	2.27	2.34	2.42	2.49	2.57	2.64	2.70

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Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet	.01741	96.	.1		
	East-2	Outlet	.01042	97.	.1		
9.589	2.76	2.81	2.86	2.90	2.94	3.00	3.07
9.633	3.16	3.27	3.40	3.55	3.70	3.84	3.99
9.677	4.12	4.25	4.36	4.46	4.54	4.62	4.72
9.721	4.82	4.96	5.13	5.33	5.57	5.83	6.09
9.766	6.35	6.60	6.84	7.06	7.26	7.43	7.58
9.810	7.73	7.91	8.12	8.40	8.75	9.19	9.68
9.854	10.20	10.74	11.28	11.79	12.28	12.72	13.12
9.898	13.46	13.74	13.95	14.11	14.19	14.20	14.12
9.942	13.96	13.74	13.49	13.21	12.92	12.64	12.38
9.987	12.14	11.92	11.75	11.59	11.42	11.23	10.98
10.031	10.67	10.26	9.78	9.24	8.67	8.10	7.54
10.075	7.01	6.52	6.08	5.69	5.37	5.10	4.87
10.119	4.68	4.51	4.36	4.22	4.10	3.99	3.89
10.163	3.80	3.72	3.65	3.59	3.53	3.49	3.45
10.208	3.42	3.39	3.36	3.33	3.30	3.27	3.23
10.252	3.19	3.16	3.12	3.09	3.06	3.03	3.01
10.296	2.99	2.97	2.95	2.94	2.92	2.90	2.88
10.340	2.86	2.83	2.80	2.76	2.73	2.70	2.68
10.385	2.65	2.63	2.61	2.59	2.58	2.56	2.55
10.429	2.53	2.50	2.48	2.45	2.42	2.38	2.35
10.473	2.32	2.30	2.27	2.25	2.23	2.21	2.20
10.517	2.19	2.17	2.16	2.14	2.12	2.10	2.08
10.561	2.06	2.04	2.02	2.00	1.98	1.97	1.96
10.606	1.95	1.94	1.93	1.92	1.92	1.91	1.90
10.650	1.89	1.88	1.87	1.86	1.85	1.85	1.84
10.694	1.83	1.83	1.83	1.82	1.82	1.81	1.81
10.738	1.80	1.79	1.79	1.78	1.77	1.76	1.76
10.782	1.75	1.74	1.74	1.74	1.73	1.73	1.72
10.827	1.72	1.71	1.71	1.70	1.69	1.69	1.68
10.871	1.67	1.66	1.66	1.65	1.65	1.64	1.64
10.915	1.64	1.63	1.63	1.62	1.62	1.61	1.60
10.959	1.59	1.58	1.58	1.57	1.56	1.56	1.55
11.003	1.55	1.55	1.54	1.54	1.54	1.53	1.53
11.048	1.52	1.52	1.51	1.50	1.50	1.49	1.49
11.092	1.49	1.48	1.48	1.48	1.48	1.47	1.47
11.136	1.47	1.47	1.46	1.46	1.46	1.45	1.45
11.180	1.45	1.45	1.44	1.44	1.44	1.44	1.44
11.225	1.44	1.44	1.43	1.43	1.43	1.43	1.42

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Mall
Pre-Development

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STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1			
East-2	Outlet	.01042	97.	.1			
11.269	1.42	1.42	1.41	1.41	1.41	1.41	1.41
11.313	1.41	1.41	1.40	1.40	1.40	1.40	1.39
11.357	1.39	1.39	1.39	1.38	1.38	1.38	1.38
11.401	1.38	1.37	1.37	1.37	1.37	1.37	1.37
11.446	1.36	1.36	1.36	1.36	1.35	1.35	1.35
11.490	1.35	1.34	1.34	1.34	1.34	1.34	1.34

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Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
11.534	1.34	1.33	1.33	1.33	1.32	1.32	1.32
11.578	1.32	1.31	1.31	1.31	1.31	1.31	1.31
11.622	1.31	1.30	1.30	1.30	1.30	1.29	1.29
11.667	1.29	1.29	1.28	1.28	1.28	1.28	1.28
11.711	1.27	1.27	1.27	1.27	1.27	1.27	1.26
11.755	1.26	1.26	1.25	1.25	1.25	1.25	1.24
11.799	1.24	1.24	1.24	1.24	1.24	1.24	1.23
11.843	1.23	1.23	1.23	1.22	1.22	1.22	1.21
11.888	1.21	1.21	1.21	1.21	1.21	1.21	1.20
11.932	1.20	1.20	1.20	1.19	1.19	1.19	1.19
11.976	1.18	1.18	1.18	1.18	1.18	1.17	1.17
12.020	1.17	1.17	1.17	1.17	1.16	1.16	1.16
12.065	1.16	1.15	1.15	1.15	1.15	1.15	1.15
12.109	1.15	1.14	1.14	1.14	1.14	1.14	1.14
12.153	1.14	1.13	1.13	1.13	1.13	1.13	1.13
12.197	1.12	1.12	1.12	1.12	1.12	1.12	1.12
12.241	1.12	1.12	1.11	1.11	1.11	1.11	1.11
12.286	1.11	1.10	1.10	1.10	1.10	1.10	1.10
12.330	1.10	1.10	1.10	1.09	1.09	1.09	1.09
12.374	1.09	1.09	1.08	1.08	1.08	1.08	1.08
12.418	1.08	1.08	1.08	1.08	1.07	1.07	1.07
12.462	1.07	1.07	1.07	1.06	1.06	1.06	1.06

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
12.507	1.06	1.06	1.06	1.06	1.06	1.06	1.05
12.551	1.05	1.05	1.05	1.05	1.04	1.04	1.04
12.595	1.04	1.04	1.04	1.04	1.04	1.04	1.04
12.639	1.03	1.03	1.03	1.03	1.03	1.03	1.02
12.683	1.02	1.02	1.02	1.02	1.02	1.02	1.02
12.728	1.02	1.01	1.01	1.01	1.01	1.01	1.01
12.772	1.00	1.00	1.00	1.00	1.00	1.00	1.00
12.816	1.00	0.99	0.99	0.99	0.99	0.99	0.99
12.860	0.99	0.98	0.98	0.98	0.98	0.98	0.98
12.905	0.98	0.98	0.97	0.97	0.97	0.97	0.97
12.949	0.97	0.97	0.96	0.96	0.96	0.96	0.96
12.993	0.96	0.96	0.95	0.95	0.95	0.95	0.95
13.037	0.95	0.95	0.95	0.94	0.94	0.94	0.94
13.081	0.94	0.94	0.93	0.93	0.93	0.93	0.93
13.126	0.93	0.93	0.93	0.93	0.92	0.92	0.92
13.170	0.92	0.92	0.92	0.91	0.91	0.91	0.91
13.214	0.91	0.91	0.91	0.91	0.91	0.90	0.90
13.258	0.90	0.90	0.90	0.90	0.89	0.89	0.89
13.302	0.89	0.89	0.89	0.89	0.89	0.89	0.88
13.347	0.88	0.88	0.88	0.88	0.88	0.87	0.87
13.391	0.87	0.87	0.87	0.87	0.87	0.87	0.87
13.435	0.86	0.86	0.86	0.86	0.86	0.86	0.85
13.479	0.85	0.85	0.85	0.85	0.85	0.85	0.85
13.523	0.84	0.84	0.84	0.84	0.84	0.84	0.84
13.568	0.83	0.83	0.83	0.83	0.83	0.83	0.83
13.612	0.83	0.82	0.82	0.82	0.82	0.82	0.82
13.656	0.82	0.81	0.81	0.81	0.81	0.81	0.81
13.700	0.81	0.80	0.80	0.80	0.80	0.80	0.80
13.745	0.80	0.80	0.79	0.79	0.79	0.79	0.79

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Brea Mall
Pre-Development

Line							
Start Time	-----	Flow	Values @	time	increment	of	0.006 hr
(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

WinTR-20: Version 1.10

0

0

0.05

Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

West-1	Outlet						
East-2	Outlet	.01741	96.	.1			
		.01042	97.	.1			

13.789	0.79	0.78	0.78	0.78	0.78	0.78	0.78
13.833	0.78	0.78	0.78	0.77	0.77	0.77	0.77
13.877	0.77	0.76	0.76	0.76	0.76	0.76	0.76
13.921	0.76	0.76	0.76	0.76	0.75	0.75	0.75
13.966	0.75	0.75	0.74	0.74	0.74	0.74	0.74
14.010	0.74	0.74	0.74	0.74	0.74	0.73	0.73
14.054	0.73	0.73	0.73	0.73	0.73	0.73	0.73
14.098	0.73	0.72	0.72	0.72	0.72	0.72	0.72
14.142	0.72	0.72	0.72	0.72	0.72	0.72	0.72
14.187	0.72	0.72	0.72	0.72	0.72	0.72	0.72
14.231	0.72	0.72	0.72	0.72	0.72	0.72	0.72
14.275	0.72	0.72	0.72	0.71	0.71	0.71	0.71
14.319	0.71	0.71	0.71	0.71	0.71	0.71	0.71
14.363	0.71	0.71	0.71	0.71	0.71	0.71	0.71
14.408	0.71	0.71	0.71	0.71	0.71	0.71	0.71
14.452	0.71	0.71	0.71	0.71	0.71	0.71	0.71
14.496	0.71	0.71	0.71	0.71	0.71	0.71	0.71
14.540	0.71	0.70	0.70	0.70	0.70	0.70	0.70
14.585	0.70	0.70	0.70	0.70	0.70	0.70	0.70
14.629	0.70	0.70	0.70	0.70	0.70	0.70	0.70
14.673	0.70	0.70	0.70	0.70	0.70	0.70	0.70
14.717	0.70	0.70	0.70	0.70	0.70	0.70	0.70
14.761	0.70	0.70	0.69	0.69	0.69	0.69	0.69
14.806	0.69	0.69	0.69	0.69	0.69	0.69	0.69
14.850	0.69	0.69	0.69	0.69	0.69	0.69	0.69
14.894	0.69	0.69	0.69	0.69	0.69	0.69	0.69
14.938	0.69	0.69	0.69	0.69	0.69	0.69	0.69
14.982	0.69	0.69	0.69	0.69	0.69	0.69	0.68
15.027	0.68	0.68	0.68	0.68	0.68	0.68	0.68
15.071	0.68	0.68	0.68	0.68	0.68	0.68	0.68
15.115	0.68	0.68	0.68	0.68	0.68	0.68	0.68
15.159	0.68	0.68	0.68	0.68	0.68	0.68	0.68
15.203	0.68	0.68	0.68	0.68	0.68	0.68	0.68
15.248	0.68	0.67	0.67	0.67	0.67	0.67	0.67
15.292	0.67	0.67	0.67	0.67	0.67	0.67	0.67
15.336	0.67	0.67	0.67	0.67	0.67	0.67	0.67
15.380	0.67	0.67	0.67	0.67	0.67	0.67	0.67

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
15.425	0.67	0.67	0.67	0.67	0.67	0.67	0.67
15.469	0.67	0.67	0.67	0.66	0.66	0.66	0.66
15.513	0.66	0.66	0.66	0.66	0.66	0.66	0.66
15.557	0.66	0.66	0.66	0.66	0.66	0.66	0.66
15.601	0.66	0.66	0.66	0.66	0.66	0.66	0.66
15.646	0.66	0.66	0.66	0.66	0.66	0.66	0.66
15.690	0.66	0.66	0.66	0.66	0.66	0.66	0.66
15.734	0.65	0.65	0.65	0.65	0.65	0.65	0.65
15.778	0.65	0.65	0.65	0.65	0.65	0.65	0.65
15.822	0.65	0.65	0.65	0.65	0.65	0.65	0.65
15.867	0.65	0.65	0.65	0.65	0.65	0.65	0.65
15.911	0.65	0.65	0.65	0.65	0.65	0.65	0.65
15.955	0.65	0.64	0.64	0.64	0.64	0.64	0.64
15.999	0.64	0.64	0.64	0.64	0.64	0.64	0.64

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Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
16.043	0.64	0.64	0.64	0.64	0.64	0.64	0.64
16.088	0.64	0.64	0.64	0.64	0.64	0.64	0.64
16.132	0.64	0.64	0.64	0.64	0.64	0.64	0.64
16.176	0.64	0.64	0.64	0.63	0.63	0.63	0.63
16.220	0.63	0.63	0.63	0.63	0.63	0.63	0.63
16.265	0.63	0.63	0.63	0.63	0.63	0.63	0.63
16.309	0.63	0.63	0.63	0.63	0.63	0.63	0.63
16.353	0.63	0.63	0.63	0.63	0.63	0.63	0.63
16.397	0.63	0.63	0.63	0.63	0.63	0.63	0.63
16.441	0.62	0.62	0.62	0.62	0.62	0.62	0.62
16.486	0.62	0.62	0.62	0.62	0.62	0.62	0.62
16.530	0.62	0.62	0.62	0.62	0.62	0.62	0.62
16.574	0.62	0.62	0.62	0.62	0.62	0.62	0.62
16.618	0.62	0.62	0.62	0.62	0.62	0.62	0.62

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
16.662	0.62	0.61	0.61	0.61	0.61	0.61	0.61
16.707	0.61	0.61	0.61	0.61	0.61	0.61	0.61
16.751	0.61	0.61	0.61	0.61	0.61	0.61	0.61
16.795	0.61	0.61	0.61	0.61	0.61	0.61	0.61
16.839	0.61	0.61	0.61	0.61	0.61	0.61	0.61
16.883	0.61	0.61	0.60	0.60	0.60	0.60	0.60
16.928	0.60	0.60	0.60	0.60	0.60	0.60	0.60
16.972	0.60	0.60	0.60	0.60	0.60	0.60	0.60
17.016	0.60	0.60	0.60	0.60	0.60	0.60	0.60
17.060	0.60	0.60	0.60	0.60	0.60	0.60	0.60
17.105	0.60	0.60	0.60	0.60	0.60	0.60	0.59
17.149	0.59	0.59	0.59	0.59	0.59	0.59	0.59
17.193	0.59	0.59	0.59	0.59	0.59	0.59	0.59
17.237	0.59	0.59	0.59	0.59	0.59	0.59	0.59
17.281	0.59	0.59	0.59	0.59	0.59	0.59	0.59
17.326	0.59	0.59	0.59	0.59	0.59	0.59	0.58
17.370	0.58	0.58	0.58	0.58	0.58	0.58	0.58
17.414	0.58	0.58	0.58	0.58	0.58	0.58	0.58
17.458	0.58	0.58	0.58	0.58	0.58	0.58	0.58
17.502	0.58	0.58	0.58	0.58	0.58	0.58	0.58
17.547	0.58	0.58	0.58	0.58	0.58	0.58	0.58
17.591	0.58	0.57	0.57	0.57	0.57	0.57	0.57
17.635	0.57	0.57	0.57	0.57	0.57	0.57	0.57
17.679	0.57	0.57	0.57	0.57	0.57	0.57	0.57
17.723	0.57	0.57	0.57	0.57	0.57	0.57	0.57
17.768	0.57	0.57	0.57	0.57	0.57	0.57	0.57
17.812	0.57	0.57	0.57	0.57	0.56	0.56	0.56
17.856	0.56	0.56	0.56	0.56	0.56	0.56	0.56
17.900	0.56	0.56	0.56	0.56	0.56	0.56	0.56
17.945	0.56	0.56	0.56	0.56	0.56	0.56	0.56
17.989	0.56	0.56	0.56	0.56	0.56	0.56	0.56
18.033	0.56	0.56	0.56	0.56	0.56	0.55	0.55
18.077	0.55	0.55	0.55	0.55	0.55	0.55	0.55
18.121	0.55	0.55	0.55	0.55	0.55	0.55	0.55
18.166	0.55	0.55	0.55	0.55	0.55	0.55	0.55
18.210	0.55	0.55	0.55	0.55	0.55	0.55	0.55
18.254	0.55	0.55	0.55	0.55	0.55	0.54	0.54

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

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Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
18.298	0.54	0.54	0.54	0.54	0.54	0.54	0.54
18.342	0.54	0.54	0.54	0.54	0.54	0.54	0.54
18.387	0.54	0.54	0.54	0.54	0.54	0.54	0.54
18.431	0.54	0.54	0.54	0.54	0.54	0.54	0.54
18.475	0.54	0.54	0.54	0.54	0.54	0.54	0.54
18.519	0.54	0.54	0.53	0.53	0.53	0.53	0.53
18.563	0.53	0.53	0.53	0.53	0.53	0.53	0.53
18.608	0.53	0.53	0.53	0.53	0.53	0.53	0.53
18.652	0.53	0.53	0.53	0.53	0.53	0.53	0.53
18.696	0.53	0.53	0.53	0.53	0.53	0.53	0.53
18.740	0.53	0.53	0.52	0.52	0.52	0.52	0.52
18.785	0.52	0.52	0.52	0.52	0.52	0.52	0.52
18.829	0.52	0.52	0.52	0.52	0.52	0.52	0.52
18.873	0.52	0.52	0.52	0.52	0.52	0.52	0.52
18.917	0.52	0.52	0.52	0.52	0.52	0.52	0.52
18.961	0.52	0.52	0.52	0.51	0.51	0.51	0.51
19.006	0.51	0.51	0.51	0.51	0.51	0.51	0.51
19.050	0.51	0.51	0.51	0.51	0.51	0.51	0.51
19.094	0.51	0.51	0.51	0.51	0.51	0.51	0.51
19.138	0.51	0.51	0.51	0.51	0.51	0.51	0.51
19.182	0.51	0.51	0.51	0.51	0.51	0.50	0.50
19.227	0.50	0.50	0.50	0.50	0.50	0.50	0.50
19.271	0.50	0.50	0.50	0.50	0.50	0.50	0.50
19.315	0.50	0.50	0.50	0.50	0.50	0.50	0.50
19.359	0.50	0.50	0.50	0.50	0.50	0.50	0.50
19.403	0.50	0.50	0.50	0.50	0.50	0.50	0.50
19.448	0.49	0.49	0.49	0.49	0.49	0.49	0.49
19.492	0.49	0.49	0.49	0.49	0.49	0.49	0.49
19.536	0.49	0.49	0.49	0.49	0.49	0.49	0.49

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
19.580	0.49	0.49	0.49	0.49	0.49	0.49	0.49
19.625	0.49	0.49	0.49	0.49	0.49	0.49	0.49
19.669	0.48	0.48	0.48	0.48	0.48	0.48	0.48
19.713	0.48	0.48	0.48	0.48	0.48	0.48	0.48
19.757	0.48	0.48	0.48	0.48	0.48	0.48	0.48
19.801	0.48	0.48	0.48	0.48	0.48	0.48	0.48
19.846	0.48	0.48	0.48	0.48	0.48	0.48	0.48
19.890	0.48	0.47	0.47	0.47	0.47	0.47	0.47
19.934	0.47	0.47	0.47	0.47	0.47	0.47	0.47
19.978	0.47	0.47	0.47	0.47	0.47	0.47	0.47
20.022	0.47	0.47	0.47	0.47	0.47	0.47	0.47
20.067	0.47	0.47	0.47	0.47	0.47	0.47	0.47
20.111	0.47	0.47	0.47	0.47	0.46	0.46	0.46
20.155	0.46	0.46	0.46	0.46	0.46	0.46	0.46
20.199	0.46	0.46	0.46	0.46	0.46	0.46	0.46
20.243	0.46	0.46	0.46	0.46	0.46	0.46	0.46
20.288	0.46	0.46	0.46	0.46	0.46	0.46	0.46
20.332	0.46	0.46	0.46	0.46	0.45	0.45	0.45
20.376	0.45	0.45	0.45	0.45	0.45	0.45	0.45
20.420	0.45	0.45	0.45	0.45	0.45	0.45	0.45
20.465	0.45	0.45	0.45	0.45	0.45	0.45	0.45
20.509	0.45	0.45	0.45	0.45	0.45	0.45	0.45

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Brea Mall
Pre-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
(hr)							
20.553	0.45	0.45	0.45	0.45	0.44	0.44	0.44
20.597	0.44	0.44	0.44	0.44	0.44	0.44	0.44
20.641	0.44	0.44	0.44	0.44	0.44	0.44	0.44
20.686	0.44	0.44	0.44	0.44	0.44	0.44	0.44
20.730	0.44	0.44	0.44	0.44	0.44	0.44	0.44
20.774	0.44	0.44	0.44	0.44	0.44	0.44	0.43

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet	.01741	96.	.1		
	East-2	Outlet	.01042	97.	.1		
20.818	0.43	0.43	0.43	0.43	0.43	0.43	0.43
20.862	0.43	0.43	0.43	0.43	0.43	0.43	0.43
20.907	0.43	0.43	0.43	0.43	0.43	0.43	0.43
20.951	0.43	0.43	0.43	0.43	0.43	0.43	0.43
20.995	0.43	0.43	0.43	0.43	0.43	0.43	0.43
21.039	0.43	0.42	0.42	0.42	0.42	0.42	0.42
21.083	0.42	0.42	0.42	0.42	0.42	0.42	0.42
21.128	0.42	0.42	0.42	0.42	0.42	0.42	0.42
21.172	0.42	0.42	0.42	0.42	0.42	0.42	0.42
21.216	0.42	0.42	0.42	0.42	0.42	0.42	0.42
21.260	0.42	0.41	0.41	0.41	0.41	0.41	0.41
21.305	0.41	0.41	0.41	0.41	0.41	0.41	0.41
21.349	0.41	0.41	0.41	0.41	0.41	0.41	0.41
21.393	0.41	0.41	0.41	0.41	0.41	0.41	0.41
21.437	0.41	0.41	0.41	0.41	0.41	0.41	0.41
21.481	0.41	0.40	0.40	0.40	0.40	0.40	0.40
21.526	0.40	0.40	0.40	0.40	0.40	0.40	0.40
21.570	0.40	0.40	0.40	0.40	0.40	0.40	0.40
21.614	0.40	0.40	0.40	0.40	0.40	0.40	0.40
21.658	0.40	0.40	0.40	0.40	0.40	0.40	0.40
21.702	0.40	0.40	0.40	0.39	0.39	0.39	0.39
21.747	0.39	0.39	0.39	0.39	0.39	0.39	0.39
21.791	0.39	0.39	0.39	0.39	0.39	0.39	0.39
21.835	0.39	0.39	0.39	0.39	0.39	0.39	0.39
21.879	0.39	0.39	0.39	0.39	0.39	0.39	0.39
21.923	0.39	0.39	0.39	0.39	0.38	0.38	0.38
21.968	0.38	0.38	0.38	0.38	0.38	0.38	0.38
22.012	0.38	0.38	0.38	0.38	0.38	0.38	0.38
22.056	0.38	0.38	0.38	0.38	0.38	0.38	0.38
22.100	0.38	0.38	0.38	0.38	0.38	0.38	0.38
22.145	0.38	0.38	0.38	0.38	0.37	0.37	0.37
22.189	0.37	0.37	0.37	0.37	0.37	0.37	0.37
22.233	0.37	0.37	0.37	0.37	0.37	0.37	0.37
22.277	0.37	0.37	0.37	0.37	0.37	0.37	0.37
22.321	0.37	0.37	0.37	0.37	0.37	0.37	0.37
22.366	0.37	0.37	0.37	0.37	0.36	0.36	0.36
22.410	0.36	0.36	0.36	0.36	0.36	0.36	0.36
22.454	0.36	0.36	0.36	0.36	0.36	0.36	0.36

WinTR-20: Version 1.10
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Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Out let		.01741	96.	.1	
	East-2	Out let		.01042	97.	.1	
22.498	0.36	0.36	0.36	0.36	0.36	0.36	0.36
22.542	0.36	0.36	0.36	0.36	0.36	0.36	0.36
22.587	0.36	0.36	0.36	0.36	0.36	0.36	0.35
22.631	0.35	0.35	0.35	0.35	0.35	0.35	0.35
22.675	0.35	0.35	0.35	0.35	0.35	0.35	0.35
22.719	0.35	0.35	0.35	0.35	0.35	0.35	0.35
22.763	0.35	0.35	0.35	0.35	0.35	0.35	0.35

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Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment of (cfs)	0.006 hr (cfs)	----- (cfs)	(cfs)
22.808	0.35	0.35	0.35	0.35	0.35	0.35	0.35
22.852	0.34	0.34	0.34	0.34	0.34	0.34	0.34
22.896	0.34	0.34	0.34	0.34	0.34	0.34	0.34
22.940	0.34	0.34	0.34	0.34	0.34	0.34	0.34
22.985	0.34	0.34	0.34	0.34	0.34	0.34	0.34
23.029	0.34	0.34	0.34	0.34	0.34	0.34	0.34
23.073	0.33	0.33	0.33	0.33	0.33	0.33	0.33
23.117	0.33	0.33	0.33	0.33	0.33	0.33	0.33
23.161	0.33	0.33	0.33	0.33	0.33	0.33	0.33
23.206	0.33	0.33	0.33	0.33	0.33	0.33	0.33
23.250	0.33	0.33	0.33	0.33	0.33	0.33	0.33
23.294	0.32	0.32	0.32	0.32	0.32	0.32	0.32
23.338	0.32	0.32	0.32	0.32	0.32	0.32	0.32
23.382	0.32	0.32	0.32	0.32	0.32	0.32	0.32
23.427	0.32	0.32	0.32	0.32	0.32	0.32	0.32
23.471	0.32	0.32	0.32	0.32	0.32	0.32	0.32
23.515	0.32	0.32	0.31	0.31	0.31	0.31	0.31
23.559	0.31	0.31	0.31	0.31	0.31	0.31	0.31
23.603	0.31	0.31	0.31	0.31	0.31	0.31	0.31
23.648	0.31	0.31	0.31	0.31	0.31	0.31	0.31
23.692	0.31	0.31	0.31	0.31	0.31	0.31	0.31

WinTR-20: Version 1.10
Mall
Pre-Development

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(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet	.01741	96.	.1			
	East-2	Outlet	.01042	97.	.1			
23.736	0.31	0.31	0.31	0.30	0.30	0.30	0.30	0.30
23.780	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
23.825	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
23.869	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
23.913	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30
23.957	0.30	0.30	0.29	0.29	0.29	0.29	0.29	0.29
24.001	0.29	0.29	0.29	0.28	0.28	0.27	0.25	0.25
24.046	0.23	0.21	0.19	0.17	0.15	0.13	0.11	0.11
24.090	0.09	0.08	0.06	0.05				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
East-2	0.010		1.717		9.92	8.91	855.15

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
2.705	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2.749	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2.793	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2.837	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2.882	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2.926	0.06	0.06	0.06	0.06	0.06	0.06	0.07
2.970	0.07	0.07	0.07	0.07	0.07	0.07	0.07
3.014	0.07	0.07	0.07	0.07	0.07	0.07	0.07
3.058	0.07	0.07	0.07	0.07	0.07	0.07	0.07
3.103	0.07	0.07	0.07	0.07	0.07	0.08	0.08

Brea Mall
Pre-Development

Line Start Time	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr	Flow Values @ time increment of 0.006 hr
	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

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STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
3.147	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.191	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.235	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.279	0.08	0.08	0.08	0.09	0.09	0.09	0.09
3.324	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3.368	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3.412	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3.456	0.09	0.10	0.10	0.10	0.10	0.10	0.10
3.501	0.10	0.10	0.10	0.10	0.10	0.10	0.10
3.545	0.10	0.10	0.10	0.10	0.10	0.10	0.10
3.589	0.10	0.10	0.10	0.10	0.10	0.10	0.11
3.633	0.11	0.11	0.11	0.11	0.11	0.11	0.11
3.677	0.11	0.11	0.11	0.11	0.11	0.11	0.11
3.722	0.11	0.11	0.11	0.11	0.11	0.11	0.11
3.766	0.11	0.11	0.11	0.11	0.12	0.12	0.12
3.810	0.12	0.12	0.12	0.12	0.12	0.12	0.12
3.854	0.12	0.12	0.12	0.12	0.12	0.12	0.12
3.898	0.12	0.12	0.12	0.12	0.12	0.12	0.12
3.943	0.12	0.12	0.13	0.13	0.13	0.13	0.13
3.987	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.031	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.075	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.119	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.164	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.208	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.252	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.296	0.14	0.14	0.14	0.14	0.15	0.15	0.15
4.341	0.15	0.15	0.15	0.15	0.15	0.15	0.15
4.385	0.15	0.15	0.15	0.15	0.15	0.15	0.15
4.429	0.15	0.15	0.15	0.15	0.15	0.15	0.15
4.473	0.15	0.15	0.15	0.15	0.15	0.15	0.15
4.517	0.15	0.15	0.16	0.16	0.16	0.16	0.16
4.562	0.16	0.16	0.16	0.16	0.16	0.16	0.16
4.606	0.16	0.16	0.16	0.16	0.16	0.16	0.16
4.650	0.16	0.16	0.16	0.16	0.16	0.16	0.16
4.694	0.16	0.16	0.16	0.16	0.16	0.16	0.16

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Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet						
	East-2	Outlet						
			.01741	96.	.1			
			.01042	97.	.1			
4.738	0.16	0.16	0.17	0.17	0.17	0.17	0.17	0.17
4.783	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
4.827	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
4.871	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
4.915	0.17	0.17	0.17	0.17	0.17	0.17	0.17	0.17
4.959	0.17	0.18	0.18	0.18	0.18	0.18	0.18	0.18
5.004	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
5.048	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
5.092	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
5.136	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
5.181	0.18	0.18	0.18	0.18	0.18	0.19	0.19	0.19
5.225	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
5.269	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
5.313	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19
5.357	0.19	0.19	0.19	0.19	0.19	0.19	0.19	0.19

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Brea Mall
Pre-Development

Line	Start Time	Flow	Values @ time	increment	of	0.006 hr		
	(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.402		0.19	0.19	0.19	0.19	0.19	0.19	0.20
5.446		0.20	0.20	0.20	0.20	0.20	0.20	0.20
5.490		0.20	0.20	0.20	0.20	0.20	0.20	0.20
5.534		0.20	0.20	0.20	0.20	0.20	0.20	0.20
5.578		0.20	0.20	0.20	0.20	0.20	0.20	0.20
5.623		0.20	0.20	0.20	0.20	0.20	0.20	0.20
5.667		0.20	0.20	0.20	0.20	0.21	0.21	0.21
5.711		0.21	0.21	0.21	0.21	0.21	0.21	0.21
5.755		0.21	0.21	0.21	0.21	0.21	0.21	0.21
5.799		0.21	0.21	0.21	0.21	0.21	0.21	0.21
5.844		0.21	0.21	0.21	0.21	0.21	0.21	0.21
5.888		0.21	0.21	0.21	0.21	0.21	0.21	0.21
5.932		0.21	0.21	0.22	0.22	0.22	0.22	0.22

WinTR-20: Version 1.10

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
5.976	0.22	0.22	0.22	0.22	0.22	0.22	0.22
6.021	0.22	0.22	0.22	0.22	0.22	0.22	0.22
6.065	0.22	0.22	0.22	0.22	0.22	0.22	0.22
6.109	0.22	0.22	0.23	0.23	0.23	0.23	0.23
6.153	0.23	0.23	0.23	0.23	0.23	0.23	0.23
6.197	0.24	0.24	0.24	0.24	0.24	0.24	0.24
6.242	0.24	0.24	0.24	0.24	0.24	0.24	0.25
6.286	0.25	0.25	0.25	0.25	0.25	0.25	0.25
6.330	0.25	0.25	0.25	0.25	0.25	0.25	0.26
6.374	0.26	0.26	0.26	0.26	0.26	0.26	0.26
6.418	0.26	0.26	0.26	0.26	0.26	0.27	0.27
6.463	0.27	0.27	0.27	0.27	0.27	0.27	0.27
6.507	0.27	0.27	0.28	0.28	0.28	0.28	0.28
6.551	0.28	0.28	0.28	0.28	0.28	0.28	0.29
6.595	0.29	0.29	0.29	0.29	0.29	0.29	0.29
6.639	0.29	0.29	0.29	0.29	0.30	0.30	0.30
6.684	0.30	0.30	0.30	0.30	0.30	0.30	0.30
6.728	0.30	0.30	0.31	0.31	0.31	0.31	0.31
6.772	0.31	0.31	0.31	0.31	0.31	0.31	0.31
6.816	0.32	0.32	0.32	0.32	0.32	0.32	0.32
6.861	0.32	0.32	0.32	0.32	0.33	0.33	0.33
6.905	0.33	0.33	0.33	0.33	0.33	0.33	0.33
6.949	0.33	0.33	0.34	0.34	0.34	0.34	0.34
6.993	0.34	0.34	0.34	0.34	0.34	0.34	0.35
7.037	0.35	0.35	0.35	0.35	0.35	0.35	0.35
7.082	0.35	0.35	0.35	0.35	0.35	0.35	0.36
7.126	0.36	0.36	0.36	0.36	0.36	0.36	0.36
7.170	0.36	0.36	0.36	0.36	0.36	0.36	0.36
7.214	0.36	0.36	0.36	0.36	0.36	0.36	0.36
7.258	0.36	0.37	0.37	0.37	0.37	0.37	0.37
7.303	0.37	0.37	0.37	0.37	0.37	0.37	0.37
7.347	0.37	0.37	0.37	0.37	0.37	0.37	0.37
7.391	0.38	0.38	0.38	0.38	0.38	0.38	0.38
7.435	0.38	0.38	0.38	0.38	0.38	0.38	0.38
7.479	0.38	0.38	0.38	0.38	0.38	0.38	0.38
7.524	0.38	0.38	0.38	0.38	0.38	0.39	0.39
7.568	0.39	0.39	0.39	0.39	0.39	0.39	0.39
7.612	0.39	0.39	0.39	0.39	0.39	0.39	0.39

WinTR-20: Version 1.10
Mall
Pre-Development

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(continued)

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
7.656	0.39	0.39	0.39	0.39	0.39	0.39	0.39
7.701	0.39	0.40	0.40	0.40	0.40	0.40	0.40
7.745	0.40	0.40	0.40	0.40	0.40	0.40	0.40
7.789	0.40	0.40	0.40	0.40	0.40	0.40	0.40
7.833	0.40	0.40	0.41	0.41	0.41	0.41	0.41
7.877	0.41	0.41	0.41	0.41	0.41	0.41	0.41
7.922	0.41	0.41	0.41	0.41	0.41	0.41	0.41
7.966	0.41	0.41	0.41	0.41	0.41	0.42	0.42
8.010	0.42	0.42	0.42	0.42	0.42	0.42	0.42
8.054	0.42	0.43	0.43	0.43	0.43	0.43	0.44
8.098	0.44	0.44	0.44	0.44	0.44	0.45	0.45
8.143	0.45	0.45	0.46	0.46	0.47	0.47	0.47
8.187	0.48	0.48	0.48	0.48	0.48	0.49	0.49
8.231	0.49	0.49	0.50	0.50	0.51	0.51	0.51
8.275	0.52	0.52	0.52	0.53	0.53	0.53	0.53
8.319	0.54	0.54	0.54	0.54	0.55	0.55	0.56
8.364	0.56	0.56	0.57	0.57	0.57	0.58	0.58
8.408	0.58	0.58	0.59	0.59	0.59	0.60	0.60
8.452	0.60	0.61	0.61	0.62	0.62	0.62	0.63
8.496	0.63	0.63	0.63	0.63	0.64	0.64	0.64
8.541	0.65	0.65	0.65	0.66	0.66	0.67	0.67
8.585	0.67	0.68	0.68	0.68	0.68	0.69	0.69
8.629	0.69	0.69	0.70	0.70	0.70	0.71	0.71
8.673	0.72	0.72	0.72	0.73	0.73	0.73	0.73
8.717	0.74	0.74	0.74	0.74	0.75	0.75	0.76
8.762	0.76	0.76	0.77	0.77	0.77	0.78	0.78
8.806	0.78	0.78	0.79	0.79	0.79	0.79	0.80
8.850	0.80	0.81	0.81	0.81	0.82	0.82	0.82

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
8.894	0.83	0.83	0.83	0.83	0.84	0.84	0.84
8.938	0.84	0.85	0.85	0.86	0.86	0.87	0.87
8.983	0.87	0.88	0.88	0.88	0.88	0.89	0.89
9.027	0.89	0.90	0.90	0.91	0.91	0.92	0.92
9.071	0.93	0.93	0.94	0.94	0.95	0.95	0.95
9.115	0.96	0.96	0.96	0.97	0.97	0.98	0.99
9.159	1.00	1.00	1.01	1.02	1.02	1.03	1.03
9.204	1.04	1.04	1.05	1.05	1.06	1.06	1.07
9.248	1.08	1.08	1.09	1.10	1.11	1.11	1.12
9.292	1.13	1.13	1.13	1.14	1.14	1.15	1.15
9.336	1.16	1.17	1.17	1.18	1.19	1.20	1.20
9.381	1.21	1.22	1.22	1.23	1.23	1.24	1.24
9.425	1.25	1.25	1.26	1.26	1.27	1.28	1.29
9.469	1.30	1.30	1.31	1.32	1.32	1.33	1.33
9.513	1.34	1.35	1.37	1.40	1.43	1.47	1.52
9.557	1.56	1.61	1.66	1.70	1.74	1.78	1.81
9.602	1.84	1.87	1.90	1.93	1.98	2.04	2.11
9.646	2.19	2.28	2.38	2.47	2.56	2.65	2.73
9.690	2.80	2.86	2.91	2.96	3.02	3.09	3.17
9.734	3.28	3.41	3.56	3.72	3.89	4.06	4.21
9.778	4.36	4.50	4.62	4.73	4.82	4.92	5.03
9.823	5.16	5.33	5.56	5.83	6.14	6.46	6.80
9.867	7.13	7.45	7.75	8.03	8.27	8.48	8.65

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Brea Mall
Pre-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time (hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
9.911	8.78	8.86	8.91	8.91	8.85	8.75	8.61
9.955	8.44	8.26	8.08	7.90	7.73	7.58	7.44
9.999	7.33	7.23	7.12	6.99	6.84	6.64	6.38
10.044	6.08	5.74	5.38	5.03	4.68	4.35	4.04
10.088	3.77	3.53	3.33	3.16	3.02	2.90	2.79

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
10.132	2.70	2.62	2.54	2.47	2.41	2.35	2.30
10.176	2.26	2.22	2.19	2.16	2.14	2.12	2.10
10.221	2.08	2.06	2.04	2.02	2.00	1.98	1.95
10.265	1.93	1.91	1.89	1.87	1.86	1.85	1.84
10.309	1.83	1.82	1.81	1.80	1.78	1.76	1.75
10.353	1.73	1.71	1.69	1.67	1.65	1.64	1.62
10.397	1.61	1.60	1.59	1.58	1.57	1.56	1.55
10.442	1.53	1.51	1.49	1.47	1.45	1.43	1.42
10.486	1.40	1.39	1.38	1.37	1.36	1.35	1.34
10.530	1.33	1.32	1.31	1.29	1.28	1.27	1.26
10.574	1.24	1.23	1.22	1.21	1.21	1.20	1.20
10.618	1.19	1.19	1.18	1.18	1.17	1.16	1.16
10.663	1.15	1.15	1.14	1.14	1.13	1.13	1.13
10.707	1.12	1.12	1.12	1.12	1.11	1.11	1.11
10.751	1.10	1.10	1.09	1.09	1.08	1.08	1.07
10.795	1.07	1.07	1.07	1.06	1.06	1.06	1.06
10.839	1.05	1.05	1.04	1.04	1.03	1.03	1.02
10.884	1.02	1.02	1.01	1.01	1.01	1.01	1.00
10.928	1.00	1.00	0.99	0.99	0.98	0.98	0.98
10.972	0.97	0.97	0.96	0.96	0.96	0.95	0.95
11.016	0.95	0.95	0.94	0.94	0.94	0.94	0.93
11.061	0.93	0.93	0.92	0.92	0.92	0.91	0.91
11.105	0.91	0.91	0.91	0.91	0.90	0.90	0.90
11.149	0.90	0.90	0.90	0.89	0.89	0.89	0.89
11.193	0.89	0.89	0.89	0.89	0.88	0.88	0.88
11.237	0.88	0.88	0.88	0.88	0.87	0.87	0.87
11.282	0.87	0.87	0.87	0.87	0.87	0.86	0.86
11.326	0.86	0.86	0.86	0.86	0.86	0.85	0.85
11.370	0.85	0.85	0.85	0.85	0.85	0.85	0.84
11.414	0.84	0.84	0.84	0.84	0.84	0.84	0.84
11.458	0.83	0.83	0.83	0.83	0.83	0.83	0.83
11.503	0.82	0.82	0.82	0.82	0.82	0.82	0.82
11.547	0.82	0.81	0.81	0.81	0.81	0.81	0.81
11.591	0.81	0.80	0.80	0.80	0.80	0.80	0.80
11.635	0.80	0.80	0.80	0.79	0.79	0.79	0.79
11.679	0.79	0.79	0.78	0.78	0.78	0.78	0.78
11.724	0.78	0.78	0.78	0.78	0.77	0.77	0.77
11.768	0.77	0.77	0.77	0.76	0.76	0.76	0.76

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
11.812	0.76	0.76	0.76	0.76	0.76	0.75	0.75
11.856	0.75	0.75	0.75	0.75	0.74	0.74	0.74
11.901	0.74	0.74	0.74	0.74	0.74	0.74	0.74
11.945	0.73	0.73	0.73	0.73	0.73	0.73	0.72
11.989	0.72	0.72	0.72	0.72	0.72	0.72	0.72
12.033	0.72	0.71	0.71	0.71	0.71	0.71	0.71
12.077	0.71	0.71	0.70	0.70	0.70	0.70	0.70
12.122	0.70	0.70	0.70	0.70	0.70	0.70	0.69

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Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
12.166	0.69	0.69	0.69	0.69	0.69	0.69	0.69
12.210	0.69	0.69	0.69	0.69	0.69	0.68	0.68
12.254	0.68	0.68	0.68	0.68	0.68	0.68	0.68
12.298	0.68	0.68	0.67	0.67	0.67	0.67	0.67
12.343	0.67	0.67	0.67	0.67	0.67	0.67	0.66
12.387	0.66	0.66	0.66	0.66	0.66	0.66	0.66
12.431	0.66	0.66	0.66	0.66	0.66	0.65	0.65
12.475	0.65	0.65	0.65	0.65	0.65	0.65	0.65
12.519	0.65	0.65	0.65	0.65	0.64	0.64	0.64
12.564	0.64	0.64	0.64	0.64	0.64	0.64	0.64
12.608	0.64	0.64	0.63	0.63	0.63	0.63	0.63
12.652	0.63	0.63	0.63	0.63	0.63	0.63	0.62
12.696	0.62	0.62	0.62	0.62	0.62	0.62	0.62
12.741	0.62	0.62	0.62	0.62	0.61	0.61	0.61
12.785	0.61	0.61	0.61	0.61	0.61	0.61	0.61
12.829	0.61	0.61	0.61	0.60	0.60	0.60	0.60
12.873	0.60	0.60	0.60	0.60	0.60	0.60	0.60
12.917	0.60	0.60	0.59	0.59	0.59	0.59	0.59
12.962	0.59	0.59	0.59	0.59	0.59	0.58	0.58
13.006	0.58	0.58	0.58	0.58	0.58	0.58	0.58

WinTR-20: Version 1.10
Mall
Pre-Development

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(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet	.01741	96.	.1		
	East-2	Outlet	.01042	97.	.1		
13.050	0.58	0.58	0.58	0.57	0.57	0.57	0.57
13.094	0.57	0.57	0.57	0.57	0.57	0.57	0.57
13.138	0.57	0.57	0.56	0.56	0.56	0.56	0.56
13.183	0.56	0.56	0.56	0.56	0.56	0.56	0.56
13.227	0.56	0.55	0.55	0.55	0.55	0.55	0.55
13.271	0.55	0.55	0.55	0.55	0.54	0.54	0.54
13.315	0.54	0.54	0.54	0.54	0.54	0.54	0.54
13.359	0.54	0.54	0.53	0.53	0.53	0.53	0.53
13.404	0.53	0.53	0.53	0.53	0.53	0.53	0.53
13.448	0.53	0.52	0.52	0.52	0.52	0.52	0.52
13.492	0.52	0.52	0.52	0.52	0.52	0.52	0.52
13.536	0.51	0.51	0.51	0.51	0.51	0.51	0.51
13.581	0.51	0.51	0.51	0.50	0.50	0.50	0.50
13.625	0.50	0.50	0.50	0.50	0.50	0.50	0.50
13.669	0.50	0.49	0.49	0.49	0.49	0.49	0.49
13.713	0.49	0.49	0.49	0.49	0.49	0.49	0.49
13.757	0.48	0.48	0.48	0.48	0.48	0.48	0.48
13.802	0.48	0.48	0.48	0.48	0.48	0.48	0.47
13.846	0.47	0.47	0.47	0.47	0.47	0.47	0.47
13.890	0.47	0.47	0.46	0.46	0.46	0.46	0.46
13.934	0.46	0.46	0.46	0.46	0.46	0.46	0.46
13.978	0.45	0.45	0.45	0.45	0.45	0.45	0.45
14.023	0.45	0.45	0.45	0.45	0.45	0.45	0.45
14.067	0.45	0.44	0.44	0.44	0.44	0.44	0.44
14.111	0.44	0.44	0.44	0.44	0.44	0.44	0.44
14.155	0.44	0.44	0.44	0.44	0.44	0.44	0.44
14.199	0.44	0.44	0.44	0.44	0.44	0.44	0.44
14.244	0.44	0.44	0.44	0.44	0.44	0.44	0.44
14.288	0.44	0.44	0.44	0.44	0.44	0.44	0.44
14.332	0.44	0.44	0.44	0.43	0.43	0.43	0.43
14.376	0.43	0.43	0.43	0.43	0.43	0.43	0.43

Brea Mall
Pre-Development

Line

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
14.421	0.43	0.43	0.43	0.43	0.43	0.43	0.43
14.465	0.43	0.43	0.43	0.43	0.43	0.43	0.43
14.509	0.43	0.43	0.43	0.43	0.43	0.43	0.43
14.553	0.43	0.43	0.43	0.43	0.43	0.43	0.43
14.597	0.43	0.43	0.43	0.43	0.43	0.43	0.43
14.642	0.43	0.43	0.43	0.43	0.43	0.43	0.43
14.686	0.43	0.43	0.43	0.43	0.43	0.43	0.43
14.730	0.43	0.42	0.42	0.42	0.42	0.42	0.42
14.774	0.42	0.42	0.42	0.42	0.42	0.42	0.42
14.818	0.42	0.42	0.42	0.42	0.42	0.42	0.42
14.863	0.42	0.42	0.42	0.42	0.42	0.42	0.42
14.907	0.42	0.42	0.42	0.42	0.42	0.42	0.42
14.951	0.42	0.42	0.42	0.42	0.42	0.42	0.42
14.995	0.42	0.42	0.42	0.42	0.42	0.42	0.42
15.039	0.42	0.42	0.42	0.42	0.42	0.42	0.42
15.084	0.42	0.42	0.42	0.42	0.42	0.42	0.41
15.128	0.41	0.41	0.41	0.41	0.41	0.41	0.41
15.172	0.41	0.41	0.41	0.41	0.41	0.41	0.41
15.216	0.41	0.41	0.41	0.41	0.41	0.41	0.41
15.261	0.41	0.41	0.41	0.41	0.41	0.41	0.41
15.305	0.41	0.41	0.41	0.41	0.41	0.41	0.41
15.349	0.41	0.41	0.41	0.41	0.41	0.41	0.41
15.393	0.41	0.41	0.41	0.41	0.41	0.41	0.41
15.437	0.41	0.41	0.41	0.41	0.41	0.41	0.41
15.482	0.41	0.41	0.40	0.40	0.40	0.40	0.40
15.526	0.40	0.40	0.40	0.40	0.40	0.40	0.40
15.570	0.40	0.40	0.40	0.40	0.40	0.40	0.40
15.614	0.40	0.40	0.40	0.40	0.40	0.40	0.40
15.658	0.40	0.40	0.40	0.40	0.40	0.40	0.40
15.703	0.40	0.40	0.40	0.40	0.40	0.40	0.40
15.747	0.40	0.40	0.40	0.40	0.40	0.40	0.40
15.791	0.40	0.40	0.40	0.40	0.40	0.40	0.40
15.835	0.40	0.40	0.40	0.40	0.40	0.40	0.40
15.879	0.39	0.39	0.39	0.39	0.39	0.39	0.39
15.924	0.39	0.39	0.39	0.39	0.39	0.39	0.39

WinTR-20: Version 1.10

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
15.968	0.39	0.39	0.39	0.39	0.39	0.39	0.39
16.012	0.39	0.39	0.39	0.39	0.39	0.39	0.39
16.056	0.39	0.39	0.39	0.39	0.39	0.39	0.39
16.101	0.39	0.39	0.39	0.39	0.39	0.39	0.39
16.145	0.39	0.39	0.39	0.39	0.39	0.39	0.39
16.189	0.39	0.39	0.39	0.39	0.39	0.39	0.39
16.233	0.39	0.39	0.39	0.39	0.39	0.38	0.38
16.277	0.38	0.38	0.38	0.38	0.38	0.38	0.38
16.322	0.38	0.38	0.38	0.38	0.38	0.38	0.38
16.366	0.38	0.38	0.38	0.38	0.38	0.38	0.38
16.410	0.38	0.38	0.38	0.38	0.38	0.38	0.38
16.454	0.38	0.38	0.38	0.38	0.38	0.38	0.38
16.498	0.38	0.38	0.38	0.38	0.38	0.38	0.38
16.543	0.38	0.38	0.38	0.38	0.38	0.38	0.38
16.587	0.38	0.38	0.38	0.38	0.38	0.38	0.38
16.631	0.38	0.38	0.37	0.37	0.37	0.37	0.37

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Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
16.675	0.37	0.37	0.37	0.37	0.37	0.37	0.37
16.719	0.37	0.37	0.37	0.37	0.37	0.37	0.37
16.764	0.37	0.37	0.37	0.37	0.37	0.37	0.37
16.808	0.37	0.37	0.37	0.37	0.37	0.37	0.37
16.852	0.37	0.37	0.37	0.37	0.37	0.37	0.37
16.896	0.37	0.37	0.37	0.37	0.37	0.37	0.37
16.941	0.37	0.37	0.37	0.37	0.37	0.37	0.37
16.985	0.37	0.37	0.37	0.37	0.37	0.37	0.36
17.029	0.36	0.36	0.36	0.36	0.36	0.36	0.36
17.073	0.36	0.36	0.36	0.36	0.36	0.36	0.36
17.117	0.36	0.36	0.36	0.36	0.36	0.36	0.36
17.162	0.36	0.36	0.36	0.36	0.36	0.36	0.36

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
17.206	0.36	0.36	0.36	0.36	0.36	0.36	0.36
17.250	0.36	0.36	0.36	0.36	0.36	0.36	0.36
17.294	0.36	0.36	0.36	0.36	0.36	0.36	0.36
17.338	0.36	0.36	0.36	0.36	0.36	0.36	0.36
17.383	0.36	0.36	0.35	0.35	0.35	0.35	0.35
17.427	0.35	0.35	0.35	0.35	0.35	0.35	0.35
17.471	0.35	0.35	0.35	0.35	0.35	0.35	0.35
17.515	0.35	0.35	0.35	0.35	0.35	0.35	0.35
17.559	0.35	0.35	0.35	0.35	0.35	0.35	0.35
17.604	0.35	0.35	0.35	0.35	0.35	0.35	0.35
17.648	0.35	0.35	0.35	0.35	0.35	0.35	0.35
17.692	0.35	0.35	0.35	0.35	0.35	0.35	0.35
17.736	0.35	0.35	0.35	0.35	0.35	0.35	0.34
17.781	0.34	0.34	0.34	0.34	0.34	0.34	0.34
17.825	0.34	0.34	0.34	0.34	0.34	0.34	0.34
17.869	0.34	0.34	0.34	0.34	0.34	0.34	0.34
17.913	0.34	0.34	0.34	0.34	0.34	0.34	0.34
17.957	0.34	0.34	0.34	0.34	0.34	0.34	0.34
18.002	0.34	0.34	0.34	0.34	0.34	0.34	0.34
18.046	0.34	0.34	0.34	0.34	0.34	0.34	0.34
18.090	0.34	0.34	0.34	0.34	0.34	0.34	0.34
18.134	0.34	0.34	0.34	0.33	0.33	0.33	0.33
18.178	0.33	0.33	0.33	0.33	0.33	0.33	0.33
18.223	0.33	0.33	0.33	0.33	0.33	0.33	0.33
18.267	0.33	0.33	0.33	0.33	0.33	0.33	0.33
18.311	0.33	0.33	0.33	0.33	0.33	0.33	0.33
18.355	0.33	0.33	0.33	0.33	0.33	0.33	0.33
18.399	0.33	0.33	0.33	0.33	0.33	0.33	0.33
18.444	0.33	0.33	0.33	0.33	0.33	0.33	0.33
18.488	0.33	0.33	0.33	0.33	0.33	0.33	0.33
18.532	0.32	0.32	0.32	0.32	0.32	0.32	0.32
18.576	0.32	0.32	0.32	0.32	0.32	0.32	0.32
18.621	0.32	0.32	0.32	0.32	0.32	0.32	0.32
18.665	0.32	0.32	0.32	0.32	0.32	0.32	0.32
18.709	0.32	0.32	0.32	0.32	0.32	0.32	0.32
18.753	0.32	0.32	0.32	0.32	0.32	0.32	0.32
18.797	0.32	0.32	0.32	0.32	0.32	0.32	0.32
18.842	0.32	0.32	0.32	0.32	0.32	0.32	0.32

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

18.886	0.32	0.32	0.31	0.31	0.31	0.31	0.31
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Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
18.930	0.31	0.31	0.31	0.31	0.31	0.31	0.31
18.974	0.31	0.31	0.31	0.31	0.31	0.31	0.31
19.018	0.31	0.31	0.31	0.31	0.31	0.31	0.31
19.063	0.31	0.31	0.31	0.31	0.31	0.31	0.31
19.107	0.31	0.31	0.31	0.31	0.31	0.31	0.31
19.151	0.31	0.31	0.31	0.31	0.31	0.31	0.31
19.195	0.31	0.31	0.31	0.31	0.31	0.31	0.31
19.239	0.31	0.31	0.31	0.31	0.31	0.31	0.30
19.284	0.30	0.30	0.30	0.30	0.30	0.30	0.30
19.328	0.30	0.30	0.30	0.30	0.30	0.30	0.30
19.372	0.30	0.30	0.30	0.30	0.30	0.30	0.30
19.416	0.30	0.30	0.30	0.30	0.30	0.30	0.30
19.461	0.30	0.30	0.30	0.30	0.30	0.30	0.30
19.505	0.30	0.30	0.30	0.30	0.30	0.30	0.30
19.549	0.30	0.30	0.30	0.30	0.30	0.30	0.30
19.593	0.30	0.30	0.30	0.30	0.30	0.30	0.30
19.637	0.30	0.30	0.30	0.29	0.29	0.29	0.29
19.682	0.29	0.29	0.29	0.29	0.29	0.29	0.29
19.726	0.29	0.29	0.29	0.29	0.29	0.29	0.29
19.770	0.29	0.29	0.29	0.29	0.29	0.29	0.29
19.814	0.29	0.29	0.29	0.29	0.29	0.29	0.29
19.858	0.29	0.29	0.29	0.29	0.29	0.29	0.29
19.903	0.29	0.29	0.29	0.29	0.29	0.29	0.29
19.947	0.29	0.29	0.29	0.29	0.29	0.29	0.29
19.991	0.29	0.29	0.29	0.29	0.29	0.29	0.29
20.035	0.28	0.28	0.28	0.28	0.28	0.28	0.28
20.079	0.28	0.28	0.28	0.28	0.28	0.28	0.28

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
20.124	0.28	0.28	0.28	0.28	0.28	0.28	0.28
20.168	0.28	0.28	0.28	0.28	0.28	0.28	0.28
20.212	0.28	0.28	0.28	0.28	0.28	0.28	0.28
20.256	0.28	0.28	0.28	0.28	0.28	0.28	0.28
20.301	0.28	0.28	0.28	0.28	0.28	0.28	0.28
20.345	0.28	0.28	0.28	0.28	0.28	0.28	0.28
20.389	0.28	0.27	0.27	0.27	0.27	0.27	0.27
20.433	0.27	0.27	0.27	0.27	0.27	0.27	0.27
20.477	0.27	0.27	0.27	0.27	0.27	0.27	0.27
20.522	0.27	0.27	0.27	0.27	0.27	0.27	0.27
20.566	0.27	0.27	0.27	0.27	0.27	0.27	0.27
20.610	0.27	0.27	0.27	0.27	0.27	0.27	0.27
20.654	0.27	0.27	0.27	0.27	0.27	0.27	0.27
20.698	0.27	0.27	0.27	0.27	0.27	0.27	0.27
20.743	0.27	0.27	0.27	0.27	0.26	0.26	0.26
20.787	0.26	0.26	0.26	0.26	0.26	0.26	0.26
20.831	0.26	0.26	0.26	0.26	0.26	0.26	0.26
20.875	0.26	0.26	0.26	0.26	0.26	0.26	0.26
20.919	0.26	0.26	0.26	0.26	0.26	0.26	0.26
20.964	0.26	0.26	0.26	0.26	0.26	0.26	0.26
21.008	0.26	0.26	0.26	0.26	0.26	0.26	0.26
21.052	0.26	0.26	0.26	0.26	0.26	0.26	0.26
21.096	0.26	0.26	0.26	0.26	0.26	0.26	0.26
21.141	0.26	0.25	0.25	0.25	0.25	0.25	0.25

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Brea Mall
Pre-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time (hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
21.185	0.25	0.25	0.25	0.25	0.25	0.25	0.25
21.229	0.25	0.25	0.25	0.25	0.25	0.25	0.25
21.273	0.25	0.25	0.25	0.25	0.25	0.25	0.25
21.317	0.25	0.25	0.25	0.25	0.25	0.25	0.25

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
21.362	0.25	0.25	0.25	0.25	0.25	0.25	0.25
21.406	0.25	0.25	0.25	0.25	0.25	0.25	0.25
21.450	0.25	0.25	0.25	0.25	0.25	0.25	0.25
21.494	0.25	0.25	0.25	0.25	0.24	0.24	0.24
21.538	0.24	0.24	0.24	0.24	0.24	0.24	0.24
21.583	0.24	0.24	0.24	0.24	0.24	0.24	0.24
21.627	0.24	0.24	0.24	0.24	0.24	0.24	0.24
21.671	0.24	0.24	0.24	0.24	0.24	0.24	0.24
21.715	0.24	0.24	0.24	0.24	0.24	0.24	0.24
21.759	0.24	0.24	0.24	0.24	0.24	0.24	0.24
21.804	0.24	0.24	0.24	0.24	0.24	0.24	0.24
21.848	0.24	0.24	0.24	0.24	0.24	0.24	0.23
21.892	0.23	0.23	0.23	0.23	0.23	0.23	0.23
21.936	0.23	0.23	0.23	0.23	0.23	0.23	0.23
21.981	0.23	0.23	0.23	0.23	0.23	0.23	0.23
22.025	0.23	0.23	0.23	0.23	0.23	0.23	0.23
22.069	0.23	0.23	0.23	0.23	0.23	0.23	0.23
22.113	0.23	0.23	0.23	0.23	0.23	0.23	0.23
22.157	0.23	0.23	0.23	0.23	0.23	0.23	0.23
22.202	0.23	0.23	0.23	0.23	0.23	0.23	0.23
22.246	0.23	0.23	0.23	0.22	0.22	0.22	0.22
22.290	0.22	0.22	0.22	0.22	0.22	0.22	0.22
22.334	0.22	0.22	0.22	0.22	0.22	0.22	0.22
22.378	0.22	0.22	0.22	0.22	0.22	0.22	0.22
22.423	0.22	0.22	0.22	0.22	0.22	0.22	0.22
22.467	0.22	0.22	0.22	0.22	0.22	0.22	0.22
22.511	0.22	0.22	0.22	0.22	0.22	0.22	0.22
22.555	0.22	0.22	0.22	0.22	0.22	0.22	0.22
22.599	0.22	0.22	0.22	0.22	0.22	0.22	0.21
22.644	0.21	0.21	0.21	0.21	0.21	0.21	0.21
22.688	0.21	0.21	0.21	0.21	0.21	0.21	0.21
22.732	0.21	0.21	0.21	0.21	0.21	0.21	0.21
22.776	0.21	0.21	0.21	0.21	0.21	0.21	0.21
22.821	0.21	0.21	0.21	0.21	0.21	0.21	0.21
22.865	0.21	0.21	0.21	0.21	0.21	0.21	0.21
22.909	0.21	0.21	0.21	0.21	0.21	0.21	0.21
22.953	0.21	0.21	0.21	0.21	0.21	0.21	0.21
22.997	0.21	0.20	0.20	0.20	0.20	0.20	0.20

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

23.042	0.20	0.20	0.20	0.20	0.20	0.20	0.20
23.086	0.20	0.20	0.20	0.20	0.20	0.20	0.20
23.130	0.20	0.20	0.20	0.20	0.20	0.20	0.20
23.174	0.20	0.20	0.20	0.20	0.20	0.20	0.20
23.218	0.20	0.20	0.20	0.20	0.20	0.20	0.20
23.263	0.20	0.20	0.20	0.20	0.20	0.20	0.20
23.307	0.20	0.20	0.20	0.20	0.20	0.20	0.20
23.351	0.20	0.20	0.20	0.19	0.19	0.19	0.19
23.395	0.19	0.19	0.19	0.19	0.19	0.19	0.19

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Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment of (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
23.439	0.19	0.19	0.19	0.19	0.19	0.19	0.19
23.484	0.19	0.19	0.19	0.19	0.19	0.19	0.19
23.528	0.19	0.19	0.19	0.19	0.19	0.19	0.19
23.572	0.19	0.19	0.19	0.19	0.19	0.19	0.19
23.616	0.19	0.19	0.19	0.19	0.19	0.19	0.19
23.661	0.19	0.19	0.19	0.19	0.19	0.19	0.19
23.705	0.19	0.19	0.19	0.19	0.19	0.19	0.19
23.749	0.18	0.18	0.18	0.18	0.18	0.18	0.18
23.793	0.18	0.18	0.18	0.18	0.18	0.18	0.18
23.837	0.18	0.18	0.18	0.18	0.18	0.18	0.18
23.882	0.18	0.18	0.18	0.18	0.18	0.18	0.18
23.926	0.18	0.18	0.18	0.18	0.18	0.18	0.18
23.970	0.18	0.18	0.18	0.18	0.18	0.18	0.18
24.014	0.18	0.17	0.17	0.16	0.15	0.14	0.13
24.058	0.11	0.10	0.09	0.08	0.06	0.05	

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	----- Rate (cfs)	Rate (csm)
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WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

OUTLET	0.028	1.657	9.93	23.10	830.22
--------	-------	-------	------	-------	--------

Line Start Time (hr)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	hr (cfs)	
2.711	0.05	0.05	0.05	0.05	0.05	0.05
2.755	0.05	0.05	0.05	0.05	0.05	0.06
2.799	0.06	0.06	0.06	0.06	0.06	0.06
2.843	0.06	0.06	0.06	0.06	0.06	0.06
2.888	0.06	0.06	0.06	0.06	0.06	0.06
2.932	0.06	0.06	0.06	0.06	0.06	0.07
2.976	0.07	0.07	0.07	0.07	0.12	0.12
3.020	0.12	0.12	0.12	0.12	0.12	0.13
3.065	0.13	0.13	0.13	0.13	0.13	0.13
3.109	0.13	0.13	0.13	0.14	0.14	0.14
3.153	0.14	0.14	0.14	0.14	0.14	0.15
3.197	0.15	0.15	0.15	0.15	0.15	0.15
3.241	0.15	0.15	0.15	0.16	0.16	0.16
3.286	0.16	0.16	0.16	0.16	0.16	0.16
3.330	0.17	0.17	0.17	0.17	0.17	0.17
3.374	0.17	0.17	0.17	0.18	0.18	0.18
3.418	0.18	0.18	0.18	0.18	0.18	0.18
3.462	0.19	0.19	0.19	0.19	0.19	0.19
3.507	0.19	0.19	0.19	0.20	0.20	0.20
3.551	0.20	0.20	0.20	0.20	0.20	0.21
3.595	0.21	0.21	0.21	0.21	0.21	0.21
3.639	0.21	0.21	0.21	0.22	0.22	0.22
3.683	0.22	0.22	0.22	0.22	0.22	0.23
3.728	0.23	0.23	0.23	0.23	0.23	0.23
3.772	0.23	0.23	0.24	0.24	0.24	0.24

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Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
3.816	0.24	0.24	0.24	0.24	0.24	0.24	0.25
3.860	0.25	0.25	0.25	0.25	0.25	0.25	0.25
3.905	0.25	0.25	0.25	0.26	0.26	0.26	0.26
3.949	0.26	0.26	0.26	0.26	0.26	0.27	0.27
3.993	0.27	0.27	0.27	0.27	0.27	0.27	0.27
4.037	0.27	0.28	0.28	0.28	0.28	0.28	0.28
4.081	0.28	0.28	0.28	0.28	0.28	0.29	0.29
4.126	0.29	0.29	0.29	0.29	0.29	0.29	0.29
4.170	0.29	0.29	0.29	0.30	0.30	0.30	0.30
4.214	0.30	0.30	0.30	0.30	0.30	0.30	0.30
4.258	0.30	0.31	0.31	0.31	0.31	0.31	0.31
4.302	0.31	0.31	0.31	0.31	0.31	0.31	0.32
4.347	0.32	0.32	0.32	0.32	0.32	0.32	0.32
4.391	0.32	0.32	0.32	0.32	0.33	0.33	0.33
4.435	0.33	0.33	0.33	0.33	0.33	0.33	0.33
4.479	0.33	0.33	0.33	0.34	0.34	0.34	0.34
4.523	0.34	0.34	0.34	0.34	0.34	0.34	0.34
4.568	0.34	0.35	0.35	0.35	0.35	0.35	0.35
4.612	0.35	0.35	0.35	0.35	0.35	0.35	0.35
4.656	0.36	0.36	0.36	0.36	0.36	0.36	0.36
4.700	0.36	0.36	0.36	0.36	0.36	0.36	0.37
4.745	0.37	0.37	0.37	0.37	0.37	0.37	0.37
4.789	0.37	0.37	0.37	0.37	0.37	0.37	0.38
4.833	0.38	0.38	0.38	0.38	0.38	0.38	0.38
4.877	0.38	0.38	0.38	0.39	0.39	0.39	0.39
4.921	0.39	0.39	0.39	0.39	0.39	0.39	0.39
4.966	0.39	0.39	0.39	0.39	0.40	0.40	0.40
5.010	0.40	0.40	0.40	0.40	0.40	0.40	0.40
5.054	0.40	0.40	0.40	0.41	0.41	0.41	0.41
5.098	0.41	0.41	0.41	0.41	0.41	0.41	0.41
5.142	0.41	0.41	0.41	0.42	0.42	0.42	0.42
5.187	0.42	0.42	0.42	0.42	0.42	0.42	0.42
5.231	0.42	0.42	0.42	0.42	0.43	0.43	0.43
5.275	0.43	0.43	0.43	0.43	0.43	0.43	0.43

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

West-1	Outlet							
East-2	Outlet							
		.01741	96.	.1				
		.01042	97.	.1				
5.319	0.43	0.43	0.44	0.44	0.44	0.44	0.44	0.44
5.363	0.44	0.44	0.44	0.44	0.44	0.44	0.44	0.44
5.408	0.44	0.44	0.45	0.45	0.45	0.45	0.45	0.45
5.452	0.45	0.45	0.45	0.45	0.45	0.45	0.45	0.45
5.496	0.45	0.45	0.45	0.46	0.46	0.46	0.46	0.46
5.540	0.46	0.46	0.46	0.46	0.46	0.46	0.46	0.46
5.585	0.46	0.46	0.46	0.46	0.47	0.47	0.47	0.47
5.629	0.47	0.47	0.47	0.47	0.47	0.47	0.47	0.47
5.673	0.47	0.47	0.47	0.47	0.48	0.48	0.48	0.48
5.717	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.48
5.761	0.48	0.48	0.48	0.48	0.48	0.48	0.48	0.49
5.806	0.49	0.49	0.49	0.49	0.49	0.49	0.49	0.49
5.850	0.49	0.49	0.49	0.49	0.49	0.49	0.50	0.50
5.894	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
5.938	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50
5.982	0.51	0.51	0.51	0.51	0.51	0.51	0.51	0.51
6.027	0.51	0.51	0.51	0.51	0.51	0.52	0.52	0.52

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Brea Mall
Pre-Development

Line	Start Time	Flow	Values @	time	increment	of	0.006 hr	
	(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
6.071		0.52	0.52	0.52	0.52	0.52	0.52	0.53
6.115		0.53	0.53	0.53	0.53	0.53	0.54	0.54
6.159		0.54	0.54	0.54	0.55	0.55	0.55	0.55
6.203		0.55	0.56	0.56	0.56	0.56	0.56	0.56
6.248		0.57	0.57	0.57	0.57	0.58	0.58	0.58
6.292		0.58	0.58	0.58	0.59	0.59	0.59	0.59
6.336		0.59	0.60	0.60	0.60	0.60	0.60	0.61
6.380		0.61	0.61	0.61	0.61	0.62	0.62	0.62
6.425		0.62	0.62	0.62	0.63	0.63	0.63	0.63
6.469		0.64	0.64	0.64	0.64	0.65	0.65	0.65
6.513		0.65	0.65	0.66	0.66	0.66	0.66	0.66

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
6.557	0.67	0.67	0.67	0.67	0.68	0.68	0.68
6.601	0.68	0.68	0.68	0.69	0.69	0.69	0.69
6.646	0.69	0.70	0.70	0.70	0.71	0.71	0.71
6.690	0.71	0.72	0.72	0.72	0.72	0.72	0.72
6.734	0.73	0.73	0.73	0.73	0.74	0.74	0.74
6.778	0.74	0.75	0.75	0.75	0.75	0.75	0.75
6.822	0.76	0.76	0.76	0.76	0.77	0.77	0.77
6.867	0.77	0.78	0.78	0.78	0.78	0.78	0.79
6.911	0.79	0.79	0.79	0.79	0.80	0.80	0.80
6.955	0.80	0.81	0.81	0.81	0.82	0.82	0.82
6.999	0.82	0.82	0.83	0.83	0.83	0.83	0.83
7.043	0.83	0.84	0.84	0.84	0.84	0.85	0.85
7.088	0.85	0.85	0.85	0.85	0.86	0.86	0.86
7.132	0.86	0.86	0.86	0.86	0.86	0.87	0.87
7.176	0.87	0.87	0.87	0.87	0.87	0.87	0.87
7.220	0.88	0.88	0.88	0.88	0.88	0.88	0.88
7.265	0.88	0.89	0.89	0.89	0.89	0.89	0.89
7.309	0.89	0.89	0.90	0.90	0.90	0.90	0.90
7.353	0.90	0.90	0.91	0.91	0.91	0.91	0.91
7.397	0.91	0.91	0.91	0.92	0.92	0.92	0.92
7.441	0.92	0.92	0.92	0.92	0.92	0.93	0.93
7.486	0.93	0.93	0.93	0.93	0.93	0.93	0.93
7.530	0.93	0.94	0.94	0.94	0.94	0.94	0.94
7.574	0.94	0.95	0.95	0.95	0.95	0.95	0.95
7.618	0.95	0.95	0.95	0.96	0.96	0.96	0.96
7.662	0.96	0.96	0.96	0.96	0.96	0.96	0.97
7.707	0.97	0.97	0.97	0.97	0.97	0.97	0.97
7.751	0.97	0.98	0.98	0.98	0.98	0.98	0.98
7.795	0.98	0.99	0.99	0.99	0.99	0.99	0.99
7.839	0.99	0.99	1.00	1.00	1.00	1.00	1.00
7.883	1.00	1.00	1.00	1.01	1.01	1.01	1.01
7.928	1.01	1.01	1.01	1.01	1.01	1.02	1.02
7.972	1.02	1.02	1.02	1.02	1.02	1.02	1.02
8.016	1.03	1.03	1.03	1.03	1.04	1.04	1.05
8.060	1.05	1.06	1.06	1.07	1.07	1.07	1.08
8.105	1.08	1.08	1.09	1.09	1.10	1.10	1.11
8.149	1.12	1.13	1.14	1.15	1.16	1.17	1.17
8.193	1.18	1.19	1.19	1.20	1.20	1.21	1.21

WinTR-20: Version 1.10
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Pre-Development

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STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

8.237	1.22	1.23	1.24	1.25	1.26	1.27	1.28
8.281	1.29	1.30	1.30	1.31	1.32	1.32	1.33

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Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
8.326	1.33	1.34	1.35	1.36	1.37	1.38	1.39
8.370	1.40	1.41	1.42	1.43	1.43	1.44	1.44
8.414	1.45	1.46	1.46	1.47	1.48	1.49	1.50
8.458	1.51	1.52	1.53	1.54	1.55	1.55	1.56
8.502	1.57	1.57	1.58	1.58	1.59	1.60	1.61
8.547	1.62	1.63	1.64	1.65	1.66	1.67	1.68
8.591	1.68	1.69	1.70	1.70	1.71	1.71	1.72
8.635	1.73	1.74	1.75	1.76	1.77	1.78	1.79
8.679	1.80	1.81	1.81	1.82	1.83	1.83	1.84
8.723	1.84	1.85	1.86	1.87	1.88	1.89	1.90
8.768	1.91	1.92	1.93	1.94	1.94	1.95	1.96
8.812	1.96	1.97	1.97	1.98	1.99	2.00	2.01
8.856	2.02	2.03	2.04	2.05	2.06	2.07	2.07
8.900	2.08	2.09	2.09	2.10	2.10	2.11	2.12
8.945	2.13	2.14	2.15	2.16	2.17	2.18	2.19
8.989	2.20	2.21	2.22	2.22	2.23	2.24	2.24
9.033	2.25	2.27	2.28	2.29	2.31	2.32	2.34
9.077	2.35	2.36	2.37	2.38	2.39	2.40	2.41
9.121	2.42	2.43	2.44	2.46	2.48	2.50	2.52
9.166	2.53	2.55	2.57	2.59	2.60	2.61	2.62
9.210	2.63	2.64	2.66	2.67	2.68	2.70	2.72
9.254	2.74	2.76	2.78	2.80	2.82	2.83	2.85
9.298	2.86	2.87	2.88	2.89	2.91	2.92	2.94
9.342	2.95	2.97	2.99	3.02	3.04	3.05	3.07
9.387	3.09	3.10	3.12	3.13	3.14	3.15	3.16
9.431	3.18	3.19	3.21	3.23	3.25	3.27	3.29

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STORM 2-Yr

SUB-AREA:

West-1	Outlet		.01741	96.	.1		
East-2	Outlet		.01042	97.	.1		
9.475	3.31	3.33	3.35	3.36	3.37	3.39	3.41
9.519	3.44	3.49	3.55	3.64	3.74	3.86	3.98
9.563	4.10	4.22	4.34	4.44	4.54	4.62	4.70
9.608	4.77	4.84	4.93	5.05	5.20	5.38	5.59
9.652	5.83	6.07	6.31	6.55	6.77	6.97	7.16
9.696	7.31	7.45	7.59	7.74	7.91	8.13	8.40
9.740	8.74	9.13	9.54	9.97	10.40	10.81	11.20
9.785	11.55	11.87	12.15	12.39	12.64	12.93	13.28
9.829	13.73	14.30	15.00	15.80	16.66	17.53	18.40
9.873	19.24	20.02	20.74	21.38	21.93	22.38	22.72
9.917	22.97	23.10	23.10	22.97	22.71	22.35	21.93
9.961	21.47	21.00	20.54	20.11	19.72	19.37	19.08
10.006	18.82	18.54	18.22	17.82	17.31	16.65	15.87
10.050	14.99	14.07	13.14	12.23	11.37	10.58	9.86
10.094	9.23	8.70	8.27	7.90	7.58	7.31	7.06
10.138	6.84	6.64	6.46	6.30	6.15	6.02	5.91
10.182	5.81	5.72	5.65	5.59	5.53	5.48	5.44
10.227	5.39	5.34	5.29	5.23	5.17	5.11	5.06
10.271	5.00	4.95	4.91	4.87	4.83	4.80	4.78
10.315	4.76	4.73	4.70	4.66	4.62	4.57	4.52
10.359	4.47	4.42	4.37	4.33	4.29	4.25	4.22
10.403	4.19	4.17	4.15	4.12	4.09	4.05	4.01
10.448	3.96	3.91	3.86	3.81	3.76	3.71	3.67
10.492	3.64	3.61	3.58	3.56	3.54	3.51	3.49
10.536	3.46	3.43	3.39	3.36	3.33	3.29	3.26

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Line	Start Time	Flow	Values @ time	increment	of	0.006 hr	
	(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
10.580	3.23	3.21	3.18	3.17	3.15	3.14	3.12
10.625	3.11	3.10	3.08	3.07	3.05	3.04	3.02
10.669	3.01	3.00	2.98	2.97	2.96	2.96	2.95

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Pre-Development

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STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
10.713	2.94	2.94	2.93	2.92	2.91	2.90	2.89
10.757	2.87	2.86	2.85	2.84	2.83	2.82	2.81
10.801	2.80	2.80	2.79	2.79	2.78	2.77	2.76
10.846	2.75	2.74	2.72	2.71	2.70	2.69	2.68
10.890	2.67	2.66	2.65	2.65	2.64	2.64	2.63
10.934	2.62	2.61	2.60	2.59	2.57	2.56	2.55
10.978	2.54	2.53	2.52	2.51	2.50	2.50	2.49
11.022	2.49	2.48	2.47	2.47	2.46	2.45	2.44
11.067	2.43	2.42	2.41	2.41	2.40	2.40	2.39
11.111	2.39	2.38	2.38	2.38	2.37	2.37	2.36
11.155	2.36	2.35	2.35	2.34	2.34	2.34	2.33
11.199	2.33	2.33	2.33	2.32	2.32	2.32	2.31
11.243	2.31	2.31	2.30	2.30	2.29	2.29	2.28
11.288	2.28	2.28	2.28	2.27	2.27	2.27	2.27
11.332	2.26	2.26	2.26	2.25	2.25	2.24	2.24
11.376	2.23	2.23	2.23	2.22	2.22	2.22	2.22
11.420	2.21	2.21	2.21	2.21	2.20	2.20	2.19
11.465	2.19	2.18	2.18	2.18	2.17	2.17	2.17
11.509	2.16	2.16	2.16	2.16	2.15	2.15	2.15
11.553	2.14	2.14	2.13	2.13	2.12	2.12	2.12
11.597	2.11	2.11	2.11	2.11	2.11	2.10	2.10
11.641	2.10	2.09	2.09	2.08	2.08	2.07	2.07
11.686	2.07	2.06	2.06	2.06	2.06	2.05	2.05
11.730	2.05	2.05	2.04	2.04	2.03	2.03	2.02
11.774	2.02	2.01	2.01	2.01	2.01	2.00	2.00
11.818	2.00	2.00	1.99	1.99	1.99	1.98	1.98
11.862	1.97	1.97	1.96	1.96	1.96	1.95	1.95
11.907	1.95	1.95	1.94	1.94	1.94	1.94	1.93
11.951	1.93	1.92	1.92	1.91	1.91	1.90	1.90
11.995	1.90	1.90	1.89	1.89	1.89	1.89	1.88
12.039	1.88	1.88	1.87	1.87	1.87	1.86	1.86
12.083	1.86	1.85	1.85	1.85	1.85	1.85	1.84
12.128	1.84	1.84	1.84	1.83	1.83	1.83	1.83
12.172	1.82	1.82	1.82	1.82	1.81	1.81	1.81
12.216	1.81	1.81	1.81	1.80	1.80	1.80	1.80
12.260	1.79	1.79	1.79	1.79	1.78	1.78	1.78
12.305	1.78	1.78	1.78	1.77	1.77	1.77	1.77
12.349	1.76	1.76	1.76	1.76	1.75	1.75	1.75

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STORM 2-Yr

SUB-AREA:

	West-1	Outlet	.01741	96.	.1			
	East-2	Outlet	.01042	97.	.1			
12.393	1.75	1.75	1.74	1.74	1.74	1.74	1.74	1.74
12.437	1.74	1.73	1.73	1.73	1.72	1.72	1.72	1.72
12.481	1.72	1.71	1.71	1.71	1.71	1.71	1.71	1.71
12.526	1.71	1.70	1.70	1.70	1.70	1.69	1.69	1.69
12.570	1.69	1.68	1.68	1.68	1.68	1.68	1.68	1.68
12.614	1.67	1.67	1.67	1.67	1.67	1.66	1.66	1.66
12.658	1.66	1.66	1.65	1.65	1.65	1.65	1.65	1.64
12.702	1.64	1.64	1.64	1.64	1.64	1.63	1.63	1.63
12.747	1.63	1.63	1.62	1.62	1.62	1.62	1.62	1.61
12.791	1.61	1.61	1.61	1.61	1.60	1.60	1.60	1.60

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Line Start Time (hr)	----- (cfs)	Flow Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)	----- (cfs)
12.835	1.60	1.60	1.59	1.59	1.59	1.59	1.58
12.879	1.58	1.58	1.58	1.57	1.57	1.57	1.57
12.923	1.57	1.57	1.56	1.56	1.56	1.56	1.55
12.968	1.55	1.55	1.55	1.54	1.54	1.54	1.54
13.012	1.54	1.54	1.53	1.53	1.53	1.53	1.52
13.056	1.52	1.52	1.52	1.51	1.51	1.51	1.51
13.100	1.50	1.50	1.50	1.50	1.50	1.50	1.49
13.145	1.49	1.49	1.49	1.48	1.48	1.48	1.48
13.189	1.47	1.47	1.47	1.47	1.47	1.47	1.46
13.233	1.46	1.46	1.46	1.45	1.45	1.45	1.45
13.277	1.44	1.44	1.44	1.44	1.44	1.43	1.43
13.321	1.43	1.43	1.43	1.42	1.42	1.42	1.42
13.366	1.41	1.41	1.41	1.41	1.40	1.40	1.40
13.410	1.40	1.40	1.40	1.39	1.39	1.39	1.39
13.454	1.38	1.38	1.38	1.38	1.37	1.37	1.37
13.498	1.37	1.37	1.36	1.36	1.36	1.36	1.36
13.542	1.35	1.35	1.35	1.35	1.34	1.34	1.34
13.587	1.34	1.33	1.33	1.33	1.33	1.33	1.33

WinTR-20: Version 1.10
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Pre-Development

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(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet	.01741	96.	.1		
	East-2	Outlet	.01042	97.	.1		
13.631	1.32	1.32	1.32	1.32	1.31	1.31	1.31
13.675	1.30	1.30	1.30	1.30	1.30	1.30	1.29
13.719	1.29	1.29	1.29	1.29	1.28	1.28	1.28
13.763	1.28	1.27	1.27	1.27	1.27	1.26	1.26
13.808	1.26	1.26	1.26	1.26	1.25	1.25	1.25
13.852	1.25	1.24	1.24	1.24	1.23	1.23	1.23
13.896	1.23	1.23	1.23	1.22	1.22	1.22	1.22
13.940	1.22	1.21	1.21	1.21	1.20	1.20	1.20
13.985	1.20	1.19	1.19	1.19	1.19	1.19	1.19
14.029	1.19	1.18	1.18	1.18	1.18	1.18	1.18
14.073	1.17	1.17	1.17	1.17	1.17	1.17	1.17
14.117	1.17	1.17	1.16	1.16	1.16	1.16	1.16
14.161	1.16	1.16	1.16	1.16	1.16	1.16	1.16
14.206	1.16	1.16	1.16	1.16	1.16	1.16	1.16
14.250	1.15	1.15	1.15	1.15	1.15	1.15	1.15
14.294	1.15	1.15	1.15	1.15	1.15	1.15	1.15
14.338	1.15	1.15	1.15	1.15	1.15	1.15	1.15
14.382	1.14	1.14	1.14	1.14	1.14	1.14	1.14
14.427	1.14	1.14	1.14	1.14	1.14	1.14	1.14
14.471	1.14	1.14	1.14	1.14	1.14	1.14	1.14
14.515	1.14	1.14	1.14	1.14	1.14	1.13	1.13
14.559	1.13	1.13	1.13	1.13	1.13	1.13	1.13
14.603	1.13	1.13	1.13	1.13	1.13	1.13	1.13
14.648	1.13	1.13	1.13	1.13	1.13	1.12	1.12
14.692	1.12	1.12	1.12	1.12	1.12	1.12	1.12
14.736	1.12	1.12	1.12	1.12	1.12	1.12	1.12
14.780	1.12	1.12	1.12	1.12	1.12	1.12	1.12
14.825	1.12	1.12	1.12	1.11	1.11	1.11	1.11
14.869	1.11	1.11	1.11	1.11	1.11	1.11	1.11
14.913	1.11	1.11	1.11	1.11	1.11	1.11	1.11
14.957	1.11	1.11	1.11	1.10	1.10	1.10	1.10
15.001	1.10	1.10	1.10	1.10	1.10	1.10	1.10
15.046	1.10	1.10	1.10	1.10	1.10	1.10	1.10

WinTR-20: Version 1.10
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(continued)

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
15.090	1.10	1.10	1.10	1.10	1.10	1.10	1.10
15.134	1.09	1.09	1.09	1.09	1.09	1.09	1.09
15.178	1.09	1.09	1.09	1.09	1.09	1.09	1.09
15.222	1.09	1.09	1.09	1.09	1.09	1.09	1.09
15.267	1.09	1.08	1.08	1.08	1.08	1.08	1.08
15.311	1.08	1.08	1.08	1.08	1.08	1.08	1.08
15.355	1.08	1.08	1.08	1.08	1.08	1.08	1.08
15.399	1.08	1.08	1.08	1.08	1.07	1.07	1.07
15.443	1.07	1.07	1.07	1.07	1.07	1.07	1.07
15.488	1.07	1.07	1.07	1.07	1.07	1.07	1.07
15.532	1.07	1.07	1.07	1.07	1.07	1.06	1.06
15.576	1.06	1.06	1.06	1.06	1.06	1.06	1.06
15.620	1.06	1.06	1.06	1.06	1.06	1.06	1.06
15.665	1.06	1.06	1.06	1.06	1.06	1.06	1.06
15.709	1.06	1.05	1.05	1.05	1.05	1.05	1.05
15.753	1.05	1.05	1.05	1.05	1.05	1.05	1.05
15.797	1.05	1.05	1.05	1.05	1.05	1.05	1.05
15.841	1.05	1.05	1.05	1.04	1.04	1.04	1.04
15.886	1.04	1.04	1.04	1.04	1.04	1.04	1.04
15.930	1.04	1.04	1.04	1.04	1.04	1.04	1.04
15.974	1.04	1.04	1.04	1.04	1.03	1.03	1.03
16.018	1.03	1.03	1.03	1.03	1.03	1.03	1.03
16.062	1.03	1.03	1.03	1.03	1.03	1.03	1.03
16.107	1.03	1.03	1.03	1.03	1.03	1.03	1.03
16.151	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16.195	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16.239	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16.283	1.02	1.01	1.01	1.01	1.01	1.01	1.01
16.328	1.01	1.01	1.01	1.01	1.01	1.01	1.01
16.372	1.01	1.01	1.01	1.01	1.01	1.01	1.01
16.416	1.01	1.01	1.01	1.01	1.01	1.00	1.00
16.460	1.00	1.00	1.00	1.00	1.00	1.00	1.00
16.505	1.00	1.00	1.00	1.00	1.00	1.00	1.00

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
16.549	1.00	1.00	1.00	1.00	1.00	0.99	0.99
16.593	0.99	0.99	0.99	0.99	0.99	0.99	0.99
16.637	0.99	0.99	0.99	0.99	0.99	0.99	0.99
16.681	0.99	0.99	0.99	0.99	0.99	0.99	0.99
16.726	0.99	0.99	0.98	0.98	0.98	0.98	0.98
16.770	0.98	0.98	0.98	0.98	0.98	0.98	0.98
16.814	0.98	0.98	0.98	0.98	0.98	0.98	0.98
16.858	0.98	0.98	0.97	0.97	0.97	0.97	0.97
16.902	0.97	0.97	0.97	0.97	0.97	0.97	0.97
16.947	0.97	0.97	0.97	0.97	0.97	0.97	0.97
16.991	0.97	0.97	0.97	0.97	0.97	0.96	0.96
17.035	0.96	0.96	0.96	0.96	0.96	0.96	0.96
17.079	0.96	0.96	0.96	0.96	0.96	0.96	0.96
17.123	0.96	0.96	0.96	0.96	0.96	0.96	0.95
17.168	0.95	0.95	0.95	0.95	0.95	0.95	0.95
17.212	0.95	0.95	0.95	0.95	0.95	0.95	0.95
17.256	0.95	0.95	0.95	0.95	0.95	0.95	0.95
17.300	0.95	0.94	0.94	0.94	0.94	0.94	0.94

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Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow Values @ time increment of 0.006 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.345	0.94	0.94	0.94	0.94	0.94	0.94	0.94
17.389	0.94	0.94	0.94	0.94	0.94	0.94	0.94
17.433	0.94	0.94	0.94	0.93	0.93	0.93	0.93
17.477	0.93	0.93	0.93	0.93	0.93	0.93	0.93
17.521	0.93	0.93	0.93	0.93	0.93	0.93	0.93
17.566	0.93	0.93	0.93	0.93	0.92	0.92	0.92
17.610	0.92	0.92	0.92	0.92	0.92	0.92	0.92
17.654	0.92	0.92	0.92	0.92	0.92	0.92	0.92
17.698	0.92	0.92	0.92	0.92	0.92	0.92	0.92
17.742	0.91	0.91	0.91	0.91	0.91	0.91	0.91

WinTR-20: Version 1.10

0

0

0.05

Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
17.787	0.91	0.91	0.91	0.91	0.91	0.91	0.91
17.831	0.91	0.91	0.91	0.91	0.91	0.91	0.91
17.875	0.90	0.90	0.90	0.90	0.90	0.90	0.90
17.919	0.90	0.90	0.90	0.90	0.90	0.90	0.90
17.963	0.90	0.90	0.90	0.90	0.90	0.90	0.90
18.008	0.90	0.90	0.90	0.90	0.89	0.89	0.89
18.052	0.89	0.89	0.89	0.89	0.89	0.89	0.89
18.096	0.89	0.89	0.89	0.89	0.89	0.89	0.89
18.140	0.89	0.89	0.89	0.89	0.88	0.88	0.88
18.185	0.88	0.88	0.88	0.88	0.88	0.88	0.88
18.229	0.88	0.88	0.88	0.88	0.88	0.88	0.88
18.273	0.88	0.88	0.88	0.88	0.88	0.88	0.87
18.317	0.87	0.87	0.87	0.87	0.87	0.87	0.87
18.361	0.87	0.87	0.87	0.87	0.87	0.87	0.87
18.406	0.87	0.87	0.87	0.87	0.87	0.87	0.87
18.450	0.87	0.86	0.86	0.86	0.86	0.86	0.86
18.494	0.86	0.86	0.86	0.86	0.86	0.86	0.86
18.538	0.86	0.86	0.86	0.86	0.86	0.86	0.86
18.582	0.86	0.85	0.85	0.85	0.85	0.85	0.85
18.627	0.85	0.85	0.85	0.85	0.85	0.85	0.85
18.671	0.85	0.85	0.85	0.85	0.85	0.85	0.85
18.715	0.85	0.85	0.85	0.85	0.85	0.84	0.84
18.759	0.84	0.84	0.84	0.84	0.84	0.84	0.84
18.803	0.84	0.84	0.84	0.84	0.84	0.84	0.84
18.848	0.84	0.84	0.84	0.84	0.84	0.83	0.83
18.892	0.83	0.83	0.83	0.83	0.83	0.83	0.83
18.936	0.83	0.83	0.83	0.83	0.83	0.83	0.83
18.980	0.83	0.83	0.83	0.83	0.83	0.83	0.83
19.025	0.83	0.82	0.82	0.82	0.82	0.82	0.82
19.069	0.82	0.82	0.82	0.82	0.82	0.82	0.82
19.113	0.82	0.82	0.82	0.82	0.82	0.82	0.82
19.157	0.82	0.81	0.81	0.81	0.81	0.81	0.81
19.201	0.81	0.81	0.81	0.81	0.81	0.81	0.81
19.246	0.81	0.81	0.81	0.81	0.81	0.81	0.81
19.290	0.81	0.81	0.81	0.80	0.80	0.80	0.80
19.334	0.80	0.80	0.80	0.80	0.80	0.80	0.80
19.378	0.80	0.80	0.80	0.80	0.80	0.80	0.80
19.422	0.80	0.80	0.80	0.80	0.80	0.79	0.79

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet		.01741	96.	.1	
	East-2	Outlet		.01042	97.	.1	
19.467	0.79	0.79	0.79	0.79	0.79	0.79	0.79
19.511	0.79	0.79	0.79	0.79	0.79	0.79	0.79
19.555	0.79	0.79	0.79	0.79	0.79	0.78	0.78

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Brea Mall
Pre-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)	----- (cfs)
19.599	0.78	0.78	0.78	0.78	0.78	0.78	0.78
19.643	0.78	0.78	0.78	0.78	0.78	0.78	0.78
19.688	0.78	0.78	0.78	0.78	0.78	0.78	0.78
19.732	0.78	0.77	0.77	0.77	0.77	0.77	0.77
19.776	0.77	0.77	0.77	0.77	0.77	0.77	0.77
19.820	0.77	0.77	0.77	0.77	0.77	0.77	0.77
19.865	0.77	0.76	0.76	0.76	0.76	0.76	0.76
19.909	0.76	0.76	0.76	0.76	0.76	0.76	0.76
19.953	0.76	0.76	0.76	0.76	0.76	0.76	0.76
19.997	0.76	0.76	0.76	0.76	0.75	0.75	0.75
20.041	0.75	0.75	0.75	0.75	0.75	0.75	0.75
20.086	0.75	0.75	0.75	0.75	0.75	0.75	0.75
20.130	0.75	0.75	0.75	0.75	0.75	0.74	0.74
20.174	0.74	0.74	0.74	0.74	0.74	0.74	0.74
20.218	0.74	0.74	0.74	0.74	0.74	0.74	0.74
20.262	0.74	0.74	0.74	0.74	0.74	0.73	0.73
20.307	0.73	0.73	0.73	0.73	0.73	0.73	0.73
20.351	0.73	0.73	0.73	0.73	0.73	0.73	0.73
20.395	0.73	0.73	0.73	0.73	0.73	0.73	0.73
20.439	0.73	0.72	0.72	0.72	0.72	0.72	0.72
20.483	0.72	0.72	0.72	0.72	0.72	0.72	0.72
20.528	0.72	0.72	0.72	0.72	0.72	0.72	0.72
20.572	0.72	0.71	0.71	0.71	0.71	0.71	0.71
20.616	0.71	0.71	0.71	0.71	0.71	0.71	0.71
20.660	0.71	0.71	0.71	0.71	0.71	0.71	0.71

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
20.705	0.71	0.71	0.71	0.71	0.70	0.70	0.70
20.749	0.70	0.70	0.70	0.70	0.70	0.70	0.70
20.793	0.70	0.70	0.70	0.70	0.70	0.70	0.70
20.837	0.70	0.70	0.70	0.70	0.69	0.69	0.69
20.881	0.69	0.69	0.69	0.69	0.69	0.69	0.69
20.926	0.69	0.69	0.69	0.69	0.69	0.69	0.69
20.970	0.69	0.69	0.69	0.69	0.69	0.69	0.68
21.014	0.68	0.68	0.68	0.68	0.68	0.68	0.68
21.058	0.68	0.68	0.68	0.68	0.68	0.68	0.68
21.102	0.68	0.68	0.68	0.68	0.68	0.68	0.68
21.147	0.68	0.67	0.67	0.67	0.67	0.67	0.67
21.191	0.67	0.67	0.67	0.67	0.67	0.67	0.67
21.235	0.67	0.67	0.67	0.67	0.67	0.67	0.67
21.279	0.67	0.66	0.66	0.66	0.66	0.66	0.66
21.323	0.66	0.66	0.66	0.66	0.66	0.66	0.66
21.368	0.66	0.66	0.66	0.66	0.66	0.66	0.66
21.412	0.66	0.66	0.66	0.66	0.65	0.65	0.65
21.456	0.65	0.65	0.65	0.65	0.65	0.65	0.65
21.500	0.65	0.65	0.65	0.65	0.65	0.65	0.65
21.545	0.65	0.65	0.65	0.65	0.64	0.64	0.64
21.589	0.64	0.64	0.64	0.64	0.64	0.64	0.64
21.633	0.64	0.64	0.64	0.64	0.64	0.64	0.64
21.677	0.64	0.64	0.64	0.64	0.64	0.64	0.63
21.721	0.63	0.63	0.63	0.63	0.63	0.63	0.63
21.766	0.63	0.63	0.63	0.63	0.63	0.63	0.63
21.810	0.63	0.63	0.63	0.63	0.63	0.63	0.63

Brea Mall
Pre-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time	-----	Flow	Values	@ time	increment	of 0.006 hr	-----
(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
21.854	0.62	0.62	0.62	0.62	0.62	0.62	0.62
21.898	0.62	0.62	0.62	0.62	0.62	0.62	0.62

WinTR-20: Version 1.10

0

0

0.05

Mall

(continued)

Pre-Development

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet	.01741	96.	.1		
			.01042	97.	.1		
21.942	0.62	0.62	0.62	0.62	0.62	0.62	0.62
21.987	0.61	0.61	0.61	0.61	0.61	0.61	0.61
22.031	0.61	0.61	0.61	0.61	0.61	0.61	0.61
22.075	0.61	0.61	0.61	0.61	0.61	0.61	0.61
22.119	0.61	0.61	0.61	0.60	0.60	0.60	0.60
22.163	0.60	0.60	0.60	0.60	0.60	0.60	0.60
22.208	0.60	0.60	0.60	0.60	0.60	0.60	0.60
22.252	0.60	0.60	0.60	0.59	0.59	0.59	0.59
22.296	0.59	0.59	0.59	0.59	0.59	0.59	0.59
22.340	0.59	0.59	0.59	0.59	0.59	0.59	0.59
22.385	0.59	0.59	0.59	0.59	0.59	0.58	0.58
22.429	0.58	0.58	0.58	0.58	0.58	0.58	0.58
22.473	0.58	0.58	0.58	0.58	0.58	0.58	0.58
22.517	0.58	0.58	0.58	0.58	0.58	0.58	0.57
22.561	0.57	0.57	0.57	0.57	0.57	0.57	0.57
22.606	0.57	0.57	0.57	0.57	0.57	0.57	0.57
22.650	0.57	0.57	0.57	0.57	0.57	0.57	0.57
22.694	0.56	0.56	0.56	0.56	0.56	0.56	0.56
22.738	0.56	0.56	0.56	0.56	0.56	0.56	0.56
22.782	0.56	0.56	0.56	0.56	0.56	0.56	0.56
22.827	0.56	0.56	0.56	0.55	0.55	0.55	0.55
22.871	0.55	0.55	0.55	0.55	0.55	0.55	0.55
22.915	0.55	0.55	0.55	0.55	0.55	0.55	0.55
22.959	0.55	0.55	0.54	0.54	0.54	0.54	0.54
23.003	0.54	0.54	0.54	0.54	0.54	0.54	0.54
23.048	0.54	0.54	0.54	0.54	0.54	0.54	0.54
23.092	0.54	0.54	0.54	0.54	0.54	0.53	0.53
23.136	0.53	0.53	0.53	0.53	0.53	0.53	0.53
23.180	0.53	0.53	0.53	0.53	0.53	0.53	0.53
23.225	0.53	0.53	0.53	0.53	0.53	0.52	0.52
23.269	0.52	0.52	0.52	0.52	0.52	0.52	0.52
23.313	0.52	0.52	0.52	0.52	0.52	0.52	0.52
23.357	0.52	0.52	0.52	0.52	0.52	0.52	0.51
23.401	0.51	0.51	0.51	0.51	0.51	0.51	0.51
23.446	0.51	0.51	0.51	0.51	0.51	0.51	0.51
23.490	0.51	0.51	0.51	0.51	0.51	0.51	0.51
23.534	0.51	0.51	0.50	0.50	0.50	0.50	0.50
23.578	0.50	0.50	0.50	0.50	0.50	0.50	0.50

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	West-1	Outlet					
	East-2	Outlet					
			.01741	96.	.1		
			.01042	97.	.1		
23.622	0.50	0.50	0.50	0.50	0.50	0.50	0.50
23.667	0.50	0.49	0.49	0.49	0.49	0.49	0.49
23.711	0.49	0.49	0.49	0.49	0.49	0.49	0.49
23.755	0.49	0.49	0.49	0.49	0.49	0.49	0.49
23.799	0.49	0.49	0.49	0.49	0.48	0.48	0.48
23.843	0.48	0.48	0.48	0.48	0.48	0.48	0.48
23.888	0.48	0.48	0.48	0.48	0.48	0.48	0.48
23.932	0.48	0.48	0.48	0.48	0.47	0.47	0.47
23.976	0.47	0.47	0.47	0.47	0.47	0.47	0.47
24.020	0.46	0.44	0.43	0.40	0.37	0.34	0.30
24.065	0.27	0.23	0.20	0.17	0.15	0.12	0.06

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Brea Mall
Pre-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time (hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
24.109	0.05						

WinTR-20 Printed Page File
TR20.inp

Beginning of Input Data List

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

West-1 Outlet
East-2 Outlet

.01741 96. .1
.01042 97. .1

WinTR-20 Version 1.10

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Brea Mall

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WinTR-20 Printed Page File
TR20.inp

Beginning of Input Data List

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

West-1	Outlet	.01741	96.	.1
East-2	Outlet	.01042	97.	.1

Pre-Development

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	----- Peak Flow by Storm -----				
			2-Yr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)
West-1	0.017		14.20				
East-2	0.010		8.91				
OUTLET	0.028		23.10				

WinTR-20 Printed Page File
TR20.inp

Beginning of Input Data List

WinTR-20: Version 1.10
Mall
Pre-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

West-1 Outlet
East-2 Outlet

.01741 96. .1
.01042 97. .1

WinTR-55 Current Data Description

--- Identification Data ---

User: CJN Date: 11/8/2019
 Project: Brea Mall Units: English
 SubTitle: Post-Development Areal Units: Acres
 State: California
 County: Orange
 Filename: Q:\3180011\Eng Data\Hydrology\H&H\191108 Brea Mall Post-Development.w55

--- Sub-Area Data ---

Name	Description	Reach	Area(ac)	RCN	Tc
DMA #1	West	Outlet	13.72	98	.123
DMA #2	East	Outlet	4.09	98	0.1

Total area: 17.81 (ac)

--- Storm Data --

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	5.78	.0

Storm Data Source: User-provided custom storm data
 Rainfall Distribution Type: Type I
 Dimensionless Unit Hydrograph: <standard>

CJN

Brea Mall
Post-Development
Orange County, California

Storm Data

Rainfall Depth by Rainfall Return Period

2-Yr (in)	5-Yr (in)	10-Yr (in)	25-Yr (in)	50-Yr (in)	100-Yr (in)	1-Yr (in)
2.05	.0	.0	.0	.0	5.78	.0

Storm Data Source: User-provided custom storm data
Rainfall Distribution Type: Type I
Dimensionless Unit Hydrograph: <standard>

CJN

Brea Mall
Post-Development
Orange County, California

Watershed Peak Table

Sub-Area or Reach Identifier	Peak Flow by Rainfall Return Period	
	2-Yr (cfs)	

SUBAREAS		
DMA #1	18.37	
DMA #2	5.69	
REACHES		
OUTLET	23.99	

CJN

Brea Mall
Post-Development
Orange County, California

Hydrograph Peak/Peak Time Table

Sub-Area or Reach Identifier	Peak Flow and Peak Time (hr) by Rainfall Return Period 2-Yr (cfs) (hr)
------------------------------------	---

SUBAREAS

DMA #1	18.37 9.94
--------	---------------

DMA #2	5.69 9.93
--------	--------------

REACHES

OUTLET	23.99
--------	-------

CJN

Brea Mall
Post-Development
Orange County, California

Sub-Area Summary Table

Sub-Area Identifier	Drainage Area (ac)	Time of Concentration (hr)	Curve Number	Receiving Reach	Sub-Area Description
DMA #1	13.72	0.123	98	Outlet	West
DMA #2	4.09	0.100	98	Outlet	East

Total Area:	17.81 (ac)				

CJN

Brea Mall
Post-Development
Orange County, California

Sub-Area Time of Concentration Details

Sub-Area Identifier/	Flow Length (ft)	Slope (ft/ft)	Mannings's n	End Area (sq ft)	Wetted Perimeter (ft)	Velocity (ft/sec)	Travel Time (hr)

DMA #1							
SHALLOW	435	0.0100	0.025				0.059
CHANNEL	716	0.0050	0.012	0.79	3.14	3.489	0.057
CHANNEL	350	0.0236	0.012	4.91	7.85	13.889	0.007
Time of Concentration							.123
							=====
DMA #2							
SHALLOW	600	0.0200	0.025				0.058
CHANNEL	10	0.0050	0.012	0.79	3.14	2.778	0.001
CHANNEL	60	0.1100	0.012	1.77	3.14	16.667	0.001
Time of Concentration							0.1
							=====

CJN

Brea Mall
Post-Development
Orange County, California

Sub-Area Land Use and Curve Number Details

Sub-Area Identifier	Land Use	Hydrologic Soil Group	Sub-Area Area (ac)	Curve Number
DMA #1	Paved parking lots, roofs, driveways	C	13.72	98
	Total Area / Weighted Curve Number		13.72 =====	98 ==
DMA #2	Paved parking lots, roofs, driveways	C	4.09	98
	Total Area / Weighted Curve Number		4.09 =====	98 ==

WinTR-20 Printed Page File
TR20.inp

Beginning of Input Data List

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Brea Mall
Post-Development

0 0 0.05

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

STREAM REACH:

STORM ANALYSIS:

2-Yr 2.05 Type I 2

STRUCTURE RATING:

GLOBAL OUTPUT:

2 0.05 YYYYN YYYYNN

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End of Input Data List

Brea Mall
Post-Development

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STORM 2-Yr

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
DMA #1	0.021		1.823		9.94	18.37	856.97

Line Start Time (hr)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.008 hr (cfs)	Flow (cfs)	Rate (cfs)	Rate (csm)
1.552	0.05	0.05	0.05	0.05	0.06	0.06	0.06
1.607	0.06	0.06	0.06	0.06	0.06	0.06	0.07
1.661	0.07	0.07	0.07	0.07	0.07	0.07	0.07
1.715	0.07	0.08	0.08	0.08	0.08	0.08	0.08
1.770	0.08	0.08	0.08	0.08	0.09	0.09	0.09
1.824	0.09	0.09	0.09	0.09	0.09	0.09	0.10
1.879	0.10	0.10	0.10	0.10	0.10	0.10	0.10
1.933	0.10	0.10	0.10	0.11	0.11	0.11	0.11
1.987	0.11	0.11	0.11	0.11	0.11	0.11	0.12
2.042	0.12	0.12	0.12	0.12	0.12	0.12	0.12
2.096	0.12	0.12	0.12	0.13	0.13	0.13	0.13
2.150	0.13	0.13	0.13	0.13	0.13	0.14	0.14
2.205	0.14	0.14	0.14	0.14	0.14	0.14	0.14
2.259	0.15	0.15	0.15	0.15	0.15	0.15	0.15
2.314	0.15	0.15	0.15	0.16	0.16	0.16	0.16
2.368	0.16	0.16	0.16	0.16	0.16	0.16	0.17
2.422	0.17	0.17	0.17	0.17	0.17	0.17	0.17
2.477	0.17	0.18	0.18	0.18	0.18	0.18	0.18
2.531	0.18	0.18	0.18	0.19	0.19	0.19	0.19
2.586	0.19	0.19	0.19	0.19	0.19	0.19	0.20
2.640	0.20	0.20	0.20	0.20	0.20	0.20	0.20
2.694	0.20	0.21	0.21	0.21	0.21	0.21	0.21
2.749	0.21	0.21	0.21	0.22	0.22	0.22	0.22
2.803	0.22	0.22	0.22	0.22	0.22	0.22	0.23
2.857	0.23	0.23	0.23	0.23	0.23	0.23	0.23
2.912	0.23	0.23	0.24	0.24	0.24	0.24	0.24
2.966	0.24	0.24	0.24	0.24	0.25	0.25	0.25
3.021	0.25	0.25	0.25	0.25	0.25	0.25	0.26
3.075	0.26	0.26	0.26	0.26	0.26	0.26	0.26
3.129	0.26	0.26	0.27	0.27	0.27	0.27	0.27
3.184	0.27	0.27	0.27	0.27	0.28	0.28	0.28
3.238	0.28	0.28	0.28	0.28	0.28	0.28	0.28
3.292	0.29	0.29	0.29	0.29	0.29	0.29	0.29
3.347	0.29	0.29	0.29	0.30	0.30	0.30	0.30

3.401	0.30	0.30	0.30	0.30	0.30	0.31	0.31
3.456	0.31	0.31	0.31	0.31	0.31	0.31	0.31
3.510	0.31	0.32	0.32	0.32	0.32	0.32	0.32
3.564	0.32	0.32	0.32	0.33	0.33	0.33	0.33
3.619	0.33	0.33	0.33	0.33	0.33	0.33	0.34
3.673	0.34	0.34	0.34	0.34	0.34	0.34	0.34

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.008 hr (cfs)	----- (cfs)	(cfs)
3.727	0.34	0.34	0.35	0.35	0.35	0.35	0.35
3.782	0.35	0.35	0.35	0.35	0.36	0.36	0.36
3.836	0.36	0.36	0.36	0.36	0.36	0.36	0.36
3.891	0.36	0.37	0.37	0.37	0.37	0.37	0.37
3.945	0.37	0.37	0.37	0.38	0.38	0.38	0.38
3.999	0.38	0.38	0.38	0.38	0.38	0.38	0.39
4.054	0.39	0.39	0.39	0.39	0.39	0.39	0.39
4.108	0.39	0.39	0.40	0.40	0.40	0.40	0.40
4.163	0.40	0.40	0.40	0.40	0.40	0.40	0.40
4.217	0.40	0.40	0.40	0.41	0.41	0.41	0.41
4.271	0.41	0.41	0.41	0.41	0.41	0.41	0.41
4.326	0.41	0.42	0.42	0.42	0.42	0.42	0.42
4.380	0.42	0.42	0.42	0.42	0.42	0.42	0.42
4.434	0.42	0.43	0.43	0.43	0.43	0.43	0.43
4.489	0.43	0.43	0.43	0.43	0.43	0.43	0.43
4.543	0.43	0.44	0.44	0.44	0.44	0.44	0.44
4.598	0.44	0.44	0.44	0.44	0.44	0.44	0.44
4.652	0.44	0.44	0.45	0.45	0.45	0.45	0.45
4.706	0.45	0.45	0.45	0.45	0.45	0.45	0.45
4.761	0.45	0.45	0.45	0.46	0.46	0.46	0.46
4.815	0.46	0.46	0.46	0.46	0.46	0.46	0.46
4.869	0.46	0.46	0.46	0.47	0.47	0.47	0.47
4.924	0.47	0.47	0.47	0.47	0.47	0.47	0.47
4.978	0.47	0.47	0.47	0.47	0.47	0.47	0.48
5.033	0.48	0.48	0.48	0.48	0.48	0.48	0.48
5.087	0.48	0.48	0.48	0.48	0.48	0.48	0.48
5.141	0.49	0.49	0.49	0.49	0.49	0.49	0.49
5.196	0.49	0.49	0.49	0.49	0.49	0.49	0.49
5.250	0.49	0.49	0.49	0.49	0.50	0.50	0.50
5.304	0.50	0.50	0.50	0.50	0.50	0.50	0.50
5.359	0.50	0.50	0.50	0.50	0.50	0.51	0.51
5.413	0.51	0.51	0.51	0.51	0.51	0.51	0.51
5.468	0.51	0.51	0.51	0.51	0.51	0.51	0.51
5.522	0.51	0.51	0.52	0.52	0.52	0.52	0.52
5.576	0.52	0.52	0.52	0.52	0.52	0.52	0.52
5.631	0.52	0.52	0.52	0.52	0.52	0.52	0.53
5.685	0.53	0.53	0.53	0.53	0.53	0.53	0.53
5.740	0.53	0.53	0.53	0.53	0.53	0.53	0.53
5.794	0.53	0.53	0.53	0.53	0.54	0.54	0.54
5.848	0.54	0.54	0.54	0.54	0.54	0.54	0.54
5.903	0.54	0.54	0.54	0.54	0.54	0.54	0.55
5.957	0.55	0.55	0.55	0.55	0.55	0.55	0.55
6.011	0.55	0.55	0.55	0.55	0.55	0.55	0.55
6.066	0.55	0.56	0.56	0.56	0.56	0.56	0.56
6.120	0.56	0.56	0.57	0.57	0.57	0.57	0.58
6.175	0.58	0.58	0.58	0.58	0.59	0.59	0.59
6.229	0.59	0.59	0.60	0.60	0.60	0.60	0.61
6.283	0.61	0.61	0.61	0.61	0.62	0.62	0.62
6.338	0.62	0.62	0.63	0.63	0.63	0.63	0.64
6.392	0.64	0.64	0.64	0.64	0.65	0.65	0.65
6.446	0.65	0.65	0.66	0.66	0.66	0.67	0.67

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.008 hr (cfs)	----- (cfs)	----- (cfs)
6.501	0.67	0.67	0.67	0.68	0.68	0.68	0.68
6.555	0.68	0.69	0.69	0.69	0.69	0.70	0.70
6.610	0.70	0.70	0.70	0.71	0.71	0.71	0.71
6.664	0.72	0.72	0.72	0.73	0.73	0.73	0.73
6.718	0.73	0.74	0.74	0.74	0.74	0.75	0.75
6.773	0.75	0.75	0.76	0.76	0.76	0.76	0.76
6.827	0.77	0.77	0.77	0.77	0.77	0.78	0.78
6.881	0.78	0.78	0.79	0.79	0.79	0.79	0.79
6.936	0.80	0.80	0.80	0.80	0.81	0.81	0.81
6.990	0.82	0.82	0.82	0.82	0.83	0.83	0.83
7.045	0.83	0.83	0.84	0.84	0.84	0.84	0.84
7.099	0.85	0.85	0.85	0.85	0.85	0.85	0.85
7.153	0.85	0.86	0.86	0.86	0.86	0.86	0.86
7.208	0.86	0.86	0.86	0.86	0.87	0.87	0.87
7.262	0.87	0.87	0.87	0.87	0.87	0.87	0.88
7.316	0.88	0.88	0.88	0.88	0.88	0.88	0.88
7.371	0.88	0.89	0.89	0.89	0.89	0.89	0.89
7.425	0.89	0.89	0.89	0.89	0.90	0.90	0.90
7.480	0.90	0.90	0.90	0.90	0.90	0.90	0.90
7.534	0.90	0.91	0.91	0.91	0.91	0.91	0.91
7.588	0.91	0.91	0.91	0.92	0.92	0.92	0.92
7.643	0.92	0.92	0.92	0.92	0.92	0.92	0.92
7.697	0.92	0.93	0.93	0.93	0.93	0.93	0.93
7.752	0.93	0.93	0.93	0.93	0.94	0.94	0.94
7.806	0.94	0.94	0.94	0.94	0.94	0.94	0.94
7.860	0.95	0.95	0.95	0.95	0.95	0.95	0.95
7.915	0.95	0.95	0.96	0.96	0.96	0.96	0.96
7.969	0.96	0.96	0.96	0.96	0.96	0.96	0.96
8.023	0.97	0.97	0.97	0.97	0.98	0.98	0.99
8.078	0.99	1.00	1.00	1.00	1.01	1.01	1.02

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
8.132	1.02	1.03	1.03	1.04	1.05	1.06	1.07
8.187	1.08	1.09	1.09	1.10	1.11	1.11	1.12
8.241	1.13	1.14	1.15	1.15	1.16	1.17	1.18
8.295	1.19	1.20	1.21	1.21	1.22	1.23	1.24
8.350	1.25	1.26	1.27	1.28	1.29	1.29	1.30
8.404	1.31	1.32	1.33	1.33	1.34	1.35	1.36
8.458	1.37	1.38	1.39	1.40	1.41	1.41	1.42
8.513	1.43	1.44	1.44	1.45	1.46	1.47	1.48
8.567	1.49	1.50	1.51	1.52	1.53	1.53	1.54
8.622	1.55	1.55	1.56	1.57	1.58	1.59	1.60
8.676	1.61	1.62	1.63	1.63	1.64	1.65	1.66
8.730	1.66	1.67	1.68	1.69	1.70	1.71	1.72
8.785	1.72	1.73	1.74	1.75	1.76	1.76	1.77
8.839	1.78	1.78	1.79	1.80	1.81	1.82	1.83
8.893	1.84	1.85	1.86	1.86	1.87	1.88	1.88
8.948	1.89	1.90	1.91	1.92	1.93	1.94	1.95
9.002	1.96	1.96	1.97	1.98	1.99	2.00	2.01
9.057	2.02	2.03	2.05	2.06	2.07	2.09	2.10
9.111	2.11	2.12	2.13	2.14	2.15	2.17	2.18
9.165	2.20	2.22	2.23	2.25	2.27	2.28	2.29
9.220	2.31	2.32	2.33	2.35	2.36	2.38	2.40

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Line Start Time (hr)	----- (cfs)	Flow Values @ (cfs)	time increment (cfs)	of 0.008 hr (cfs)	----- (cfs)	(cfs)	(cfs)
9.274	2.42	2.44	2.45	2.47	2.48	2.50	2.51
9.329	2.52	2.54	2.55	2.57	2.59	2.61	2.62
9.383	2.64	2.66	2.67	2.69	2.70	2.72	2.73
9.437	2.74	2.76	2.78	2.79	2.81	2.83	2.85
9.492	2.87	2.88	2.90	2.92	2.95	2.99	3.04
9.546	3.12	3.21	3.30	3.41	3.52	3.62	3.72
9.600	3.81	3.90	4.00	4.09	4.20	4.34	4.50

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
9.655	4.69	4.90	5.11	5.32	5.53	5.72	5.90
9.709	6.08	6.26	6.44	6.65	6.90	7.20	7.54
9.764	7.90	8.28	8.65	9.01	9.34	9.66	9.97
9.818	10.29	10.64	11.05	11.55	12.14	12.82	13.55
9.872	14.29	15.03	15.75	16.41	17.02	17.53	17.94
9.927	18.21	18.36	18.37	18.26	18.05	17.77	17.44
9.981	17.09	16.74	16.40	16.07	15.74	15.39	15.01
10.035	14.56	14.01	13.36	12.63	11.86	11.08	10.31
10.090	9.57	8.89	8.27	7.72	7.25	6.85	6.52
10.144	6.23	5.97	5.74	5.53	5.35	5.19	5.05
10.199	4.93	4.83	4.73	4.65	4.58	4.51	4.44
10.253	4.37	4.30	4.24	4.18	4.12	4.07	4.02
10.307	3.98	3.94	3.90	3.87	3.83	3.79	3.74
10.362	3.69	3.65	3.60	3.56	3.52	3.48	3.45
10.416	3.41	3.38	3.35	3.32	3.28	3.24	3.19
10.470	3.15	3.10	3.06	3.02	2.98	2.95	2.92
10.525	2.89	2.86	2.83	2.80	2.77	2.74	2.71
10.579	2.68	2.65	2.62	2.60	2.58	2.56	2.54
10.634	2.53	2.51	2.49	2.48	2.46	2.45	2.44
10.688	2.42	2.41	2.40	2.39	2.38	2.37	2.36
10.742	2.35	2.34	2.33	2.32	2.31	2.30	2.29
10.797	2.28	2.27	2.26	2.25	2.25	2.24	2.23
10.851	2.22	2.21	2.20	2.19	2.17	2.16	2.16
10.906	2.15	2.14	2.13	2.12	2.12	2.11	2.10
10.960	2.09	2.07	2.06	2.05	2.04	2.03	2.02
11.014	2.02	2.01	2.00	2.00	1.99	1.98	1.97
11.069	1.96	1.96	1.95	1.94	1.93	1.93	1.92
11.123	1.92	1.91	1.91	1.90	1.90	1.89	1.89
11.177	1.89	1.88	1.88	1.87	1.87	1.87	1.86
11.232	1.86	1.86	1.85	1.85	1.85	1.84	1.84
11.286	1.83	1.83	1.83	1.82	1.82	1.82	1.82
11.341	1.81	1.81	1.80	1.80	1.80	1.79	1.79
11.395	1.79	1.78	1.78	1.78	1.77	1.77	1.77
11.449	1.76	1.76	1.76	1.75	1.75	1.74	1.74
11.504	1.74	1.74	1.73	1.73	1.73	1.72	1.72
11.558	1.72	1.71	1.71	1.70	1.70	1.70	1.69
11.612	1.69	1.69	1.69	1.68	1.68	1.68	1.67
11.667	1.67	1.66	1.66	1.66	1.65	1.65	1.65

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
11.721	1.64	1.64	1.64	1.63	1.63	1.63	1.62
11.776	1.62	1.62	1.61	1.61	1.60	1.60	1.60
11.830	1.60	1.59	1.59	1.59	1.58	1.58	1.57
11.884	1.57	1.57	1.56	1.56	1.56	1.55	1.55
11.939	1.55	1.55	1.54	1.54	1.53	1.53	1.53
11.993	1.52	1.52	1.52	1.51	1.51	1.51	1.50

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.008 hr (cfs)	----- (cfs)	----- (cfs)
12.047	1.50	1.50	1.50	1.49	1.49	1.49	1.48
12.102	1.48	1.48	1.47	1.47	1.47	1.47	1.47
12.156	1.46	1.46	1.46	1.46	1.45	1.45	1.45
12.211	1.45	1.44	1.44	1.44	1.44	1.44	1.43
12.265	1.43	1.43	1.43	1.42	1.42	1.42	1.42
12.319	1.42	1.41	1.41	1.41	1.41	1.41	1.40
12.374	1.40	1.40	1.40	1.39	1.39	1.39	1.39
12.428	1.39	1.38	1.38	1.38	1.38	1.38	1.37
12.482	1.37	1.37	1.37	1.36	1.36	1.36	1.36
12.537	1.36	1.35	1.35	1.35	1.35	1.35	1.34
12.591	1.34	1.34	1.34	1.33	1.33	1.33	1.33
12.646	1.33	1.32	1.32	1.32	1.32	1.31	1.31
12.700	1.31	1.31	1.31	1.30	1.30	1.30	1.30
12.754	1.30	1.29	1.29	1.29	1.29	1.28	1.28
12.809	1.28	1.28	1.28	1.28	1.27	1.27	1.27
12.863	1.27	1.26	1.26	1.26	1.26	1.25	1.25
12.918	1.25	1.25	1.25	1.25	1.24	1.24	1.24
12.972	1.24	1.23	1.23	1.23	1.23	1.22	1.22
13.026	1.22	1.22	1.22	1.22	1.21	1.21	1.21
13.081	1.21	1.20	1.20	1.20	1.20	1.19	1.19
13.135	1.19	1.19	1.19	1.18	1.18	1.18	1.18
13.189	1.17	1.17	1.17	1.17	1.17	1.17	1.16

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
13.244	1.16	1.16	1.16	1.15	1.15	1.15	1.15
13.298	1.14	1.14	1.14	1.14	1.14	1.14	1.13
13.353	1.13	1.13	1.13	1.12	1.12	1.12	1.12
13.407	1.11	1.11	1.11	1.11	1.11	1.11	1.10
13.461	1.10	1.10	1.10	1.09	1.09	1.09	1.09
13.516	1.08	1.08	1.08	1.08	1.08	1.07	1.07
13.570	1.07	1.07	1.06	1.06	1.06	1.06	1.06
13.624	1.05	1.05	1.05	1.05	1.05	1.04	1.04
13.679	1.04	1.04	1.03	1.03	1.03	1.03	1.03
13.733	1.03	1.02	1.02	1.02	1.02	1.01	1.01
13.788	1.01	1.01	1.00	1.00	1.00	1.00	1.00
13.842	0.99	0.99	0.99	0.99	0.99	0.98	0.98
13.896	0.98	0.98	0.97	0.97	0.97	0.97	0.97
13.951	0.96	0.96	0.96	0.96	0.95	0.95	0.95
14.005	0.95	0.95	0.94	0.94	0.94	0.94	0.94
14.059	0.94	0.93	0.93	0.93	0.93	0.93	0.93
14.114	0.93	0.93	0.92	0.92	0.92	0.92	0.92
14.168	0.92	0.92	0.92	0.92	0.92	0.92	0.92
14.223	0.92	0.92	0.92	0.92	0.91	0.91	0.91
14.277	0.91	0.91	0.91	0.91	0.91	0.91	0.91
14.331	0.91	0.91	0.91	0.91	0.91	0.91	0.91
14.386	0.91	0.91	0.91	0.91	0.91	0.91	0.90
14.440	0.90	0.90	0.90	0.90	0.90	0.90	0.90
14.495	0.90	0.90	0.90	0.90	0.90	0.90	0.90
14.549	0.90	0.90	0.90	0.90	0.90	0.90	0.90
14.603	0.90	0.89	0.89	0.89	0.89	0.89	0.89
14.658	0.89	0.89	0.89	0.89	0.89	0.89	0.89
14.712	0.89	0.89	0.89	0.89	0.89	0.89	0.89
14.766	0.89	0.89	0.89	0.88	0.88	0.88	0.88

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Brea Mall
Post-Development

Line	Start Time	Flow	Values @ time increment of 0.008 hr			
	(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

14.821	0.88	0.88	0.88	0.88	0.88	0.88	0.88
14.875	0.88	0.88	0.88	0.88	0.88	0.88	0.88
14.930	0.88	0.88	0.88	0.88	0.88	0.88	0.87
14.984	0.87	0.87	0.87	0.87	0.87	0.87	0.87
15.038	0.87	0.87	0.87	0.87	0.87	0.87	0.87
15.093	0.87	0.87	0.87	0.87	0.87	0.87	0.87
15.147	0.87	0.86	0.86	0.86	0.86	0.86	0.86
15.201	0.86	0.86	0.86	0.86	0.86	0.86	0.86
15.256	0.86	0.86	0.86	0.86	0.86	0.86	0.86
15.310	0.86	0.86	0.86	0.86	0.85	0.85	0.85
15.365	0.85	0.85	0.85	0.85	0.85	0.85	0.85
15.419	0.85	0.85	0.85	0.85	0.85	0.85	0.85
15.473	0.85	0.85	0.85	0.85	0.85	0.85	0.84
15.528	0.84	0.84	0.84	0.84	0.84	0.84	0.84
15.582	0.84	0.84	0.84	0.84	0.84	0.84	0.84
15.636	0.84	0.84	0.84	0.84	0.84	0.84	0.84
15.691	0.84	0.83	0.83	0.83	0.83	0.83	0.83
15.745	0.83	0.83	0.83	0.83	0.83	0.83	0.83
15.800	0.83	0.83	0.83	0.83	0.83	0.83	0.83
15.854	0.83	0.83	0.83	0.82	0.82	0.82	0.82
15.908	0.82	0.82	0.82	0.82	0.82	0.82	0.82
15.963	0.82	0.82	0.82	0.82	0.82	0.82	0.82
16.017	0.82	0.82	0.82	0.82	0.82	0.82	0.81
16.072	0.81	0.81	0.81	0.81	0.81	0.81	0.81
16.126	0.81	0.81	0.81	0.81	0.81	0.81	0.81
16.180	0.81	0.81	0.81	0.81	0.81	0.81	0.81
16.235	0.81	0.80	0.80	0.80	0.80	0.80	0.80
16.289	0.80	0.80	0.80	0.80	0.80	0.80	0.80
16.343	0.80	0.80	0.80	0.80	0.80	0.80	0.80
16.398	0.80	0.80	0.80	0.79	0.79	0.79	0.79
16.452	0.79	0.79	0.79	0.79	0.79	0.79	0.79
16.507	0.79	0.79	0.79	0.79	0.79	0.79	0.79
16.561	0.79	0.79	0.79	0.79	0.79	0.78	0.78
16.615	0.78	0.78	0.78	0.78	0.78	0.78	0.78
16.670	0.78	0.78	0.78	0.78	0.78	0.78	0.78
16.724	0.78	0.78	0.78	0.78	0.78	0.78	0.78
16.778	0.77	0.77	0.77	0.77	0.77	0.77	0.77

WinTR-20: Version 1.10

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Mall

(continued)

Post-Development

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet		.02144	98.	.123	
	DMA #2	Outlet		.00639	98.	.1	
16.833	0.77	0.77	0.77	0.77	0.77	0.77	0.77
16.887	0.77	0.77	0.77	0.77	0.77	0.77	0.77
16.942	0.77	0.77	0.77	0.76	0.76	0.76	0.76
16.996	0.76	0.76	0.76	0.76	0.76	0.76	0.76
17.050	0.76	0.76	0.76	0.76	0.76	0.76	0.76
17.105	0.76	0.76	0.76	0.76	0.76	0.75	0.75
17.159	0.75	0.75	0.75	0.75	0.75	0.75	0.75
17.213	0.75	0.75	0.75	0.75	0.75	0.75	0.75
17.268	0.75	0.75	0.75	0.75	0.75	0.75	0.75
17.322	0.74	0.74	0.74	0.74	0.74	0.74	0.74
17.377	0.74	0.74	0.74	0.74	0.74	0.74	0.74
17.431	0.74	0.74	0.74	0.74	0.74	0.74	0.74
17.485	0.74	0.73	0.73	0.73	0.73	0.73	0.73
17.540	0.73	0.73	0.73	0.73	0.73	0.73	0.73

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow Values @ time increment of 0.008 hr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
17.594	0.73	0.73	0.73	0.73	0.73	0.73	0.73
17.648	0.73	0.73	0.73	0.73	0.72	0.72	0.72
17.703	0.72	0.72	0.72	0.72	0.72	0.72	0.72
17.757	0.72	0.72	0.72	0.72	0.72	0.72	0.72
17.812	0.72	0.72	0.72	0.72	0.72	0.72	0.71
17.866	0.71	0.71	0.71	0.71	0.71	0.71	0.71
17.920	0.71	0.71	0.71	0.71	0.71	0.71	0.71
17.975	0.71	0.71	0.71	0.71	0.71	0.71	0.71
18.029	0.71	0.71	0.70	0.70	0.70	0.70	0.70
18.084	0.70	0.70	0.70	0.70	0.70	0.70	0.70
18.138	0.70	0.70	0.70	0.70	0.70	0.70	0.70
18.192	0.70	0.70	0.70	0.69	0.69	0.69	0.69
18.247	0.69	0.69	0.69	0.69	0.69	0.69	0.69
18.301	0.69	0.69	0.69	0.69	0.69	0.69	0.69

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Mall

(continued)

Post-Development

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
18.355	0.69	0.69	0.69	0.69	0.69	0.68	0.68
18.410	0.68	0.68	0.68	0.68	0.68	0.68	0.68
18.464	0.68	0.68	0.68	0.68	0.68	0.68	0.68
18.519	0.68	0.68	0.68	0.68	0.68	0.68	0.68
18.573	0.67	0.67	0.67	0.67	0.67	0.67	0.67
18.627	0.67	0.67	0.67	0.67	0.67	0.67	0.67
18.682	0.67	0.67	0.67	0.67	0.67	0.67	0.67
18.736	0.67	0.67	0.67	0.66	0.66	0.66	0.66
18.790	0.66	0.66	0.66	0.66	0.66	0.66	0.66
18.845	0.66	0.66	0.66	0.66	0.66	0.66	0.66
18.899	0.66	0.66	0.66	0.66	0.66	0.65	0.65
18.954	0.65	0.65	0.65	0.65	0.65	0.65	0.65
19.008	0.65	0.65	0.65	0.65	0.65	0.65	0.65
19.062	0.65	0.65	0.65	0.65	0.65	0.65	0.64
19.117	0.64	0.64	0.64	0.64	0.64	0.64	0.64
19.171	0.64	0.64	0.64	0.64	0.64	0.64	0.64
19.225	0.64	0.64	0.64	0.64	0.64	0.64	0.64
19.280	0.64	0.63	0.63	0.63	0.63	0.63	0.63
19.334	0.63	0.63	0.63	0.63	0.63	0.63	0.63
19.389	0.63	0.63	0.63	0.63	0.63	0.63	0.63
19.443	0.63	0.63	0.63	0.63	0.62	0.62	0.62
19.497	0.62	0.62	0.62	0.62	0.62	0.62	0.62
19.552	0.62	0.62	0.62	0.62	0.62	0.62	0.62
19.606	0.62	0.62	0.62	0.62	0.62	0.62	0.61
19.661	0.61	0.61	0.61	0.61	0.61	0.61	0.61
19.715	0.61	0.61	0.61	0.61	0.61	0.61	0.61
19.769	0.61	0.61	0.61	0.61	0.61	0.61	0.61
19.824	0.61	0.60	0.60	0.60	0.60	0.60	0.60
19.878	0.60	0.60	0.60	0.60	0.60	0.60	0.60
19.932	0.60	0.60	0.60	0.60	0.60	0.60	0.60
19.987	0.60	0.60	0.59	0.59	0.59	0.59	0.59
20.041	0.59	0.59	0.59	0.59	0.59	0.59	0.59
20.096	0.59	0.59	0.59	0.59	0.59	0.59	0.59
20.150	0.59	0.59	0.59	0.59	0.59	0.58	0.58
20.204	0.58	0.58	0.58	0.58	0.58	0.58	0.58
20.259	0.58	0.58	0.58	0.58	0.58	0.58	0.58
20.313	0.58	0.58	0.58	0.58	0.58	0.58	0.58

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.008 hr (cfs)	----- (cfs)	----- (cfs)
20.367	0.57	0.57	0.57	0.57	0.57	0.57	0.57
20.422	0.57	0.57	0.57	0.57	0.57	0.57	0.57
20.476	0.57	0.57	0.57	0.57	0.57	0.57	0.57
20.531	0.57	0.57	0.56	0.56	0.56	0.56	0.56
20.585	0.56	0.56	0.56	0.56	0.56	0.56	0.56
20.639	0.56	0.56	0.56	0.56	0.56	0.56	0.56
20.694	0.56	0.56	0.56	0.56	0.55	0.55	0.55
20.748	0.55	0.55	0.55	0.55	0.55	0.55	0.55
20.802	0.55	0.55	0.55	0.55	0.55	0.55	0.55
20.857	0.55	0.55	0.55	0.55	0.55	0.54	0.54
20.911	0.54	0.54	0.54	0.54	0.54	0.54	0.54
20.966	0.54	0.54	0.54	0.54	0.54	0.54	0.54
21.020	0.54	0.54	0.54	0.54	0.54	0.54	0.54
21.074	0.54	0.53	0.53	0.53	0.53	0.53	0.53
21.129	0.53	0.53	0.53	0.53	0.53	0.53	0.53
21.183	0.53	0.53	0.53	0.53	0.53	0.53	0.53
21.238	0.53	0.53	0.53	0.52	0.52	0.52	0.52
21.292	0.52	0.52	0.52	0.52	0.52	0.52	0.52
21.346	0.52	0.52	0.52	0.52	0.52	0.52	0.52
21.401	0.52	0.52	0.52	0.52	0.52	0.51	0.51
21.455	0.51	0.51	0.51	0.51	0.51	0.51	0.51
21.509	0.51	0.51	0.51	0.51	0.51	0.51	0.51
21.564	0.51	0.51	0.51	0.51	0.51	0.51	0.51
21.618	0.50	0.50	0.50	0.50	0.50	0.50	0.50
21.673	0.50	0.50	0.50	0.50	0.50	0.50	0.50
21.727	0.50	0.50	0.50	0.50	0.50	0.50	0.50
21.781	0.50	0.49	0.49	0.49	0.49	0.49	0.49
21.836	0.49	0.49	0.49	0.49	0.49	0.49	0.49
21.890	0.49	0.49	0.49	0.49	0.49	0.49	0.49

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet					
	DMA #2	Outlet					
			.02144	98.	.123		
			.00639	98.	.1		
21.944	0.49	0.49	0.49	0.49	0.48	0.48	0.48
21.999	0.48	0.48	0.48	0.48	0.48	0.48	0.48
22.053	0.48	0.48	0.48	0.48	0.48	0.48	0.48
22.108	0.48	0.48	0.48	0.48	0.48	0.48	0.47
22.162	0.47	0.47	0.47	0.47	0.47	0.47	0.47
22.216	0.47	0.47	0.47	0.47	0.47	0.47	0.47
22.271	0.47	0.47	0.47	0.47	0.47	0.47	0.47
22.325	0.47	0.46	0.46	0.46	0.46	0.46	0.46
22.379	0.46	0.46	0.46	0.46	0.46	0.46	0.46
22.434	0.46	0.46	0.46	0.46	0.46	0.46	0.46
22.488	0.46	0.46	0.45	0.45	0.45	0.45	0.45
22.543	0.45	0.45	0.45	0.45	0.45	0.45	0.45
22.597	0.45	0.45	0.45	0.45	0.45	0.45	0.45
22.651	0.45	0.45	0.45	0.45	0.44	0.44	0.44
22.706	0.44	0.44	0.44	0.44	0.44	0.44	0.44
22.760	0.44	0.44	0.44	0.44	0.44	0.44	0.44
22.814	0.44	0.44	0.44	0.44	0.44	0.44	0.43
22.869	0.43	0.43	0.43	0.43	0.43	0.43	0.43
22.923	0.43	0.43	0.43	0.43	0.43	0.43	0.43
22.978	0.43	0.43	0.43	0.43	0.43	0.43	0.43
23.032	0.43	0.43	0.42	0.42	0.42	0.42	0.42
23.086	0.42	0.42	0.42	0.42	0.42	0.42	0.42

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Brea Mall
Post-Development

Line	Start Time	Flow	Values @ time	increment	of 0.008 hr		
	(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
	23.141	0.42	0.42	0.42	0.42	0.42	0.42
	23.195	0.42	0.42	0.42	0.41	0.41	0.41
	23.250	0.41	0.41	0.41	0.41	0.41	0.41
	23.304	0.41	0.41	0.41	0.41	0.41	0.41
	23.358	0.41	0.41	0.41	0.41	0.40	0.40
	23.413	0.40	0.40	0.40	0.40	0.40	0.40

WinTR-20: Version 1.10

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Mall

(continued)

Post-Development

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet		.02144	98.	.123		
	DMA #2	Outlet		.00639	98.	.1		
23.467	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
23.521	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
23.576	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
23.630	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
23.685	0.39	0.39	0.39	0.39	0.39	0.39	0.39	0.39
23.739	0.39	0.39	0.38	0.38	0.38	0.38	0.38	0.38
23.793	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
23.848	0.38	0.38	0.38	0.38	0.38	0.38	0.38	0.38
23.902	0.38	0.38	0.38	0.38	0.38	0.37	0.37	0.37
23.956	0.37	0.37	0.37	0.37	0.37	0.37	0.37	0.37
24.011	0.37	0.36	0.36	0.35	0.33	0.31	0.29	0.29
24.065	0.26	0.23	0.21	0.18	0.15	0.13	0.11	0.11
24.120	0.09	0.08	0.07	0.06				

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
DMA #2	0.006		1.816		9.93	5.69	890.55

Line Start Time (hr)	Flow Values @ time increment of 0.006 hr	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
2.410	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2.454	0.05	0.05	0.05	0.05	0.05	0.05	0.05
2.498	0.05	0.05	0.05	0.05	0.05	0.05	0.06
2.543	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2.587	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2.631	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2.675	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2.720	0.06	0.06	0.06	0.06	0.06	0.06	0.06
2.764	0.06	0.06	0.07	0.07	0.07	0.07	0.07
2.808	0.07	0.07	0.07	0.07	0.07	0.07	0.07
2.852	0.07	0.07	0.07	0.07	0.07	0.07	0.07
2.896	0.07	0.07	0.07	0.07	0.07	0.07	0.07
2.941	0.07	0.07	0.07	0.07	0.07	0.07	0.07
2.985	0.07	0.07	0.07	0.07	0.07	0.07	0.08

WinTR-20: Version 1.10
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0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet							
DMA #2	Outlet							
		.02144	98.	.123				
		.00639	98.	.1				
3.029	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.073	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.117	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.162	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.206	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
3.250	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.09
3.294	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09

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Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
3.338	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3.383	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3.427	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3.471	0.09	0.09	0.09	0.09	0.09	0.09	0.09
3.515	0.09	0.09	0.10	0.10	0.10	0.10	0.10
3.560	0.10	0.10	0.10	0.10	0.10	0.10	0.10
3.604	0.10	0.10	0.10	0.10	0.10	0.10	0.10
3.648	0.10	0.10	0.10	0.10	0.10	0.10	0.10
3.692	0.10	0.10	0.10	0.10	0.10	0.10	0.10
3.736	0.10	0.10	0.10	0.10	0.10	0.10	0.11
3.781	0.11	0.11	0.11	0.11	0.11	0.11	0.11
3.825	0.11	0.11	0.11	0.11	0.11	0.11	0.11
3.869	0.11	0.11	0.11	0.11	0.11	0.11	0.11
3.913	0.11	0.11	0.11	0.11	0.11	0.11	0.11
3.957	0.11	0.11	0.11	0.11	0.11	0.11	0.11
4.002	0.11	0.11	0.11	0.11	0.11	0.12	0.12
4.046	0.12	0.12	0.12	0.12	0.12	0.12	0.12
4.090	0.12	0.12	0.12	0.12	0.12	0.12	0.12
4.134	0.12	0.12	0.12	0.12	0.12	0.12	0.12
4.178	0.12	0.12	0.12	0.12	0.12	0.12	0.12
4.223	0.12	0.12	0.12	0.12	0.12	0.12	0.12

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(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123			
DMA #2	Outlet		.00639	98.	.1			
4.267	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
4.311	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
4.355	0.12	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.400	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.444	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.488	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.532	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.576	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.621	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.665	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
4.709	0.13	0.13	0.13	0.13	0.13	0.14	0.14	0.14
4.753	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.797	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.842	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.886	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.930	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
4.974	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
5.018	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
5.063	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
5.107	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.15
5.151	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.195	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.240	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.284	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.328	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.372	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.416	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.461	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.505	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
5.549	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.16

Brea Mall
Post-Development

Line
Start Time ----- Flow Values @ time increment of 0.006 hr -----

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(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
5.593	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.637	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.682	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.726	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.770	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.814	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.858	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.903	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.947	0.16	0.16	0.16	0.16	0.16	0.16	0.16
5.991	0.16	0.16	0.16	0.16	0.16	0.16	0.16
6.035	0.16	0.16	0.17	0.17	0.17	0.17	0.17
6.080	0.17	0.17	0.17	0.17	0.17	0.17	0.17
6.124	0.17	0.17	0.17	0.17	0.17	0.17	0.17
6.168	0.17	0.17	0.17	0.17	0.18	0.18	0.18
6.212	0.18	0.18	0.18	0.18	0.18	0.18	0.18
6.256	0.18	0.18	0.18	0.18	0.18	0.18	0.18
6.301	0.18	0.18	0.18	0.19	0.19	0.19	0.19
6.345	0.19	0.19	0.19	0.19	0.19	0.19	0.19
6.389	0.19	0.19	0.19	0.19	0.19	0.19	0.19
6.433	0.19	0.19	0.20	0.20	0.20	0.20	0.20
6.477	0.20	0.20	0.20	0.20	0.20	0.20	0.20
6.522	0.20	0.20	0.20	0.20	0.20	0.21	0.21
6.566	0.21	0.21	0.21	0.21	0.21	0.21	0.21
6.610	0.21	0.21	0.21	0.21	0.21	0.21	0.21
6.654	0.21	0.22	0.22	0.22	0.22	0.22	0.22
6.698	0.22	0.22	0.22	0.22	0.22	0.22	0.22
6.743	0.22	0.22	0.22	0.22	0.23	0.23	0.23
6.787	0.23	0.23	0.23	0.23	0.23	0.23	0.23
6.831	0.23	0.23	0.23	0.23	0.23	0.23	0.23
6.875	0.23	0.23	0.24	0.24	0.24	0.24	0.24
6.920	0.24	0.24	0.24	0.24	0.24	0.24	0.24
6.964	0.24	0.24	0.24	0.24	0.25	0.25	0.25
7.008	0.25	0.25	0.25	0.25	0.25	0.25	0.25
7.052	0.25	0.25	0.25	0.25	0.25	0.25	0.25
7.096	0.25	0.25	0.25	0.25	0.25	0.25	0.25
7.141	0.26	0.26	0.26	0.26	0.26	0.26	0.26

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Mall

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
7.185	0.26	0.26	0.26	0.26	0.26	0.26	0.26
7.229	0.26	0.26	0.26	0.26	0.26	0.26	0.26
7.273	0.26	0.26	0.26	0.26	0.26	0.26	0.26
7.317	0.26	0.26	0.26	0.26	0.26	0.26	0.26
7.362	0.26	0.26	0.26	0.26	0.27	0.27	0.27
7.406	0.27	0.27	0.27	0.27	0.27	0.27	0.27
7.450	0.27	0.27	0.27	0.27	0.27	0.27	0.27
7.494	0.27	0.27	0.27	0.27	0.27	0.27	0.27
7.538	0.27	0.27	0.27	0.27	0.27	0.27	0.27
7.583	0.27	0.27	0.27	0.27	0.27	0.27	0.27
7.627	0.27	0.27	0.27	0.27	0.27	0.27	0.28
7.671	0.28	0.28	0.28	0.28	0.28	0.28	0.28
7.715	0.28	0.28	0.28	0.28	0.28	0.28	0.28
7.760	0.28	0.28	0.28	0.28	0.28	0.28	0.28
7.804	0.28	0.28	0.28	0.28	0.28	0.28	0.28

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Post-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time (hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
7.848	0.28	0.28	0.28	0.28	0.28	0.28	0.28
7.892	0.28	0.28	0.28	0.28	0.28	0.29	0.29
7.936	0.29	0.29	0.29	0.29	0.29	0.29	0.29
7.981	0.29	0.29	0.29	0.29	0.29	0.29	0.29
8.025	0.29	0.29	0.29	0.29	0.29	0.29	0.30
8.069	0.30	0.30	0.30	0.30	0.30	0.30	0.30
8.113	0.30	0.30	0.31	0.31	0.31	0.31	0.31
8.157	0.32	0.32	0.32	0.32	0.33	0.33	0.33
8.202	0.33	0.33	0.33	0.33	0.34	0.34	0.34
8.246	0.34	0.35	0.35	0.35	0.35	0.36	0.36
8.290	0.36	0.36	0.36	0.36	0.37	0.37	0.37
8.334	0.37	0.37	0.38	0.38	0.38	0.38	0.39
8.378	0.39	0.39	0.39	0.40	0.40	0.40	0.40

WinTR-20: Version 1.10
Mall
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(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
8.423	0.40	0.40	0.40	0.41	0.41	0.41	0.41
8.467	0.42	0.42	0.42	0.42	0.43	0.43	0.43
8.511	0.43	0.43	0.43	0.44	0.44	0.44	0.44
8.555	0.45	0.45	0.45	0.45	0.46	0.46	0.46
8.600	0.46	0.46	0.46	0.47	0.47	0.47	0.47
8.644	0.47	0.48	0.48	0.48	0.48	0.49	0.49
8.688	0.49	0.49	0.49	0.49	0.50	0.50	0.50
8.732	0.50	0.50	0.51	0.51	0.51	0.51	0.52
8.776	0.52	0.52	0.52	0.52	0.52	0.53	0.53
8.821	0.53	0.53	0.53	0.53	0.54	0.54	0.54
8.865	0.54	0.55	0.55	0.55	0.55	0.56	0.56
8.909	0.56	0.56	0.56	0.56	0.56	0.57	0.57
8.953	0.57	0.57	0.58	0.58	0.58	0.58	0.59
8.997	0.59	0.59	0.59	0.59	0.59	0.60	0.60
9.042	0.60	0.61	0.61	0.61	0.62	0.62	0.62
9.086	0.63	0.63	0.63	0.63	0.63	0.64	0.64
9.130	0.64	0.65	0.65	0.65	0.66	0.66	0.67
9.174	0.67	0.68	0.68	0.68	0.69	0.69	0.69
9.218	0.69	0.70	0.70	0.71	0.71	0.71	0.72
9.263	0.72	0.73	0.73	0.74	0.74	0.75	0.75
9.307	0.75	0.75	0.76	0.76	0.76	0.77	0.77
9.351	0.78	0.78	0.79	0.79	0.80	0.80	0.80
9.395	0.81	0.81	0.81	0.82	0.82	0.82	0.82
9.440	0.83	0.83	0.84	0.84	0.85	0.85	0.86
9.484	0.86	0.87	0.87	0.87	0.88	0.88	0.89
9.528	0.90	0.92	0.95	0.97	1.00	1.03	1.07
9.572	1.10	1.12	1.15	1.17	1.19	1.21	1.23
9.616	1.25	1.27	1.30	1.34	1.39	1.45	1.51
9.661	1.57	1.63	1.69	1.74	1.79	1.84	1.87
9.705	1.90	1.94	1.98	2.02	2.08	2.16	2.25
9.749	2.35	2.45	2.56	2.66	2.76	2.85	2.94
9.793	3.01	3.07	3.13	3.19	3.27	3.36	3.48
9.837	3.63	3.81	4.01	4.23	4.44	4.65	4.85
9.882	5.03	5.20	5.34	5.46	5.56	5.63	5.67
9.926	5.69	5.67	5.63	5.55	5.45	5.33	5.22
9.970	5.10	4.98	4.88	4.78	4.70	4.63	4.56
10.014	4.49	4.40	4.29	4.15	3.98	3.77	3.56
10.058	3.33	3.10	2.89	2.68	2.50	2.33	2.18

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(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
10.103	2.07	1.97	1.88	1.81	1.74	1.69	1.63
10.147	1.59	1.54	1.51	1.47	1.44	1.42	1.39
10.191	1.37	1.36	1.34	1.33	1.32	1.31	1.30
10.235	1.28	1.27	1.26	1.24	1.23	1.21	1.20
10.280	1.19	1.18	1.17	1.16	1.15	1.15	1.14
10.324	1.14	1.13	1.12	1.11	1.10	1.08	1.07
10.368	1.06	1.05	1.04	1.03	1.02	1.01	1.01
10.412	1.00	0.99	0.99	0.98	0.97	0.96	0.95
10.456	0.93	0.92	0.91	0.90	0.89	0.88	0.87
10.501	0.86	0.86	0.85	0.85	0.84	0.83	0.83
10.545	0.82	0.81	0.80	0.79	0.79	0.78	0.77
10.589	0.77	0.76	0.76	0.75	0.75	0.75	0.74
10.633	0.74	0.74	0.73	0.73	0.73	0.72	0.72
10.677	0.72	0.71	0.71	0.71	0.71	0.71	0.70
10.722	0.70	0.70	0.70	0.70	0.69	0.69	0.69
10.766	0.68	0.68	0.68	0.68	0.67	0.67	0.67
10.810	0.67	0.67	0.67	0.66	0.66	0.66	0.66
10.854	0.65	0.65	0.65	0.64	0.64	0.64	0.64
10.898	0.64	0.63	0.63	0.63	0.63	0.63	0.63
10.943	0.62	0.62	0.62	0.61	0.61	0.61	0.61
10.987	0.60	0.60	0.60	0.60	0.60	0.59	0.59
11.031	0.59	0.59	0.59	0.59	0.58	0.58	0.58
11.075	0.58	0.58	0.57	0.57	0.57	0.57	0.57
11.120	0.57	0.57	0.57	0.57	0.56	0.56	0.56
11.164	0.56	0.56	0.56	0.56	0.56	0.56	0.56
11.208	0.55	0.55	0.55	0.55	0.55	0.55	0.55
11.252	0.55	0.55	0.55	0.55	0.54	0.54	0.54
11.296	0.54	0.54	0.54	0.54	0.54	0.54	0.54

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Mall

(continued)

Post-Development

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
11.341	0.54	0.54	0.54	0.53	0.53	0.53	0.53
11.385	0.53	0.53	0.53	0.53	0.53	0.53	0.53
11.429	0.53	0.53	0.52	0.52	0.52	0.52	0.52
11.473	0.52	0.52	0.52	0.52	0.52	0.52	0.52
11.517	0.51	0.51	0.51	0.51	0.51	0.51	0.51
11.562	0.51	0.51	0.51	0.51	0.50	0.50	0.50
11.606	0.50	0.50	0.50	0.50	0.50	0.50	0.50
11.650	0.50	0.50	0.49	0.49	0.49	0.49	0.49
11.694	0.49	0.49	0.49	0.49	0.49	0.49	0.49
11.738	0.49	0.48	0.48	0.48	0.48	0.48	0.48
11.783	0.48	0.48	0.48	0.48	0.48	0.48	0.47
11.827	0.47	0.47	0.47	0.47	0.47	0.47	0.47
11.871	0.47	0.47	0.47	0.46	0.46	0.46	0.46
11.915	0.46	0.46	0.46	0.46	0.46	0.46	0.46
11.960	0.46	0.45	0.45	0.45	0.45	0.45	0.45
12.004	0.45	0.45	0.45	0.45	0.45	0.45	0.45
12.048	0.45	0.44	0.44	0.44	0.44	0.44	0.44
12.092	0.44	0.44	0.44	0.44	0.44	0.44	0.44
12.136	0.44	0.44	0.44	0.43	0.43	0.43	0.43
12.181	0.43	0.43	0.43	0.43	0.43	0.43	0.43
12.225	0.43	0.43	0.43	0.43	0.43	0.43	0.43
12.269	0.42	0.42	0.42	0.42	0.42	0.42	0.42
12.313	0.42	0.42	0.42	0.42	0.42	0.42	0.42

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
12.357	0.42	0.42	0.42	0.42	0.41	0.41	0.41
12.402	0.41	0.41	0.41	0.41	0.41	0.41	0.41
12.446	0.41	0.41	0.41	0.41	0.41	0.41	0.41
12.490	0.41	0.41	0.41	0.41	0.40	0.40	0.40
12.534	0.40	0.40	0.40	0.40	0.40	0.40	0.40

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
12.578	0.40	0.40	0.40	0.40	0.40	0.40	0.40
12.623	0.40	0.40	0.40	0.39	0.39	0.39	0.39
12.667	0.39	0.39	0.39	0.39	0.39	0.39	0.39
12.711	0.39	0.39	0.39	0.39	0.39	0.39	0.39
12.755	0.38	0.38	0.38	0.38	0.38	0.38	0.38
12.800	0.38	0.38	0.38	0.38	0.38	0.38	0.38
12.844	0.38	0.38	0.38	0.38	0.38	0.37	0.37
12.888	0.37	0.37	0.37	0.37	0.37	0.37	0.37
12.932	0.37	0.37	0.37	0.37	0.37	0.37	0.37
12.976	0.37	0.37	0.36	0.36	0.36	0.36	0.36
13.021	0.36	0.36	0.36	0.36	0.36	0.36	0.36
13.065	0.36	0.36	0.36	0.36	0.36	0.36	0.36
13.109	0.36	0.36	0.35	0.35	0.35	0.35	0.35
13.153	0.35	0.35	0.35	0.35	0.35	0.35	0.35
13.197	0.35	0.35	0.35	0.35	0.35	0.35	0.35
13.242	0.34	0.34	0.34	0.34	0.34	0.34	0.34
13.286	0.34	0.34	0.34	0.34	0.34	0.34	0.34
13.330	0.34	0.34	0.34	0.34	0.34	0.33	0.33
13.374	0.33	0.33	0.33	0.33	0.33	0.33	0.33
13.418	0.33	0.33	0.33	0.33	0.33	0.33	0.33
13.463	0.33	0.33	0.32	0.32	0.32	0.32	0.32
13.507	0.32	0.32	0.32	0.32	0.32	0.32	0.32
13.551	0.32	0.32	0.32	0.32	0.32	0.32	0.32
13.595	0.31	0.31	0.31	0.31	0.31	0.31	0.31
13.640	0.31	0.31	0.31	0.31	0.31	0.31	0.31
13.684	0.31	0.31	0.31	0.31	0.31	0.31	0.31
13.728	0.30	0.30	0.30	0.30	0.30	0.30	0.30
13.772	0.30	0.30	0.30	0.30	0.30	0.30	0.30
13.816	0.30	0.30	0.30	0.30	0.30	0.29	0.29
13.861	0.29	0.29	0.29	0.29	0.29	0.29	0.29
13.905	0.29	0.29	0.29	0.29	0.29	0.29	0.29
13.949	0.29	0.29	0.28	0.28	0.28	0.28	0.28
13.993	0.28	0.28	0.28	0.28	0.28	0.28	0.28
14.037	0.28	0.28	0.28	0.28	0.28	0.28	0.28
14.082	0.28	0.28	0.28	0.28	0.28	0.28	0.28
14.126	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.170	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.214	0.27	0.27	0.27	0.27	0.27	0.27	0.27

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Mall

(continued)

Post-Development

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

14.258	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.303	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.347	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.391	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.435	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.480	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.524	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.568	0.27	0.27	0.27	0.27	0.27	0.27	0.27

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
14.612	0.27	0.27	0.27	0.27	0.27	0.27	0.27
14.656	0.27	0.27	0.27	0.27	0.27	0.27	0.26
14.701	0.26	0.26	0.26	0.26	0.26	0.26	0.26
14.745	0.26	0.26	0.26	0.26	0.26	0.26	0.26
14.789	0.26	0.26	0.26	0.26	0.26	0.26	0.26
14.833	0.26	0.26	0.26	0.26	0.26	0.26	0.26
14.877	0.26	0.26	0.26	0.26	0.26	0.26	0.26
14.922	0.26	0.26	0.26	0.26	0.26	0.26	0.26
14.966	0.26	0.26	0.26	0.26	0.26	0.26	0.26
15.010	0.26	0.26	0.26	0.26	0.26	0.26	0.26
15.054	0.26	0.26	0.26	0.26	0.26	0.26	0.26
15.098	0.26	0.26	0.26	0.26	0.26	0.26	0.26
15.143	0.26	0.26	0.26	0.26	0.26	0.26	0.26
15.187	0.26	0.26	0.26	0.26	0.26	0.26	0.26
15.231	0.26	0.26	0.26	0.26	0.26	0.26	0.26
15.275	0.26	0.26	0.26	0.26	0.26	0.25	0.25
15.320	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.364	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.408	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.452	0.25	0.25	0.25	0.25	0.25	0.25	0.25

WinTR-20: Version 1.10
Mall
Post-Development

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(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123			
	DMA #2	Outlet	.00639	98.	.1			
15.496	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.541	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.585	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.629	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.673	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.717	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.762	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.806	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.850	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
15.894	0.25	0.25	0.25	0.24	0.24	0.24	0.24	0.24
15.938	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
15.983	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.027	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.071	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.115	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.160	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.204	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.248	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.292	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.336	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.381	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.425	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.469	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
16.513	0.24	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.557	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.602	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.646	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.690	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.734	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.778	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.823	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23

Brea Mall
Post-Development

Line

WinTR-20: Version 1.10

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Mall

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Post-Development

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
16.867	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.911	0.23	0.23	0.23	0.23	0.23	0.23	0.23
16.955	0.23	0.23	0.23	0.23	0.23	0.23	0.23
17.000	0.23	0.23	0.23	0.23	0.23	0.23	0.23
17.044	0.23	0.23	0.23	0.23	0.23	0.23	0.23
17.088	0.23	0.23	0.23	0.23	0.23	0.23	0.22
17.132	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.176	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.221	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.265	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.309	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.353	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.397	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.442	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.486	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.530	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.574	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.618	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.663	0.22	0.22	0.22	0.22	0.22	0.22	0.22
17.707	0.22	0.22	0.22	0.22	0.21	0.21	0.21
17.751	0.21	0.21	0.21	0.21	0.21	0.21	0.21
17.795	0.21	0.21	0.21	0.21	0.21	0.21	0.21
17.840	0.21	0.21	0.21	0.21	0.21	0.21	0.21
17.884	0.21	0.21	0.21	0.21	0.21	0.21	0.21
17.928	0.21	0.21	0.21	0.21	0.21	0.21	0.21
17.972	0.21	0.21	0.21	0.21	0.21	0.21	0.21
18.016	0.21	0.21	0.21	0.21	0.21	0.21	0.21
18.061	0.21	0.21	0.21	0.21	0.21	0.21	0.21
18.105	0.21	0.21	0.21	0.21	0.21	0.21	0.21
18.149	0.21	0.21	0.21	0.21	0.21	0.21	0.21
18.193	0.21	0.21	0.21	0.21	0.21	0.21	0.21
18.237	0.21	0.21	0.21	0.21	0.21	0.21	0.21
18.282	0.21	0.21	0.21	0.21	0.21	0.21	0.21
18.326	0.21	0.20	0.20	0.20	0.20	0.20	0.20
18.370	0.20	0.20	0.20	0.20	0.20	0.20	0.20

WinTR-20: Version 1.10
Mall
Post-Development

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(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet					
	DMA #2	Outlet					
			.02144	98.	.123		
			.00639	98.	.1		
18.414	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.458	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.503	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.547	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.591	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.635	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.680	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.724	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.768	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.812	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.856	0.20	0.20	0.20	0.20	0.20	0.20	0.20
18.901	0.20	0.20	0.20	0.20	0.20	0.19	0.19
18.945	0.19	0.19	0.19	0.19	0.19	0.19	0.19
18.989	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.033	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.077	0.19	0.19	0.19	0.19	0.19	0.19	0.19

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Brea Mall
Post-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
(hr)							
19.122	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.166	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.210	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.254	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.298	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.343	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.387	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.431	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.475	0.19	0.19	0.19	0.19	0.19	0.19	0.19
19.520	0.19	0.19	0.19	0.18	0.18	0.18	0.18
19.564	0.18	0.18	0.18	0.18	0.18	0.18	0.18
19.608	0.18	0.18	0.18	0.18	0.18	0.18	0.18

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
19.652	0.18	0.18	0.18	0.18	0.18	0.18	0.18
19.696	0.18	0.18	0.18	0.18	0.18	0.18	0.18
19.741	0.18	0.18	0.18	0.18	0.18	0.18	0.18
19.785	0.18	0.18	0.18	0.18	0.18	0.18	0.18
19.829	0.18	0.18	0.18	0.18	0.18	0.18	0.18
19.873	0.18	0.18	0.18	0.18	0.18	0.18	0.18
19.917	0.18	0.18	0.18	0.18	0.18	0.18	0.18
19.962	0.18	0.18	0.18	0.18	0.18	0.18	0.18
20.006	0.18	0.18	0.18	0.18	0.18	0.18	0.18
20.050	0.18	0.18	0.18	0.18	0.18	0.18	0.18
20.094	0.18	0.18	0.18	0.18	0.18	0.18	0.18
20.138	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.183	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.227	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.271	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.315	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.360	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.404	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.448	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.492	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.536	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.581	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.625	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.669	0.17	0.17	0.17	0.17	0.17	0.17	0.17
20.713	0.17	0.17	0.17	0.17	0.16	0.16	0.16
20.757	0.16	0.16	0.16	0.16	0.16	0.16	0.16
20.802	0.16	0.16	0.16	0.16	0.16	0.16	0.16
20.846	0.16	0.16	0.16	0.16	0.16	0.16	0.16
20.890	0.16	0.16	0.16	0.16	0.16	0.16	0.16
20.934	0.16	0.16	0.16	0.16	0.16	0.16	0.16
20.978	0.16	0.16	0.16	0.16	0.16	0.16	0.16
21.023	0.16	0.16	0.16	0.16	0.16	0.16	0.16
21.067	0.16	0.16	0.16	0.16	0.16	0.16	0.16
21.111	0.16	0.16	0.16	0.16	0.16	0.16	0.16
21.155	0.16	0.16	0.16	0.16	0.16	0.16	0.16
21.200	0.16	0.16	0.16	0.16	0.16	0.16	0.16
21.244	0.16	0.16	0.16	0.16	0.16	0.16	0.16
21.288	0.16	0.16	0.16	0.16	0.16	0.16	0.16

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

21.332 0.15 0.15 0.15 0.15 0.15 0.15 0.15

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
21.376	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.421	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.465	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.509	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.553	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.597	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.642	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.686	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.730	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.774	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.818	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.863	0.15	0.15	0.15	0.15	0.15	0.15	0.15
21.907	0.15	0.15	0.15	0.15	0.14	0.14	0.14
21.951	0.14	0.14	0.14	0.14	0.14	0.14	0.14
21.995	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.040	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.084	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.128	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.172	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.216	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.261	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.305	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.349	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.393	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.437	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.482	0.14	0.14	0.14	0.14	0.14	0.14	0.14
22.526	0.14	0.13	0.13	0.13	0.13	0.13	0.13

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1
22.570	0.13	0.13	0.13	0.13
22.614	0.13	0.13	0.13	0.13
22.658	0.13	0.13	0.13	0.13
22.703	0.13	0.13	0.13	0.13
22.747	0.13	0.13	0.13	0.13
22.791	0.13	0.13	0.13	0.13
22.835	0.13	0.13	0.13	0.13
22.880	0.13	0.13	0.13	0.13
22.924	0.13	0.13	0.13	0.13
22.968	0.13	0.13	0.13	0.13
23.012	0.13	0.13	0.13	0.13
23.056	0.13	0.13	0.13	0.13
23.101	0.13	0.13	0.13	0.12
23.145	0.12	0.12	0.12	0.12
23.189	0.12	0.12	0.12	0.12
23.233	0.12	0.12	0.12	0.12
23.277	0.12	0.12	0.12	0.12
23.322	0.12	0.12	0.12	0.12
23.366	0.12	0.12	0.12	0.12
23.410	0.12	0.12	0.12	0.12
23.454	0.12	0.12	0.12	0.12
23.498	0.12	0.12	0.12	0.12
23.543	0.12	0.12	0.12	0.12
23.587	0.12	0.12	0.12	0.12

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Brea Mall
Post-Development

Line	Start Time	Flow	Values @ time	increment	of 0.006 hr		
	(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.631	0.12	0.12	0.12	0.12	0.12	0.12	0.12
23.675	0.12	0.12	0.12	0.12	0.12	0.12	0.12
23.720	0.12	0.11	0.11	0.11	0.11	0.11	0.11
23.764	0.11	0.11	0.11	0.11	0.11	0.11	0.11

WinTR-20: Version 1.10

0

0

0.05

Mall

(continued)

Post-Development

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet		.02144	98.	.123		
	DMA #2	Outlet		.00639	98.	.1		
23.808	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
23.852	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
23.896	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
23.941	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
23.985	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
24.029	0.10	0.10	0.09	0.08	0.08	0.07	0.06	0.06
24.073	0.05							

Area or Reach Identifier	Drainage Area (sq mi)	Rain Gage ID or Location	Runoff Amount (in)	----- Elevation (ft)	Peak Flow Time (hr)	Rate (cfs)	Rate (csm)
OUTLET	0.028		1.822		9.93	23.99	862.09

Line Start Time (hr)	----- (cfs)	Flow Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
1.557	0.05	0.05	0.05	0.05	0.06	0.06
1.602	0.06	0.06	0.06	0.06	0.06	0.06
1.646	0.06	0.07	0.07	0.07	0.07	0.07
1.690	0.07	0.07	0.07	0.07	0.07	0.08
1.734	0.08	0.08	0.08	0.08	0.08	0.08
1.778	0.08	0.08	0.08	0.09	0.09	0.09
1.823	0.09	0.09	0.09	0.09	0.09	0.09
1.867	0.09	0.10	0.10	0.10	0.10	0.10
1.911	0.10	0.10	0.10	0.10	0.10	0.11
1.955	0.11	0.11	0.11	0.11	0.11	0.11
2.000	0.11	0.11	0.11	0.11	0.11	0.12
2.044	0.12	0.12	0.12	0.12	0.12	0.12
2.088	0.12	0.12	0.12	0.12	0.13	0.13
2.132	0.13	0.13	0.13	0.13	0.13	0.13
2.176	0.13	0.13	0.14	0.14	0.14	0.14
2.221	0.14	0.14	0.14	0.14	0.14	0.15
2.265	0.15	0.15	0.15	0.15	0.15	0.15
2.309	0.15	0.15	0.15	0.15	0.16	0.16
2.353	0.16	0.16	0.16	0.16	0.16	0.16
2.397	0.16	0.16	0.22	0.22	0.22	0.22

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123			
DMA #2	Outlet		.00639	98.	.1			
2.442	0.22	0.22	0.22	0.22	0.23	0.23	0.23	
2.486	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.24
2.530	0.24	0.24	0.24	0.24	0.24	0.24	0.24	0.24
2.574	0.24	0.25	0.25	0.25	0.25	0.25	0.25	0.25
2.618	0.25	0.25	0.25	0.26	0.26	0.26	0.26	0.26
2.663	0.26	0.26	0.26	0.26	0.27	0.27	0.27	0.27
2.707	0.27	0.27	0.27	0.27	0.27	0.27	0.27	0.27
2.751	0.28	0.28	0.28	0.28	0.28	0.28	0.28	0.28
2.795	0.28	0.29	0.29	0.29	0.29	0.29	0.29	0.29

Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
2.840	0.29	0.29	0.29	0.29	0.30	0.30	0.30
2.884	0.30	0.30	0.30	0.30	0.30	0.30	0.31
2.928	0.31	0.31	0.31	0.31	0.31	0.31	0.31
2.972	0.31	0.32	0.32	0.32	0.32	0.32	0.32
3.016	0.32	0.32	0.33	0.33	0.33	0.33	0.33
3.061	0.33	0.33	0.33	0.33	0.34	0.34	0.34
3.105	0.34	0.34	0.34	0.34	0.34	0.34	0.34
3.149	0.35	0.35	0.35	0.35	0.35	0.35	0.35
3.193	0.35	0.36	0.36	0.36	0.36	0.36	0.36
3.237	0.36	0.36	0.36	0.37	0.37	0.37	0.37
3.282	0.37	0.37	0.37	0.37	0.37	0.37	0.38
3.326	0.38	0.38	0.38	0.38	0.38	0.38	0.38
3.370	0.38	0.39	0.39	0.39	0.39	0.39	0.39
3.414	0.39	0.39	0.39	0.40	0.40	0.40	0.40
3.458	0.40	0.40	0.40	0.40	0.40	0.41	0.41
3.503	0.41	0.41	0.41	0.41	0.41	0.41	0.41
3.547	0.42	0.42	0.42	0.42	0.42	0.42	0.42
3.591	0.42	0.42	0.43	0.43	0.43	0.43	0.43
3.635	0.43	0.43	0.43	0.43	0.44	0.44	0.44

WinTR-20: Version 1.10
Mall
Post-Development

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(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
3.680	0.44	0.44	0.44	0.44	0.44	0.44	0.45
3.724	0.45	0.45	0.45	0.45	0.45	0.45	0.45
3.768	0.45	0.46	0.46	0.46	0.46	0.46	0.46
3.812	0.46	0.46	0.46	0.46	0.47	0.47	0.47
3.856	0.47	0.47	0.47	0.47	0.47	0.47	0.47
3.901	0.48	0.48	0.48	0.48	0.48	0.48	0.48
3.945	0.48	0.48	0.49	0.49	0.49	0.49	0.49
3.989	0.49	0.49	0.49	0.50	0.50	0.50	0.50
4.033	0.50	0.50	0.50	0.50	0.50	0.50	0.51
4.077	0.51	0.51	0.51	0.51	0.51	0.51	0.51
4.122	0.51	0.51	0.51	0.52	0.52	0.52	0.52
4.166	0.52	0.52	0.52	0.52	0.52	0.52	0.52
4.210	0.52	0.52	0.52	0.53	0.53	0.53	0.53
4.254	0.53	0.53	0.53	0.53	0.53	0.53	0.53
4.298	0.54	0.54	0.54	0.54	0.54	0.54	0.54
4.343	0.54	0.54	0.54	0.54	0.54	0.54	0.55
4.387	0.55	0.55	0.55	0.55	0.55	0.55	0.55
4.431	0.55	0.55	0.55	0.55	0.55	0.56	0.56
4.475	0.56	0.56	0.56	0.56	0.56	0.56	0.56
4.520	0.56	0.56	0.56	0.56	0.56	0.57	0.57
4.564	0.57	0.57	0.57	0.57	0.57	0.57	0.57
4.608	0.57	0.57	0.57	0.57	0.57	0.58	0.58
4.652	0.58	0.58	0.58	0.58	0.58	0.58	0.58
4.696	0.58	0.58	0.58	0.58	0.58	0.59	0.59
4.741	0.59	0.59	0.59	0.59	0.59	0.59	0.59
4.785	0.59	0.59	0.59	0.59	0.59	0.59	0.60
4.829	0.60	0.60	0.60	0.60	0.60	0.60	0.60
4.873	0.60	0.60	0.60	0.60	0.61	0.61	0.61
4.917	0.61	0.61	0.61	0.61	0.61	0.61	0.61
4.962	0.61	0.61	0.61	0.61	0.61	0.61	0.61
5.006	0.62	0.62	0.62	0.62	0.62	0.62	0.62
5.050	0.62	0.62	0.62	0.62	0.62	0.62	0.62

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Post-Development

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
5.094	0.63	0.63	0.63	0.63	0.63	0.63	0.63
5.138	0.63	0.63	0.63	0.63	0.63	0.63	0.63
5.183	0.63	0.63	0.63	0.64	0.64	0.64	0.64
5.227	0.64	0.64	0.64	0.64	0.64	0.64	0.64
5.271	0.64	0.64	0.64	0.64	0.65	0.65	0.65
5.315	0.65	0.65	0.65	0.65	0.65	0.65	0.65
5.360	0.65	0.65	0.65	0.65	0.65	0.66	0.66
5.404	0.66	0.66	0.66	0.66	0.66	0.66	0.66
5.448	0.66	0.66	0.66	0.66	0.66	0.66	0.66
5.492	0.67	0.67	0.67	0.67	0.67	0.67	0.67
5.536	0.67	0.67	0.67	0.67	0.67	0.67	0.67
5.581	0.67	0.67	0.67	0.67	0.68	0.68	0.68
5.625	0.68	0.68	0.68	0.68	0.68	0.68	0.68
5.669	0.68	0.68	0.68	0.68	0.68	0.68	0.68
5.713	0.69	0.69	0.69	0.69	0.69	0.69	0.69
5.757	0.69	0.69	0.69	0.69	0.69	0.69	0.69
5.802	0.69	0.69	0.69	0.69	0.70	0.70	0.70
5.846	0.70	0.70	0.70	0.70	0.70	0.70	0.70
5.890	0.70	0.70	0.70	0.70	0.71	0.71	0.71
5.934	0.71	0.71	0.71	0.71	0.71	0.71	0.71
5.978	0.71	0.71	0.71	0.71	0.71	0.71	0.71
6.023	0.71	0.71	0.71	0.72	0.72	0.72	0.72
6.067	0.72	0.72	0.72	0.73	0.73	0.73	0.73
6.111	0.73	0.73	0.73	0.73	0.74	0.74	0.74
6.155	0.74	0.75	0.75	0.75	0.75	0.76	0.76
6.200	0.76	0.76	0.76	0.77	0.77	0.77	0.77
6.244	0.78	0.78	0.78	0.78	0.79	0.79	0.79
6.288	0.79	0.79	0.80	0.80	0.80	0.80	0.80
6.332	0.81	0.81	0.81	0.81	0.82	0.82	0.82
6.376	0.82	0.83	0.83	0.83	0.83	0.83	0.84
6.421	0.84	0.84	0.84	0.84	0.85	0.85	0.85
6.465	0.86	0.86	0.86	0.86	0.87	0.87	0.87
6.509	0.87	0.88	0.88	0.88	0.88	0.88	0.89
6.553	0.89	0.89	0.90	0.90	0.90	0.90	0.91

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Mall

(continued)

Post-Development

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
6.597	0.91	0.91	0.91	0.91	0.92	0.92	0.92
6.642	0.92	0.93	0.93	0.93	0.93	0.94	0.94
6.686	0.94	0.95	0.95	0.95	0.95	0.95	0.96
6.730	0.96	0.96	0.96	0.97	0.97	0.97	0.97
6.774	0.98	0.98	0.98	0.98	0.99	0.99	0.99
6.818	0.99	0.99	1.00	1.00	1.00	1.00	1.01
6.863	1.01	1.01	1.01	1.02	1.02	1.02	1.02
6.907	1.03	1.03	1.03	1.03	1.03	1.04	1.04
6.951	1.04	1.05	1.05	1.05	1.05	1.06	1.06
6.995	1.06	1.07	1.07	1.07	1.07	1.07	1.08
7.040	1.08	1.08	1.08	1.09	1.09	1.09	1.09
7.084	1.09	1.10	1.10	1.10	1.10	1.10	1.10
7.128	1.11	1.11	1.11	1.11	1.11	1.11	1.11
7.172	1.11	1.11	1.12	1.12	1.12	1.12	1.12
7.216	1.12	1.12	1.12	1.12	1.12	1.13	1.13
7.261	1.13	1.13	1.13	1.13	1.13	1.13	1.14
7.305	1.14	1.14	1.14	1.14	1.14	1.14	1.14

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
7.349	1.14	1.15	1.15	1.15	1.15	1.15	1.15
7.393	1.15	1.15	1.16	1.16	1.16	1.16	1.16
7.437	1.16	1.16	1.16	1.16	1.16	1.17	1.17
7.482	1.17	1.17	1.17	1.17	1.17	1.17	1.17
7.526	1.17	1.17	1.17	1.18	1.18	1.18	1.18
7.570	1.18	1.18	1.18	1.18	1.19	1.19	1.19
7.614	1.19	1.19	1.19	1.19	1.19	1.19	1.19
7.658	1.20	1.20	1.20	1.20	1.20	1.20	1.20
7.703	1.20	1.20	1.20	1.20	1.20	1.21	1.21
7.747	1.21	1.21	1.21	1.21	1.21	1.21	1.22
7.791	1.22	1.22	1.22	1.22	1.22	1.22	1.22

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
7.835	1.22	1.22	1.23	1.23	1.23	1.23	1.23
7.880	1.23	1.23	1.23	1.24	1.24	1.24	1.24
7.924	1.24	1.24	1.24	1.24	1.24	1.24	1.25
7.968	1.25	1.25	1.25	1.25	1.25	1.25	1.25
8.012	1.25	1.25	1.26	1.26	1.26	1.26	1.27
8.056	1.27	1.28	1.28	1.29	1.29	1.30	1.30
8.101	1.31	1.31	1.31	1.32	1.32	1.33	1.34
8.145	1.34	1.35	1.36	1.37	1.38	1.39	1.40
8.189	1.41	1.42	1.42	1.43	1.44	1.44	1.45
8.233	1.46	1.47	1.48	1.49	1.50	1.51	1.52
8.277	1.53	1.54	1.55	1.56	1.56	1.57	1.58
8.322	1.59	1.59	1.60	1.61	1.62	1.63	1.64
8.366	1.65	1.66	1.67	1.68	1.69	1.70	1.71
8.410	1.72	1.72	1.73	1.74	1.75	1.75	1.76
8.454	1.77	1.79	1.80	1.81	1.82	1.83	1.84
8.498	1.84	1.85	1.86	1.87	1.87	1.88	1.89
8.543	1.90	1.91	1.92	1.93	1.94	1.95	1.96
8.587	1.97	1.98	1.99	1.99	2.00	2.01	2.02
8.631	2.02	2.03	2.04	2.05	2.06	2.07	2.08
8.675	2.09	2.10	2.11	2.12	2.13	2.14	2.14
8.720	2.15	2.16	2.16	2.17	2.18	2.19	2.20
8.764	2.21	2.22	2.23	2.24	2.25	2.26	2.27
8.808	2.27	2.28	2.29	2.30	2.30	2.31	2.32
8.852	2.33	2.34	2.35	2.36	2.37	2.38	2.39
8.896	2.40	2.41	2.41	2.42	2.43	2.43	2.44
8.941	2.45	2.46	2.47	2.48	2.49	2.50	2.51
8.985	2.52	2.53	2.54	2.55	2.56	2.56	2.57
9.029	2.58	2.59	2.60	2.61	2.63	2.64	2.66
9.073	2.67	2.68	2.70	2.71	2.72	2.73	2.74
9.117	2.75	2.76	2.78	2.79	2.80	2.82	2.84
9.162	2.86	2.87	2.89	2.91	2.93	2.94	2.96
9.206	2.97	2.99	3.00	3.01	3.03	3.04	3.06
9.250	3.08	3.10	3.11	3.13	3.15	3.17	3.19
9.294	3.21	3.22	3.24	3.25	3.26	3.28	3.29
9.338	3.31	3.32	3.34	3.36	3.38	3.40	3.42
9.383	3.44	3.46	3.48	3.49	3.51	3.52	3.53
9.427	3.55	3.56	3.58	3.59	3.61	3.63	3.65
9.471	3.67	3.69	3.71	3.73	3.75	3.76	3.78

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123			
DMA #2	Outlet	.00639	98.	.1			
9.515	3.80	3.84	3.88	3.94	4.01	4.10	4.20
9.560	4.31	4.43	4.54	4.66	4.77	4.87	4.97

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Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
9.604	5.06	5.15	5.25	5.35	5.47	5.62	5.78
9.648	5.98	6.19	6.42	6.65	6.88	7.11	7.32
9.692	7.52	7.71	7.89	8.06	8.25	8.45	8.67
9.736	8.94	9.24	9.59	9.97	10.37	10.78	11.18
9.781	11.57	11.95	12.29	12.61	12.92	13.24	13.58
9.825	13.96	14.41	14.94	15.55	16.25	17.01	17.82
9.869	18.63	19.43	20.21	20.96	21.64	22.26	22.81
9.913	23.27	23.64	23.88	23.99	23.99	23.88	23.68
9.957	23.39	23.05	22.67	22.28	21.89	21.51	21.15
10.002	20.81	20.48	20.13	19.75	19.34	18.84	18.25
10.046	17.57	16.80	15.99	15.13	14.28	13.45	12.64
10.090	11.88	11.18	10.55	9.98	9.47	9.02	8.63
10.134	8.30	8.00	7.72	7.48	7.25	7.05	6.87
10.178	6.70	6.56	6.42	6.31	6.20	6.11	6.03
10.223	5.95	5.88	5.81	5.74	5.67	5.60	5.53
10.267	5.46	5.40	5.34	5.29	5.23	5.19	5.15
10.311	5.11	5.07	5.03	5.00	4.96	4.91	4.87
10.355	4.82	4.77	4.72	4.67	4.62	4.58	4.53
10.400	4.50	4.46	4.43	4.40	4.37	4.33	4.30
10.444	4.25	4.21	4.16	4.11	4.06	4.01	3.97
10.488	3.93	3.89	3.85	3.82	3.78	3.75	3.73
10.532	3.70	3.67	3.64	3.60	3.57	3.54	3.50
10.576	3.47	3.44	3.41	3.38	3.36	3.34	3.32
10.621	3.30	3.28	3.27	3.25	3.23	3.22	3.20
10.665	3.19	3.17	3.16	3.14	3.13	3.12	3.11
10.709	3.10	3.09	3.08	3.07	3.06	3.05	3.04

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
10.753	3.03	3.02	3.00	2.99	2.98	2.97	2.96
10.797	2.95	2.94	2.93	2.92	2.92	2.91	2.90
10.842	2.89	2.88	2.87	2.86	2.84	2.83	2.82
10.886	2.81	2.80	2.79	2.78	2.77	2.77	2.76
10.930	2.75	2.74	2.73	2.72	2.71	2.70	2.68
10.974	2.67	2.66	2.65	2.64	2.63	2.62	2.62
11.018	2.61	2.60	2.59	2.59	2.58	2.57	2.56
11.063	2.55	2.54	2.53	2.53	2.52	2.51	2.51
11.107	2.50	2.49	2.49	2.48	2.48	2.47	2.47
11.151	2.46	2.46	2.45	2.45	2.44	2.44	2.44
11.195	2.43	2.43	2.42	2.42	2.42	2.42	2.41
11.240	2.41	2.40	2.40	2.40	2.39	2.39	2.38
11.284	2.38	2.38	2.37	2.37	2.37	2.36	2.36
11.328	2.36	2.35	2.35	2.35	2.34	2.34	2.33
11.372	2.33	2.33	2.32	2.32	2.31	2.31	2.31
11.416	2.31	2.30	2.30	2.30	2.29	2.29	2.28
11.461	2.28	2.28	2.27	2.27	2.26	2.26	2.26
11.505	2.25	2.25	2.25	2.24	2.24	2.24	2.23
11.549	2.23	2.23	2.22	2.22	2.21	2.21	2.21
11.593	2.20	2.20	2.20	2.19	2.19	2.19	2.18
11.637	2.18	2.18	2.17	2.17	2.16	2.16	2.16
11.682	2.15	2.15	2.14	2.14	2.14	2.14	2.13
11.726	2.13	2.13	2.12	2.12	2.12	2.11	2.11
11.770	2.10	2.10	2.09	2.09	2.09	2.08	2.08
11.814	2.08	2.07	2.07	2.07	2.07	2.06	2.06

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Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	(cfs)
11.858	2.05	2.05	2.04	2.04	2.04	2.03	2.03
11.903	2.03	2.02	2.02	2.02	2.01	2.01	2.01
11.947	2.00	2.00	1.99	1.99	1.99	1.98	1.98

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Post-Development

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STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
11.991	1.97	1.97	1.97	1.96	1.96	1.96	1.96
12.035	1.95	1.95	1.95	1.94	1.94	1.94	1.93
12.080	1.93	1.93	1.92	1.92	1.92	1.91	1.91
12.124	1.91	1.91	1.91	1.90	1.90	1.90	1.89
12.168	1.89	1.89	1.89	1.88	1.88	1.88	1.88
12.212	1.88	1.87	1.87	1.87	1.87	1.87	1.86
12.256	1.86	1.86	1.85	1.85	1.85	1.85	1.84
12.301	1.84	1.84	1.84	1.84	1.84	1.83	1.83
12.345	1.83	1.83	1.82	1.82	1.82	1.82	1.81
12.389	1.81	1.81	1.81	1.80	1.80	1.80	1.80
12.433	1.80	1.80	1.79	1.79	1.79	1.78	1.78
12.477	1.78	1.78	1.77	1.77	1.77	1.77	1.77
12.522	1.76	1.76	1.76	1.76	1.76	1.75	1.75
12.566	1.75	1.75	1.74	1.74	1.74	1.74	1.73
12.610	1.73	1.73	1.73	1.73	1.72	1.72	1.72
12.654	1.72	1.71	1.71	1.71	1.71	1.70	1.70
12.698	1.70	1.70	1.70	1.69	1.69	1.69	1.69
12.743	1.69	1.68	1.68	1.68	1.68	1.67	1.67
12.787	1.67	1.67	1.66	1.66	1.66	1.66	1.66
12.831	1.65	1.65	1.65	1.65	1.64	1.64	1.64
12.875	1.64	1.63	1.63	1.63	1.63	1.63	1.62
12.920	1.62	1.62	1.62	1.62	1.61	1.61	1.61
12.964	1.61	1.60	1.60	1.60	1.60	1.59	1.59
13.008	1.59	1.59	1.59	1.58	1.58	1.58	1.58
13.052	1.57	1.57	1.57	1.57	1.56	1.56	1.56
13.096	1.56	1.55	1.55	1.55	1.55	1.55	1.55
13.141	1.54	1.54	1.54	1.54	1.53	1.53	1.53
13.185	1.52	1.52	1.52	1.52	1.52	1.51	1.51
13.229	1.51	1.51	1.51	1.50	1.50	1.50	1.50
13.273	1.49	1.49	1.49	1.49	1.48	1.48	1.48
13.317	1.48	1.48	1.47	1.47	1.47	1.47	1.47
13.362	1.46	1.46	1.46	1.45	1.45	1.45	1.45
13.406	1.45	1.44	1.44	1.44	1.44	1.44	1.43
13.450	1.43	1.43	1.43	1.42	1.42	1.42	1.42
13.494	1.41	1.41	1.41	1.41	1.41	1.40	1.40
13.538	1.40	1.40	1.39	1.39	1.39	1.39	1.38
13.583	1.38	1.38	1.38	1.37	1.37	1.37	1.37
13.627	1.37	1.37	1.36	1.36	1.36	1.36	1.35

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SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
13.671	1.35	1.35	1.34	1.34	1.34	1.34	1.34
13.715	1.33	1.33	1.33	1.33	1.33	1.32	1.32
13.760	1.32	1.32	1.31	1.31	1.31	1.31	1.30
13.804	1.30	1.30	1.30	1.30	1.29	1.29	1.29
13.848	1.29	1.29	1.28	1.28	1.28	1.27	1.27
13.892	1.27	1.27	1.27	1.26	1.26	1.26	1.26
13.936	1.26	1.25	1.25	1.25	1.25	1.24	1.24
13.981	1.24	1.24	1.23	1.23	1.23	1.23	1.23
14.025	1.22	1.22	1.22	1.22	1.22	1.22	1.21
14.069	1.21	1.21	1.21	1.21	1.21	1.20	1.20

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Line Start Time (hr)	----- (cfs)	Flow Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)	----- (cfs)
14.113	1.20	1.20	1.20	1.20	1.20	1.20	1.20
14.157	1.20	1.19	1.19	1.19	1.19	1.19	1.19
14.202	1.19	1.19	1.19	1.19	1.19	1.19	1.19
14.246	1.19	1.19	1.19	1.19	1.19	1.18	1.18
14.290	1.18	1.18	1.18	1.18	1.18	1.18	1.18
14.334	1.18	1.18	1.18	1.18	1.18	1.18	1.18
14.378	1.18	1.18	1.18	1.18	1.18	1.18	1.18
14.423	1.17	1.17	1.17	1.17	1.17	1.17	1.17
14.467	1.17	1.17	1.17	1.17	1.17	1.17	1.17
14.511	1.17	1.17	1.17	1.17	1.17	1.17	1.17
14.555	1.17	1.16	1.16	1.16	1.16	1.16	1.16
14.600	1.16	1.16	1.16	1.16	1.16	1.16	1.16
14.644	1.16	1.16	1.16	1.16	1.16	1.16	1.16
14.688	1.16	1.16	1.15	1.15	1.15	1.15	1.15
14.732	1.15	1.15	1.15	1.15	1.15	1.15	1.15
14.776	1.15	1.15	1.15	1.15	1.15	1.15	1.15
14.821	1.15	1.15	1.15	1.15	1.14	1.14	1.14
14.865	1.14	1.14	1.14	1.14	1.14	1.14	1.14

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STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
14.909	1.14	1.14	1.14	1.14	1.14	1.14	1.14
14.953	1.14	1.14	1.14	1.14	1.13	1.13	1.13
14.997	1.13	1.13	1.13	1.13	1.13	1.13	1.13
15.042	1.13	1.13	1.13	1.13	1.13	1.13	1.13
15.086	1.13	1.13	1.13	1.13	1.13	1.13	1.12
15.130	1.12	1.12	1.12	1.12	1.12	1.12	1.12
15.174	1.12	1.12	1.12	1.12	1.12	1.12	1.12
15.218	1.12	1.12	1.12	1.12	1.12	1.12	1.12
15.263	1.11	1.11	1.11	1.11	1.11	1.11	1.11
15.307	1.11	1.11	1.11	1.11	1.11	1.11	1.11
15.351	1.11	1.11	1.11	1.11	1.11	1.11	1.11
15.395	1.10	1.10	1.10	1.10	1.10	1.10	1.10
15.440	1.10	1.10	1.10	1.10	1.10	1.10	1.10
15.484	1.10	1.10	1.10	1.10	1.10	1.10	1.10
15.528	1.10	1.10	1.09	1.09	1.09	1.09	1.09
15.572	1.09	1.09	1.09	1.09	1.09	1.09	1.09
15.616	1.09	1.09	1.09	1.09	1.09	1.09	1.09
15.661	1.09	1.09	1.08	1.08	1.08	1.08	1.08
15.705	1.08	1.08	1.08	1.08	1.08	1.08	1.08
15.749	1.08	1.08	1.08	1.08	1.08	1.08	1.08
15.793	1.08	1.08	1.08	1.08	1.07	1.07	1.07
15.837	1.07	1.07	1.07	1.07	1.07	1.07	1.07
15.882	1.07	1.07	1.07	1.07	1.07	1.07	1.07
15.926	1.07	1.07	1.07	1.07	1.07	1.06	1.06
15.970	1.06	1.06	1.06	1.06	1.06	1.06	1.06
16.014	1.06	1.06	1.06	1.06	1.06	1.06	1.06
16.058	1.06	1.06	1.06	1.06	1.06	1.05	1.05
16.103	1.05	1.05	1.05	1.05	1.05	1.05	1.05
16.147	1.05	1.05	1.05	1.05	1.05	1.05	1.05
16.191	1.05	1.05	1.05	1.05	1.05	1.05	1.05
16.235	1.04	1.04	1.04	1.04	1.04	1.04	1.04
16.280	1.04	1.04	1.04	1.04	1.04	1.04	1.04
16.324	1.04	1.04	1.04	1.04	1.04	1.04	1.04

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time (cfs)	increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)
16.368	1.04	1.03	1.03	1.03	1.03	1.03	1.03
16.412	1.03	1.03	1.03	1.03	1.03	1.03	1.03
16.456	1.03	1.03	1.03	1.03	1.03	1.03	1.03
16.501	1.03	1.02	1.02	1.02	1.02	1.02	1.02
16.545	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16.589	1.02	1.02	1.02	1.02	1.02	1.02	1.02
16.633	1.02	1.02	1.02	1.01	1.01	1.01	1.01
16.677	1.01	1.01	1.01	1.01	1.01	1.01	1.01
16.722	1.01	1.01	1.01	1.01	1.01	1.01	1.01
16.766	1.01	1.01	1.01	1.00	1.00	1.00	1.00
16.810	1.00	1.00	1.00	1.00	1.00	1.00	1.00
16.854	1.00	1.00	1.00	1.00	1.00	1.00	1.00
16.898	1.00	1.00	1.00	1.00	1.00	0.99	0.99
16.943	0.99	0.99	0.99	0.99	0.99	0.99	0.99
16.987	0.99	0.99	0.99	0.99	0.99	0.99	0.99
17.031	0.99	0.99	0.99	0.99	0.99	0.99	0.98
17.075	0.98	0.98	0.98	0.98	0.98	0.98	0.98
17.120	0.98	0.98	0.98	0.98	0.98	0.98	0.98
17.164	0.98	0.98	0.98	0.98	0.98	0.98	0.97
17.208	0.97	0.97	0.97	0.97	0.97	0.97	0.97
17.252	0.97	0.97	0.97	0.97	0.97	0.97	0.97
17.296	0.97	0.97	0.97	0.97	0.97	0.97	0.97
17.341	0.97	0.96	0.96	0.96	0.96	0.96	0.96
17.385	0.96	0.96	0.96	0.96	0.96	0.96	0.96
17.429	0.96	0.96	0.96	0.96	0.96	0.96	0.96
17.473	0.96	0.95	0.95	0.95	0.95	0.95	0.95
17.517	0.95	0.95	0.95	0.95	0.95	0.95	0.95
17.562	0.95	0.95	0.95	0.95	0.95	0.95	0.95
17.606	0.95	0.95	0.94	0.94	0.94	0.94	0.94
17.650	0.94	0.94	0.94	0.94	0.94	0.94	0.94
17.694	0.94	0.94	0.94	0.94	0.94	0.94	0.94
17.738	0.94	0.94	0.94	0.93	0.93	0.93	0.93
17.783	0.93	0.93	0.93	0.93	0.93	0.93	0.93

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0

0.05

Mall

(continued)

Post-Development

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet						
	DMA #2	Outlet						
			.02144	98.	.123			
			.00639	98.	.1			
17.827	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
17.871	0.93	0.93	0.93	0.93	0.92	0.92	0.92	0.92
17.915	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
17.960	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
18.004	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.91
18.048	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
18.092	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
18.136	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.90
18.181	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
18.225	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
18.269	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
18.313	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
18.357	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
18.402	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
18.446	0.89	0.88	0.88	0.88	0.88	0.88	0.88	0.88
18.490	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
18.534	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
18.578	0.88	0.87	0.87	0.87	0.87	0.87	0.87	0.87

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Brea Mall
Post-Development

Line	Flow Values @ time increment of 0.006 hr						
Start Time	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
(hr)							
18.623	0.87	0.87	0.87	0.87	0.87	0.87	0.87
18.667	0.87	0.87	0.87	0.87	0.87	0.87	0.87
18.711	0.87	0.87	0.87	0.86	0.86	0.86	0.86
18.755	0.86	0.86	0.86	0.86	0.86	0.86	0.86
18.800	0.86	0.86	0.86	0.86	0.86	0.86	0.86
18.844	0.86	0.86	0.86	0.85	0.85	0.85	0.85
18.888	0.85	0.85	0.85	0.85	0.85	0.85	0.85
18.932	0.85	0.85	0.85	0.85	0.85	0.85	0.85
18.976	0.85	0.85	0.85	0.85	0.84	0.84	0.84
19.021	0.84	0.84	0.84	0.84	0.84	0.84	0.84

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
19.065	0.84	0.84	0.84	0.84	0.84	0.84	0.84
19.109	0.84	0.84	0.84	0.84	0.84	0.83	0.83
19.153	0.83	0.83	0.83	0.83	0.83	0.83	0.83
19.197	0.83	0.83	0.83	0.83	0.83	0.83	0.83
19.242	0.83	0.83	0.83	0.83	0.83	0.82	0.82
19.286	0.82	0.82	0.82	0.82	0.82	0.82	0.82
19.330	0.82	0.82	0.82	0.82	0.82	0.82	0.82
19.374	0.82	0.82	0.82	0.82	0.82	0.82	0.81
19.418	0.81	0.81	0.81	0.81	0.81	0.81	0.81
19.463	0.81	0.81	0.81	0.81	0.81	0.81	0.81
19.507	0.81	0.81	0.81	0.81	0.81	0.81	0.81
19.551	0.81	0.80	0.80	0.80	0.80	0.80	0.80
19.595	0.80	0.80	0.80	0.80	0.80	0.80	0.80
19.640	0.80	0.80	0.80	0.80	0.80	0.80	0.80
19.684	0.80	0.79	0.79	0.79	0.79	0.79	0.79
19.728	0.79	0.79	0.79	0.79	0.79	0.79	0.79
19.772	0.79	0.79	0.79	0.79	0.79	0.79	0.79
19.816	0.79	0.79	0.78	0.78	0.78	0.78	0.78
19.861	0.78	0.78	0.78	0.78	0.78	0.78	0.78
19.905	0.78	0.78	0.78	0.78	0.78	0.78	0.78
19.949	0.78	0.78	0.78	0.77	0.77	0.77	0.77
19.993	0.77	0.77	0.77	0.77	0.77	0.77	0.77
20.037	0.77	0.77	0.77	0.77	0.77	0.77	0.77
20.082	0.77	0.77	0.77	0.76	0.76	0.76	0.76
20.126	0.76	0.76	0.76	0.76	0.76	0.76	0.76
20.170	0.76	0.76	0.76	0.76	0.76	0.76	0.76
20.214	0.76	0.76	0.76	0.76	0.76	0.75	0.75
20.258	0.75	0.75	0.75	0.75	0.75	0.75	0.75
20.303	0.75	0.75	0.75	0.75	0.75	0.75	0.75
20.347	0.75	0.75	0.75	0.75	0.75	0.74	0.74
20.391	0.74	0.74	0.74	0.74	0.74	0.74	0.74
20.435	0.74	0.74	0.74	0.74	0.74	0.74	0.74
20.480	0.74	0.74	0.74	0.74	0.74	0.74	0.73
20.524	0.73	0.73	0.73	0.73	0.73	0.73	0.73
20.568	0.73	0.73	0.73	0.73	0.73	0.73	0.73
20.612	0.73	0.73	0.73	0.73	0.73	0.73	0.73
20.656	0.72	0.72	0.72	0.72	0.72	0.72	0.72
20.701	0.72	0.72	0.72	0.72	0.72	0.72	0.72

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123			
DMA #2	Outlet	.00639	98.	.1			
20.745	0.72	0.72	0.72	0.72	0.72	0.72	0.72
20.789	0.71	0.71	0.71	0.71	0.71	0.71	0.71
20.833	0.71	0.71	0.71	0.71	0.71	0.71	0.71

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Brea Mall
Post-Development

Line Start Time (hr)	----- (cfs)	Flow (cfs)	Values @ time increment (cfs)	of 0.006 hr (cfs)	----- (cfs)	----- (cfs)	----- (cfs)
20.877	0.71	0.71	0.71	0.71	0.71	0.71	0.71
20.922	0.71	0.71	0.70	0.70	0.70	0.70	0.70
20.966	0.70	0.70	0.70	0.70	0.70	0.70	0.70
21.010	0.70	0.70	0.70	0.70	0.70	0.70	0.70
21.054	0.70	0.70	0.69	0.69	0.69	0.69	0.69
21.098	0.69	0.69	0.69	0.69	0.69	0.69	0.69
21.143	0.69	0.69	0.69	0.69	0.69	0.69	0.69
21.187	0.69	0.69	0.68	0.68	0.68	0.68	0.68
21.231	0.68	0.68	0.68	0.68	0.68	0.68	0.68
21.275	0.68	0.68	0.68	0.68	0.68	0.68	0.68
21.320	0.68	0.68	0.68	0.68	0.67	0.67	0.67
21.364	0.67	0.67	0.67	0.67	0.67	0.67	0.67
21.408	0.67	0.67	0.67	0.67	0.67	0.67	0.67
21.452	0.67	0.67	0.67	0.67	0.66	0.66	0.66
21.496	0.66	0.66	0.66	0.66	0.66	0.66	0.66
21.541	0.66	0.66	0.66	0.66	0.66	0.66	0.66
21.585	0.66	0.66	0.66	0.66	0.66	0.65	0.65
21.629	0.65	0.65	0.65	0.65	0.65	0.65	0.65
21.673	0.65	0.65	0.65	0.65	0.65	0.65	0.65
21.717	0.65	0.65	0.65	0.65	0.65	0.65	0.64
21.762	0.64	0.64	0.64	0.64	0.64	0.64	0.64
21.806	0.64	0.64	0.64	0.64	0.64	0.64	0.64
21.850	0.64	0.64	0.64	0.64	0.64	0.64	0.63
21.894	0.63	0.63	0.63	0.63	0.63	0.63	0.63
21.938	0.63	0.63	0.63	0.63	0.63	0.63	0.63

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

DMA #1	Outlet		.02144	98.	.123		
DMA #2	Outlet		.00639	98.	.1		
21.983	0.63	0.63	0.63	0.63	0.63	0.63	0.63
22.027	0.63	0.62	0.62	0.62	0.62	0.62	0.62
22.071	0.62	0.62	0.62	0.62	0.62	0.62	0.62
22.115	0.62	0.62	0.62	0.62	0.62	0.62	0.62
22.160	0.62	0.61	0.61	0.61	0.61	0.61	0.61
22.204	0.61	0.61	0.61	0.61	0.61	0.61	0.61
22.248	0.61	0.61	0.61	0.61	0.61	0.61	0.61
22.292	0.61	0.61	0.60	0.60	0.60	0.60	0.60
22.336	0.60	0.60	0.60	0.60	0.60	0.60	0.60
22.381	0.60	0.60	0.60	0.60	0.60	0.60	0.60
22.425	0.60	0.60	0.60	0.59	0.59	0.59	0.59
22.469	0.59	0.59	0.59	0.59	0.59	0.59	0.59
22.513	0.59	0.59	0.59	0.59	0.59	0.59	0.59
22.557	0.59	0.59	0.59	0.58	0.58	0.58	0.58
22.602	0.58	0.58	0.58	0.58	0.58	0.58	0.58
22.646	0.58	0.58	0.58	0.58	0.58	0.58	0.58
22.690	0.58	0.58	0.58	0.58	0.57	0.57	0.57
22.734	0.57	0.57	0.57	0.57	0.57	0.57	0.57
22.778	0.57	0.57	0.57	0.57	0.57	0.57	0.57
22.823	0.57	0.57	0.57	0.57	0.57	0.56	0.56
22.867	0.56	0.56	0.56	0.56	0.56	0.56	0.56
22.911	0.56	0.56	0.56	0.56	0.56	0.56	0.56
22.955	0.56	0.56	0.56	0.56	0.56	0.55	0.55
23.000	0.55	0.55	0.55	0.55	0.55	0.55	0.55
23.044	0.55	0.55	0.55	0.55	0.55	0.55	0.55
23.088	0.55	0.55	0.55	0.55	0.55	0.55	0.55

Brea Mall
Post-Development

Line	Start Time	Flow	Values @ time	increment	of 0.006 hr		
	(hr)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)	(cfs)
23.132		0.54	0.54	0.54	0.54	0.54	0.54
23.176		0.54	0.54	0.54	0.54	0.54	0.54

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

(continued)

STORM 2-Yr

SUB-AREA:

	DMA #1	Outlet	.02144	98.	.123		
	DMA #2	Outlet	.00639	98.	.1		
23.221	0.54	0.54	0.54	0.54	0.54	0.54	0.54
23.265	0.53	0.53	0.53	0.53	0.53	0.53	0.53
23.309	0.53	0.53	0.53	0.53	0.53	0.53	0.53
23.353	0.53	0.53	0.53	0.53	0.53	0.53	0.53
23.397	0.52	0.52	0.52	0.52	0.52	0.52	0.52
23.442	0.52	0.52	0.52	0.52	0.52	0.52	0.52
23.486	0.52	0.52	0.52	0.52	0.52	0.52	0.52
23.530	0.52	0.52	0.51	0.51	0.51	0.51	0.51
23.574	0.51	0.51	0.51	0.51	0.51	0.51	0.51
23.618	0.51	0.51	0.51	0.51	0.51	0.51	0.51
23.663	0.51	0.51	0.50	0.50	0.50	0.50	0.50
23.707	0.50	0.50	0.50	0.50	0.50	0.50	0.50
23.751	0.50	0.50	0.50	0.50	0.50	0.50	0.50
23.795	0.50	0.50	0.50	0.49	0.49	0.49	0.49
23.840	0.49	0.49	0.49	0.49	0.49	0.49	0.49
23.884	0.49	0.49	0.49	0.49	0.49	0.49	0.49
23.928	0.49	0.49	0.49	0.49	0.48	0.48	0.48
23.972	0.48	0.48	0.48	0.48	0.48	0.48	0.48
24.016	0.47	0.47	0.46	0.44	0.42	0.40	0.37
24.061	0.35	0.32	0.28	0.26	0.19	0.17	0.15
24.105	0.13	0.11	0.10	0.09	0.08	0.07	0.06
24.149	0.05						

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Beginning of Input Data List

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

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Brea Mall
Post-Development

Area or Reach Identifier	Drainage Area (sq mi)	Alternate	----- Peak Flow by Storm -----				
			2-Yr (cfs)	(cfs)	(cfs)	(cfs)	(cfs)
DMA #1	0.021		18.37				
DMA #2	0.006		5.69				
OUTLET	0.028		23.99				

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TR20.inp

Beginning of Input Data List

WinTR-20: Version 1.10
Mall
Post-Development

0 0 0.05

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STORM 2-Yr

SUB-AREA:

DMA #1	Outlet	.02144	98.	.123
DMA #2	Outlet	.00639	98.	.1

Attachment 2 – Geotechnical Report



Report of

PRELIMINARY GEOTECHNICAL INVESTIGATION

Proposed Brea Mall Development

1066 Brea Mall
Brea, California 92821

Prepared for

Simon

225 West Washington Street
Indianapolis, Indiana 46204

Prepared by

Professional Service Industries, Inc.

11980 Telegraph Road
Unit 104
Santa Fe Springs, California

February 27, 2018

PSI Project No. 00661261

February 27, 2018

Mr. Clif Poynter

Senior Civil Engineer

Simon

225 West Washington Street

Indianapolis, Indiana 46204

Subject: Preliminary Geotechnical Investigation

Proposed Brea Mall Development

1066 Brea Mall

Brea, California 92821

PSI Project No. 00661261

Dear Mr. Poynter;

As requested, Professional Service Industries, Inc. (PSI), an Intertek Company, is pleased to provide this report summarizing our Preliminary Geotechnical Investigation for the above referenced project in Brea, California. This report includes the results of our review of published and unpublished geologic information, subsurface exploration, laboratory testing, and our preliminary conclusions and recommendations as they pertain to the proposed development of the property.

We appreciate the opportunity to perform this Preliminary Geotechnical Investigation and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.



Douglas T. Abernathy, PE, GE
Senior Project Engineer



Robert R. Russell, PE
Principal Consultant

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FIGURES

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APPENDIX B – LABORATORY TEST RESULTS

APPENDIX C – PERCOLATION TEST RESULTS

APPENDIX D – LIQUEFACTION ANALYSIS



1 PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

Professional Service Industries, Inc. (PSI) has completed a Preliminary Geotechnical Investigation for the proposed Brea Mall Development to be located in the southwest corner of the Brea Mall property in Brea, California. Our work was performed in general accordance with our proposal revised January 22, 2018 and signed February 2, 2018.

1.2 PROJECT DESCRIPTION

PSI understands that conceptually the site is proposed to be improved with several buildings ranging from 3,000 square feet (sf) to 120,000 sf along with a 5 to 6-Level parking garage holding 1,000 to 1,300 vehicles. Development of the site will also include paving, hardscape, landscaping, utilities, possibly a pool, and various other improvements. The existing Sears store is proposed to be demolished. Grading plans have not been developed but we assume grades will remain relatively level with minor adjustments of less than ± 2 feet as the site consists of an active mall and parking lots. The proposed developments may have maximum column loadings of roughly 150 to 200 kips for one-story, 200 to 250 kips for two-story, and 300 to 400 kips for three-story structures. The parking structure may induce loadings of 750 to 1,000 kips. Wall loadings are anticipated to be 3 to 15 kips/ft. Shallow foundations including slab-on-grade construction is anticipated. Slabs may support loadings of up to 150 pounds per square foot.

The preliminary geotechnical recommendations presented in this report are based on the available project information, site location, laboratory testing, and the subsurface materials encountered. If any of the noted information is incorrect, please inform PSI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes to the project. We understand that future, more detailed plans and designs are proposed and therefore, more detailed geotechnical investigations will need to be performed for select buildings.

1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of this preliminary geotechnical investigation was to explore the subsurface conditions and provide suitable preliminary design recommendations for the proposed developments. The investigation for this project involved drilling six geotechnical soil borings, perform percolation testing in two of the borings, laboratory testing, and geotechnical analyses. This report briefly outlines the testing procedures, presents available project information,

describes the site and subsurface conditions, and presents preliminary geotechnical recommendations for the following:

- Seismic hazards on the property;
- Site preparation and grading;
- General foundation types, depths, allowable bearing capacities, and estimates of settlement;
- Concrete floor slabs;
- Paving recommendations;
- Retaining wall recommendations;
- Percolation test results; and
- Comments regarding factors that may impact construction and performance of the proposed development.

This report is **not** intended to be used for final design purposes. Additional geotechnical investigations will be necessary based on future grading plans and foundation plans proposed for the development.

The scope of services did not include environmental assessments for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. PSI can perform Phase I/ESA, asbestos, lead, and mold surveys of the existing site improvements and property if desired with an additional budget.

2 SITE AND SUBSURFACE CONDITIONS

2.1 SITE LOCATION AND DESCRIPTION

The project site is situated at 1066 Brea Mall in Brea, California in the southwest corner of the mall property. The proposed development spans across an area of roughly 800-feet by 800-feet. The property is bounded to the west by Randolph Avenue, to the south by other commercial developments and Imperial Highway and State College Boulevard, to the east by parking areas, and to the north and east by the main mall development. At the time of our fieldwork, the site consisted of an existing two to three-story Sears store with surface parking areas, drive aisles, landscaping, hardscaping, and a roughly 15-foot high slope. The site appears to slope to the southwest with elevations (estimated from Google Earth) ranging from roughly 330 to 350 feet above mean sea level. The site is located at approximate latitude 33.9137° and longitude -117.8883°. A Site Vicinity Map showing the site location is included as Figure 1.

2.2 PREVIOUS INVESTIGATIONS

Previously Converse Consultants Orange County (Converse) performed several geotechnical investigations for the mall development as listed below:

Table 1 – Converse Consultants Reports

Year	Report
1974	Original geotechnical report for the mall development.
1974 – 1978	Grading reports for earthwork.
1975	Fill compaction reports.
1977	Fill compaction reports.
1978	Geotechnical investigation for Nordstrom.
1980	Geotechnical investigation for restaurant on perimeter access road on State College Boulevard.
1984	Geotechnical investigation for repaving perimeter road, south and east.
1985	Geotechnical investigation for hotel and parking structure on Bristol St.
1986	Geotechnical investigation for restaurant on perimeter access road on State College Boulevard.
1987	Geotechnical investigation for mall expansion to northwest and southeast.

The 1987 report describes encountering compacted fill and native terrace deposits. Soils encountered by Converse predominantly consisted of sandy clay beneath the site. Other soils were also encountered including silty sand, clayey sand, clay, silt, and sandy silt. The majority of the fill soils were encountered southwest of the Macy's store (5 to 33 feet bgs). Relatively moderate amounts of fill were encountered beneath the parking structure west of Nordstrom (0 to 13 feet bgs). Groundwater was described by Converse as being deeper than 50 feet bgs (Orange County Water District, 1976) with perched water encountered at depths ranging from 23½ to 42½ feet bgs. Existing pavements consisted of roughly 3 inches of asphalt concrete over 4 inches of aggregate base. Sulfate testing of the soils indicated 160 to 224 ppm. Expansion index testing (generally 40 to 50) indicated low to medium expansion potential. R-values ranged from 6 to 13 for sandy clay and clayey sand respectively.

2.3 REGIONAL GEOLOGY

The site is located within the La Habra 7½ minute quadrangle within the Los Angeles Basin Geomorphic Province boundary. Based on a review of the Dibblee Geologic Map of the area (2001), the site is underlain by elevated older alluvial deposits. Areas nearby (outside the proposed development area) to the southwest and southeast consist of younger alluvium that is considered potentially liquefiable.

2.4 REGIONAL SEISMICITY

The project site is located in Southern California, which has undergone a complex multiphase structural history and remains an active tectonic region with documented historic earthquakes. Generally, the seismicity within California can be attributed to faulting due to regional tectonic movement. This includes the San Andreas Fault and other sub-parallel strike-slip faults, as well as normal and thrust faulting within the State. The area of the subject site is considered seismically active. Seismic hazards within the area can be attributed to potential ground shaking resulting from earthquake events along nearby or more distant faulting.

2.5 SEISMIC HAZARD ASSESSMENT

2.5.1 Alquist-Priolo Fault Zone

The seismicity of the site was evaluated utilizing deterministic methods for active faults within the regional vicinity. According to the Alquist-Priolo Special Studies Zones Act of 1972 (revised

1994) faults have been classified as active faults which show apparent movement during the last 11,000 years (i.e., Holocene time). The site is not located within a currently designated Earthquake Fault Zone per the Alquist-Priolo Special Studies Zone Map produced by the California Geological Survey (CGS). Based on CGS mapping, the closest active fault is the Whittier Fault (Elsinore fault zone, Whittier section) located approximately 1.7 miles to the northeast from the site.

2.5.2 Liquefaction-Induced Settlement

The primary causes of damage in this general area during seismic events include ground shaking and liquefaction of the subsurface strata. Liquefaction occurs when loose granular and low plastic materials below the groundwater table are subjected to cyclic shear forces resulting from seismic events. Water pressure within the pore spaces of the soil increases with a corresponding decrease in the soil's effective stress and individual grains of soil lose contact with each other. Excess pore pressures ultimately dissipate and the soil consolidates, often causing significant total and differential settlement of the ground surface.

Liquefaction potential is greatest where the ground water level is shallow and submerged loose fine sands and silts and soft low plasticity clays occur within a depth of about 50 feet or less. Liquefaction potential decreases as grain size and clay and gravel content increase. As ground acceleration and shaking duration increase during an earthquake, liquefaction potential increases.

A review of the California Geologic Survey (CGS) map indicates that the site is not in an area designated as having a liquefaction potential. Areas of potentially liquefiable younger alluvium exist to the southwest and southeast offsite. Liquefaction analyses were performed onsite at one boring location due to high groundwater levels and questionable soil strengths. Our liquefaction analysis indicates that a zone of poorly graded sand between depths of 33 to 37 feet bgs may liquefy during the design earthquake with high groundwater levels. Seismic settlements induced from such liquefaction may result in 0.7-inch of displacement with an estimated differential settlement of less than ½ inch over a 40 foot span. Our liquefaction analysis is provided in Appendix D.

We do not believe lateral spreading or surficial disturbances will be an issue at this site due to potential liquefaction.

2.5.3 Landsliding

A review of the CGS map indicates that the site is not in an area designated as having a landslide potential. Due to the generally flat nature of the site and surrounding properties, it is our opinion that the site is not susceptible to landsliding.

2.5.4 Tsunamis and Seiches

Inundation by tsunamis (seismic or "tidal waves") are not likely to be considered a significant threat to the subject site due to the distance from the coast. The elevation of the project site is also significantly above sea level. Based on there being no bodies of water near the site, the site is also not considered subject to seiches.

2.6 SUBSURFACE CONDITIONS

2.6.1 GENERAL

The boring locations were marked in the field by a PSI representative by referencing existing landmarks based on the information provided by the client. A truck-mounted drill rig and continuous flight, hollow-stem augers were used to advance the soil borings.

During the sampling procedure, Standard Penetration Tests (SPT) were performed in accordance with ASTM D1586 and relatively undisturbed samples were obtained in general accordance with ASTM D3550. The SPT for soil borings is performed by driving a split-spoon sampler, with an outside diameter of 2 inches, into the undisturbed formation located at the bottom of the advanced borehole with repeated blows of a 140-pound hammer falling a vertical distance of 30 inches. The number of blows required to drive the sampler the last 12 inches of an 18-inch penetration depth is a measure of the soil consistency (N-value). If 50 blows are performed before reaching the end of a 6 inch increment this is referred to as refusal and the number of blow per inches driven is recorded, i.e. 50/4 inches. For ASTM D3550 (California Modified Sampler) the split barrel sampler possesses a 3-inch O.D. and is driven in the same manner as the SPT. The field blow counts obtained from the California Modified sampler, as indicated in the boring logs, were adjusted by 63 percent to obtain a rough correlation to SPT blow counts (SPT-N value). Samples were identified in the field, placed in sealed containers and transported to the laboratory for further classification and testing.

2.6.2 SOIL BORINGS

The subsurface conditions were explored by drilling six soil borings (B1 through B6) at the site for geotechnical exploration purposes. Two borings (B1 and B2) were drilled closer to the mall for correlations with previous borings performed by Converse Consultants in 1987. Two borings (B3 and B4) were drilled in the southwest region of the proposed development to depths of approximately 51½ feet below the ground surface (bgs) for purposes of liquefaction analysis. Percolation testing was also performed near these two borings (B3 and B4) to depths of 10 feet bgs. Two borings (B5 and B6) were drilled to depths of 31½ feet at mid-elevation portions of the site for general geotechnical analysis. Figure 2 shows the approximate boring locations. The soil types encountered at the specific boring locations are presented on the attached Boring Logs provided in Appendix A.

As indicated on the boring logs, the subsurface soils consisted of many types of soils ranging from sands to silts to clays and combinations of each. Coarse grained soils had relative densities ranging from loose to very dense while fine grained soils had consistencies ranging from soft to hard. Fill was encountered at boring locations B1 (2.3 feet bgs) and B2 (2½ feet bgs). Possible fill was encountered at boring locations B1 (2.3 to 4.7 feet bgs), B3 (1½ to 7 feet bgs), and B4 (0.8 to 5 feet bgs). Near surface loose and soft soils were encountered at boring locations B1 (1½ to 9 feet bgs) and B3 (4.7 to 7 feet bgs).

The stratification presented on the boring logs is based on a visual examination of the recovered soil samples and the interpretation of field logs by a geotechnical professional. Included on the boring logs are the standard penetration resistances (SPT N-values and California Modified sampler blows) recorded in the individual borings at standard testing intervals to the boring termination depths.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs, included in Appendix A, should be reviewed for specific information at individual boring locations. These records include soil descriptions, stratification, penetration resistance, locations of the samples and laboratory test data. The stratification shown on the boring logs represents the conditions only at the actual boring locations at the time of our exploration. Variations may occur and should be expected between boring locations. The stratification that represents the approximate boundary between subsurface materials and the actual transition may be gradual.

2.7 GROUNDWATER

Groundwater was encountered in two of our soil borings during our investigation at depths ranging from approximately 25 feet bgs (at boring location B4) to 30 feet bgs (at boring location B3). These depths are approximate as the drilling operations continued and monitoring equipment was not installed. Groundwater is not expected to impact the proposed construction. It is possible, however, that transient, saturated ground conditions at shallower depths could develop at a later time due to periods of heavy precipitation, landscape watering, leaking water lines, or other unforeseen causes. Variations in groundwater levels should be expected seasonally, annually, and from location to location.

2.8 LABORATORY TESTING

The soil samples obtained during the field exploration were transported to our laboratory and selected soil samples were tested in the laboratory to determine the material properties for evaluation. Laboratory testing on selected samples included moisture content (ASTM D2216), density (ASTM D2937), grain size distribution (ASTM D422), Atterberg Limits (ASTM D4318), expansion index (ASTM D4829), R-value (CTM 301), consolidation (ASTM D2435), direct shear (ASTM D3080), and corrosion testing [soluble sulfate (CTM 417), soluble chloride (CTM 422), pH (ASTM D4972), and minimum resistivity (CTM 643)]. Laboratory testing was performed in general accordance with ASTM and Caltrans procedures. Unless otherwise informed, the soil samples will be discarded 60 days from the issuance of this report. Laboratory test results are included in Appendix B.

2.9 PERCOLATION TESTING

A limited program of in-situ percolation testing was performed at two boring locations [B3(P1) and B4(P2)] as shown on Figure 2. Testing was performed in general accordance with the Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans for the Santa Ana Regional Water Quality Control Board (September, 2013). Results of the testing are provided below in Table 1 and are attached in an Appendix C.

Table 2 – Percolation Test Results

Test Location	Raw Infiltration Rate (in/hr)	Design Infiltration Rate (in/hr)
P1 (B3)	0.0	0.0
P2 (B4)	2.8	1.4

Measured percolation rates were reduced to determine design values that will represent long-term performance of the proposed infiltration BMPs. The recommended factor values used were obtained from the Technical Guidance Document referenced above. We have assumed that maintenance of the designed system will be performed regularly. The following assumptions were made:

Table 3 – Percolation Assumptions

Factor Category	Factor Description	Factor Value Location P1/B3	Factor Value Location P2/B4
Suitability Assessment	Soil Assessment Methods	2	2
	Predominant Soil Texture	3	1
	Site Soil Variability	4	2
	Depth to Groundwater or Impervious Layer	1	1
Design	Tributary Area Size	1	1
	Level of Pretreatment	1	1
	Redundancy	1	1
	Compaction During Constr.	1	1
Combined FS	$\sum S_{Total}$	2	1.5
Measured Rate	(in/hr)	0.0	2.8
Design Rate	(in/hr)	0.0	1.4

Use a minimum FS of 2 for design

Please note that percolation/infiltration rates are representative of the location and depth at which the tests were conducted. If infiltration is to occur at different locations or depths, different rates may exist and further testing will be necessary. Individual counties and

municipalities may have stricter guidelines and applicable correction factors for infiltration rates and, if applicable, should be utilized for design. Rates will vary depending on head applied. For calculating “time to empty”, the design infiltration rates above should be reduced by half.

The Technical Guidance Document requires that testing be performed at several locations within the proposed drainage area depending on the quantity of design flow anticipated and the size of the BMP. For slow flow areas, tests are required to be performed over several days. The limited testing performed for this investigation should be repeated several times over several days at the proposed BMP location to adequately characterize the site soils in question for infiltration purposes. Testing and design factors assumed above are subject to change and may not be representative of actual conditions anticipated for the development.

3 CONCLUSIONS AND RECOMMENDATIONS

The subject property is considered a suitable site for the proposed development from a geologic and soils engineering standpoint. We believe that development of the site will not cause adverse effects on adjacent properties. It is our opinion that the proposed facility can be constructed provided the recommendations stated in the report are followed. Test findings and statements of professional opinion do not constitute a guarantee or warranty, expressed or implied.

The following preliminary geotechnical design recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there are any changes in these project criteria, PSI should be contacted to determine if modifications to the recommendations are warranted.

Based on the results of the fieldwork, laboratory evaluation, and engineering analyses, the site can be adapted for the proposed facility. Based on the observed site conditions PSI believes that conventional spread footings are suitable to support the proposed structure. Details related to site preparation, foundation design, and construction are presented in the following sections.

3.1 EARTHQUAKE AND SEISMIC DESIGN CONSIDERATION

We have employed the 2016 California Building Code (CBC), the locally adopted version of the International Building Code, 2015 edition. As part of this code, the design of structures must consider dynamic forces resulting from seismic events. These forces are dependent upon the magnitude of the earthquake event as well as the properties of the soils that underlie the site.

As part of the procedure to evaluate seismic forces, the code requires the evaluation of the Seismic Site Class, which categorizes the site based upon the characteristics of the subsurface profile within the upper 100 feet of the ground surface. PSI's deepest boring extended to 51 ½ feet bgs, but to define the Site Class for this project, we have interpreted the results of soil test borings drilled within the project site and estimated appropriate soil properties below the base of the borings to a depth of 100 feet as permitted by the code. The estimated soil properties were based upon data available in published geologic reports as well as our experience with subsurface conditions in the general site area.

Based upon our evaluation, the subsurface conditions within the site are consistent with the characteristics of a **Site Class "D"** as defined in Chapter 20.3-1 of the ASCE 7-10. The associated probabilistic ground acceleration values and site coefficients for the general site area were

obtained from the USGS geohazards web page, <http://earthquake.usgs.gov/designmaps/us/application.php>, and are presented in the table below.

Table 4 - Ground Motion Values*

Period (sec)	Mapped MCE Spectral Response Acceleration** (g)		Site Coefficients		Adjusted MCE Spectral Response Acceleration (g)		Design Spectral Response Acceleration (g)	
0.2	S_s	2.018	F_a	1.0	S_{Ms}	2.018	S_{Ds}	1.345
1.0	S_1	0.741	F_v	1.5	S_{M1}	1.111	S_{D1}	0.741

*2% Probability of Exceedance in 50 years

MCE = Maximum Considered Earthquake

The Site Coefficients, F_a and F_v presented in the above table were also obtained from the noted USGS webpage as a function of the site classification and mapped spectral response acceleration at the short (S_s) and 1-second (S_1) periods, but can also be interpolated from ASCE Tables 11.4-1 and 11.4-2.

Considering the use of the proposed structures and the values of S_{Ds} and S_{D1} shown above, we expect the structures to fall within **Seismic Design Category D**, as defined by ASCE Tables 11.6-1 and 11.6-2 of the code. Design of structures should comply with the requirements of the governing jurisdiction's building codes and standard practices of the Structural Engineering Association of California.

3.2 SITE PREPARATION & GRADING

The following recommendations are provided for general grading of the site. More detailed geotechnical investigations may be required depending on the proposed development.

3.2.1 SITE PREPARATION

The site should be cleared of all man-made structures, surface vegetation, utilities, and construction debris. Any previous utilities, foundations, seepage pits, or other site improvements found on site in conflict with the new construction should be removed or abandoned in place

below the proposed structures. As a minimum, it is recommended the clearing operations extend at least five feet beyond the building and a few feet beyond the development perimeters.

We recommend that at the time of initial site stripping and grading, that PSI be retained to observe proof-rolling of excavations and subgrade conditions to verify that no potentially deleterious soft soils or unforeseen conditions are present. All excavation bottoms should be firm and unyielding prior to fill being placed above.

Though PSI was not provided with project-specific grading plans, proposed cuts and fills are anticipated within the project site to establish design grades. Any new fill should be placed in accordance with the Engineered Fill section of this report.

If grading occurs in the winter rainy season, unstable subgrade conditions may be present. These conditions may require stabilizing the subgrade with by adding coarse aggregate or admixtures such as cement kiln dust. Isolated areas may be stabilized using a geogrid, such as Tensar TX160 or equal, with one foot compacted Class II aggregate base over the geogrid. Additional recommendations can be provided, as required, during construction.

Asphalt and concrete debris will likely be generated from demolition at the site during construction. These materials may require hauling offsite or may be crushed for placement onsite per geotechnical recommendations or local building authorities.

3.2.2 REMEDIAL GRADING

All undocumented fill materials, within the limits of proposed structures, should be removed and replaced as evaluated by the Geotechnical Engineer or their representative. Existing unsuitable fill soils extending to a depth of 2½ feet bgs near boring location B1 and B2 should be removed and replaced with compacted engineered fill. Areas near boring locations B1, B3, and B4 should be evaluated closely as some soils appear to possibly consist of fill materials to depths of roughly 5 to 7 feet bgs. Loose or soft soils should also be removed and replaced near boring location B1 to a depth of roughly 9 feet bgs. The soils exposed at the base of all excavations should also be scarified to a depth of at least 12 inches, be compacted as described below in Section 3.2.3.

Dependent upon the building locations and their structural loads, some over-excavation of the existing soil and replacement as a properly compacted engineered fill beneath footings may be necessary to limit static settlements to acceptable levels. The need for this over-excavation

should be determined at the time of more detailed investigations and based on specific structural loading information to be provided.

Site grades may then be raised with Engineered Fill to achieve the design elevations proposed for the site. A PSI representative should be on-site during site grading to evaluate the degree of compaction obtained by the contractor.

3.2.3 ENGINEERED FILL

Engineered Fill materials required at this site, including both native and import soil, should not contain rocks greater than 3-inches in diameter or have greater than 30 percent retained on the $\frac{3}{4}$ -inch sieve, and should not contain more than 3 percent (by weight) of organic matter or other unsuitable material. Engineered Fill soils should also have an Expansion Index (EI) that does not exceed 40. Based on our subsurface investigation, existing on-site soils are generally suitable for use as Engineered Fill provided they can be properly moisture conditioned to meet the compaction requirement. This should be confirmed by a PSI representative during grading. Import materials meeting the above requirements should be approved by the Geotechnical Engineer prior to importing to the site. Soil that are environmentally impacted should not be used as Engineered Fill onsite.

Engineered Fill should be compacted to at least 90 percent of the maximum dry density as determined by the modified Proctor (ASTM D1557). The moisture content of Engineered Fill should be maintained between 0 to 2 percent above the material's optimum moisture content during compaction. If the Engineered Fill is too dry, water should be uniformly applied across the affected fill area. If the Engineered Fill is too wet, it must be dried. Engineered Fill should be thoroughly mixed by diskings, or other approved methods, to obtain relatively uniform moisture content throughout the lift immediately prior to compaction.

Engineered Fill should be placed in maximum lifts of 8-inches of loose material. Each lift of Engineered Fill should be tested by a PSI soils technician, working under the direction of our Project Geotechnical Engineer, prior to placement of subsequent lifts. If smaller compaction equipment such as jumping jacks or plate compactors are used thinner lifts may be required to achieve compaction.

Compaction of the backfill should be checked with a sufficient number of density tests by a representative of the Geotechnical Engineer to determine if adequate compaction is being

achieved by the contractor. The properly compacted Engineered Fill should extend horizontally outward beyond the exterior perimeter of the building and foundations a distance equal to the height of fill or 5-feet, whichever is greater, prior to significant sloping. In addition, Engineered Fill should extend horizontally outward beyond the exterior perimeter of pavements and hardscape a distance equal to the height of fill or 3-feet, whichever is greater, prior to significant sloping.

3.3 UTILITY TRENCH CONSTRUCTION

Utility trenches can be backfilled with on-site soils above the utility bedding and shading materials. Trench backfill should be moisture conditioned to between 0 to 2 percent above the optimum moisture content, compacted in 4- to 6-inch lifts to a minimum of 90 percent of the maximum dry density as determined by the modified Proctor (ASTM D1557). If rocks larger than 3-inches in maximum size are encountered, they should be removed from the fill material prior to placement in the utility trenches. Utility bedding and shading compaction requirements should be in conformance with the requirements of the local agencies having jurisdiction, but typically require clean granular material having a sand equivalent equal to or above 30. Jetting or flooding of utility backfill is not recommended.

3.4 SOIL EXPANSION

The expansion potential of representative samples of the existing site soils is low (EI=34 & 35). Such soils must be kept at a constant moisture content to avoid shrinkage and swelling near improvements. Foundation and slab subgrades must be designed for such soils. Landscaping, irrigation, and site grading/drainage must also be designed for such soils as mentioned below. Following site grading, testing of site soils should be performed by the project geotechnical consultant to confirm the basis of these recommendations. Depending upon the distribution of soil types and expansion characteristics, differing design recommendations may be developed to better suit the types of conditions present at the site.

3.5 CORROSION

Testing was performed to evaluate the corrosivity of the on-site soils and the potential for attack on concrete and subsurface cast iron and ductile iron utility pipes. The testing included pH, sulfate, chloride and minimum electrical resistivity. The results of the chemical analysis are as follows:

Table 3 – Corrosion Analyses

Boring Number	Sample Depth (feet)	pH	Minimum Resistivity (Ω -cm)	Soluble Sulfate (ppm)	Soluble Chlorides (ppm)
B3	1½ - 5	7.5	1100	246	145
B6	1 - 5	7.4	1050	576	230

Notes: ppm = parts per million.

Concrete mix design should follow the minimum requirements of the 2016 California Building Code and ACI 318. Laboratory testing of representative near surface soil samples indicates that the on-site soils have very low levels of sulfates such that they are characterized as having a **negligible** corrosion potential with respect to concrete based on ACI 318. Chloride levels also suggest that the site soils are **non-corrosive** to steel (iron/ferrous materials) according to Caltrans specifications. For preliminary design purposes, it is our opinion that the use of Type II cement is suitable for concrete in contact with on-site soils. Final concrete mix design should be evaluated after sulfate and chloride tests have been performed on the actual in-place subgrade material used for finished pad grades.

Based on the minimum resistivity laboratory test results, the soils are characterized as being **highly corrosive** to cast iron or ductile iron piping (National Association of Corrosion Engineers, 1984). PSI does not practice in the field of corrosion engineering. We suggest that a qualified corrosion engineer be consulted to determine if special corrosion protection is warranted. Testing for corrosivity of fill soils should be conducted after site grading.

3.6 SHALLOW FOUNDATIONS

Once proposed structural loadings and foundation plans are available, the geotechnical engineer should evaluate those plans for allowable foundation capacities which depend on the locations of the structures. On a preliminary basis, we would anticipate an allowable soil bearing pressure in the range of 3,000 to 5,000 psf, dependent upon the remedial grading performed. It is our opinion that the proposed buildings having relatively light loadings (150 to 250 kips) can be supported on conventional shallow spread footings bearing on Engineered Fill and/or stiff, or better, native soils, compacted to a firm and unyielding state. More heavily loaded foundations (>250 kips) may require deeper foundations or a ground improvement program to be more effective and to limit settlements to a tolerable level. Structures placed near boring location B3

should consider potential settlement issues. The size of the foundations, the bearing pressure and the embedment depth have a direct impact on the anticipated settlement. Once specific plans are developed and once detailed structural loading information is known, additional test borings and engineering analysis will be necessary.

3.7 SLABS ON GRADE

We anticipate that the proposed buildings may use slab-on-grade construction supported on Engineered Fill and/or suitable existing soil provided the subgrade has been prepared as described in Section 3.2 of this report. Soft or otherwise unsuitable areas observed should be addressed on a case-by-case basis by our Geotechnical Engineer.

Due to the presence of low expansive soils, we recommend that the subgrade soils beneath the building floor slab be moisture conditioned to 0 to 2 percent above the soil's optimum moisture content to a depth of at least 12 inches. This moisture conditioning is recommended to be verified by the geotechnical engineer within 48 hours of floor slab concrete placement. Floor slabs should have a nominal thickness of 5 inches and be reinforced with at least No. 3 bars placed at 18-inches centers each way. Additional steel reinforcement may be required for structural considerations.

To reduce moisture vapor transmission into interior spaces, we recommend a 10-mil vapor retarding membrane be included beneath slabs. Membrane specifications should be provided by the flooring manufacturer. Vapor retarders should be installed in accordance with ACI 302.1R and should extend to footings with no breaks (sealed between footings and around penetrations). A minimum 2 inch thick capillary break material (clean sand) should be provided above and below the vapor retarder to help protect the vapor barrier from punctures and to allow more uniform curing of the concrete slab.

This vapor retarder system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 3 pounds of water per 1000 square feet and therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes.

Exterior slabs should be isolated from the building. These slabs should be reinforced to function as independent units. Movement of these slabs should not be transmitted to the building

foundation or superstructure. We also recommend that expansive subgrade soils beneath concrete flatwork be moisture treated similar to that recommended for on-grade floor slabs.

The precautions listed below should be followed closely for construction of all slabs-on-grade. These details will not reduce the amount of movement, but are intended to reduce potential damage should some settlement of the supporting subgrade take place.

- Cracking of slabs-on-grade is normal and should be expected. Cracking can occur not only because of heaving or compression of the supporting soil, but also because of concrete curing stresses. The occurrence of concrete shrinkage cracks, and problems associated with concrete curing may be reduced and/or controlled by limiting the water/cement ratio of the concrete, proper concrete placement, finishing, and curing, and by the placement of crack control joints at frequent intervals, particularly, where re-entrant slab corners occur. The American Concrete Institute (ACI) recommends a maximum panel size (in feet) equal to approximately three times the thickness of the slab (in inches) in both directions. For example, joints are recommended at a maximum spacing of 12 feet, assuming a four-inch thick slab. We recommend also that control joints be scored three feet in from, and parallel to, the foundation walls. Using fiber reinforcement in the concrete can also help control shrinkage cracking.
- Some increase in moisture content is inevitable because of development and associated landscaping. However, extreme moisture content increases can be largely controlled by proper and responsible site drainage, building maintenance and irrigation practices. Landscaping and irrigation should be minimized immediately adjacent to buildings.

3.8 SETTLEMENT

Proposed loadings and structural foundation plans should be reviewed by the geotechnical engineer to accurately estimate settlements. Foundations (column loads <250 kips) designed and constructed in accordance with typical geotechnical recommendations are estimated to experience post-construction total settlements generally less than about 1-inch with differential settlement along a 40-foot long portion of a continuous footing, or similarly spaced column footings generally less than ½-inch. Total and differential settlements of these magnitudes are usually considered tolerable for the anticipated construction. However, the tolerance of proposed structures to predicted total and differential settlements should be confirmed by the structural engineer.

As previously noted, a seismic-induced settlement of about 0.7 inch with a corresponding differential seismic settlement of less than ½ inch over a 40 foot span is possible. Although these seismic settlements are well within levels considered tolerable (per SP 117A), we recommend that the structural engineer consider the seismic settlements in their design.

3.9 RETAINING WALLS

Standard retaining walls may be designed simply for walls up to a maximum height of six feet. Retaining walls above a height of six feet will require seismic loadings incorporated. Such walls may rely on shallow foundation recommendations to be provided.

Onsite clay soils are not considered suitable for retaining wall backfill. Clean granular soil backfill should be used from the site or imported. The backfill material should be compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557 with optimum moistures within 0 to 2 percent above optimum. Compaction may be checked by probing if needed. Flooding or jetting of the backfill should not be permitted. Granular backfill should be capped with 12-inches of relatively impervious fill (clayey soils, concrete, CDF) or pavements to seal the backfill and reduce the potential for infiltration and saturation. It should be noted that the use of heavy compaction equipment in close proximity to retaining structures could result in wall pressures exceeding design values and causing wall movement. In this regard, the contractor should take appropriate precautions during the backfill placement and use relatively light compaction equipment.

For drained conditions, a back-drainage system should be installed to drain any water that may collect behind retaining walls. The drainage system should consist of a 1 cubic foot per foot burrito drain containing free-draining crushed rock (5%<#200) placed adjacent to the wall. The gravel should be completely enclosed in an approved filter fabric (Mirafi 140N, or equivalent) to separate the gravel and backfill soil. A 4-inch diameter perforated SCH-40 PVC pipe should be placed with perforations down, behind the bottom of the retaining wall at a gradient of at least one percent. Drainage outlets should be 4-inch diameter solid SCH-40 PVC pipe, installed to drain to an appropriate outlet. Drainage should be conducted away from structural foundations. Weep holes may be used if desired. The project geotechnical engineer should approve any alternative drain system.

Waterproofing the back of the retaining walls should be considered to mitigate water staining, infiltration, and moisture migration through the wall. If a waterproofing system is used, it should be designed by a qualified waterproofing consultant.

3.10 PAVEMENT DESIGN

In designing the proposed pavement areas, the following conditions were considered:

1. Subgrade support characteristics are typically represented by an R-Value for the design of flexible pavements in this region.
2. Vehicular traffic volumes, in terms of the number and frequency of vehicles and their range of axle loads should be considered.
3. Likely changes in vehicular use over the life of the pavement should also be considered. We have assumed that the pavement areas will not experience additional traffic.
4. Pavement life cycle was considered to be 20 years.

All site preparations and grading should be performed as discussed above in Section 3.2.

Since an evaluation of the characteristics of the actual soils present at pavement subgrade can only be provided at the completion of grading, the following pavement sections should be used for planning purposes only. Final pavement designs should be evaluated after R-value tests have been performed on the actual in-place subgrade materials exposed for use during construction.

It should be noted that additional earthwork and/or ground improvement efforts may be required during grading on the actual subgrade material encountered, in order to achieve the aforementioned design parameters and assumptions. These design thicknesses assume that a properly prepared subgrade has been achieved.

Based on the results of our field exploration and laboratory testing of sandy clay (worse case scenario), we recommend the pavement designs presented in the table below. The pavement design criteria are based on the soil conditions present at the site, an R-value of 6 and the Traffic Index indicated below based on the estimated traffic for the site. In more granular areas of the site, a thinner pavement section may be used if desired and designed.

Table 4 - Pavement Section Recommendations

Location	Traffic Index (TI)	Asphalt Thickness (inches)	+	Aggregate Base Thickness (inches)	Portland Cement Concrete Thickness (inches)	+	Aggregate Base Thickness (inches)
Standard Drive Aisles	5	3½	+	8½	5½	+	4
		4	+	7½			
Truck Drive Aisles	7	6	+	12	6	+	6
		7	+	10			

We recommend rigid pavements (Portland Cement Concrete, PCC) be constructed at all areas requiring heavy braking and turning such as intersections, entrances, docking bays, trash truck loading areas, etc. PCC pavement sections should incorporate appropriate steel reinforcement and crack control joints as designed by the project structural engineer. We recommend that sections be as nearly squared as possible and no more than 15-feet on a side. Score joints may be constructed by saw cutting to a depth of ¼ of the slab thickness. Expansion/cold joints may be used in lieu of score joints. Such joints should be properly sealed. A minimum 4,000 psi mix is recommended.

Prior to placement of aggregate base, subgrade soils should be proof-rolled and scarified to a depth of 12 inches, brought to moisture contents between 0 to 2 percent above optimum, then compacted to at least 95 percent of the laboratory standard. The laboratory standard should be ASTM D1557.

Aggregate base below pavement sections should be compacted to at least 95 percent of ASTM D1557 with moisture contents within +/-2 percent of optimum. Aggregate base materials should be Caltrans Class II Base.

All materials should conform to and be placed in accordance with the latest revision of the Standard Specifications for Public Works Construction (Greenbook), the American Concrete Institute (ACI), and the Portland Cement Association (PCA).

3.11 LANDSCAPING AND IRRIGATION

Landscaping and irrigation should be positioned away from the building by at least 5 feet. Trees and shrubs should be positioned a distance away from the building equal to half of their mature height. Hardscape should closely surround the building as much as possible. Moisture conditions within the soil should be maintained at a constant level to avoid wetting or drying and associated movements. If landscaping is desired closer to the building, moisture barriers may be added to limit moisture infiltration beneath the building.

3.12 CONSTRUCTION CONSIDERATIONS

The site soils are sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. Furthermore, perched groundwater conditions can develop during periods of heavy rainfall as a result of less permeable layers impeding infiltration. In these instances, overlying subgrade soils may become unstable and require remedial measures. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

Groundwater was not encountered near the ground surface during our explorations onsite. It should be noted, however, that variations in the groundwater table may result from fluctuation in the ground surface topography, subsurface stratification, precipitation, irrigation, and other factors that may not have evident at the time of our exploration. This sometimes occurs where relatively impermeable and/or cemented materials are overlain by fill soils. We recommend that a representative of PSI be present during grading operations to evaluate areas of seepage. Drainage devices for reduction of water accumulation can be recommended if these conditions occur.

Water should not be allowed to collect in the foundation excavation, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs during construction.

Final grading should be designed to provide positive drainage away from proposed structures. Soil areas within 10-feet of proposed structures should sloped at a minimum of 5 percent away from the structure, if possible. Roof leaders and downspouts should discharge onto paved surfaces sloping away from the structure or into a closed pipe system which outfalls to the street gutter or directly to the storm drain system.

4 REPORT LIMITATIONS

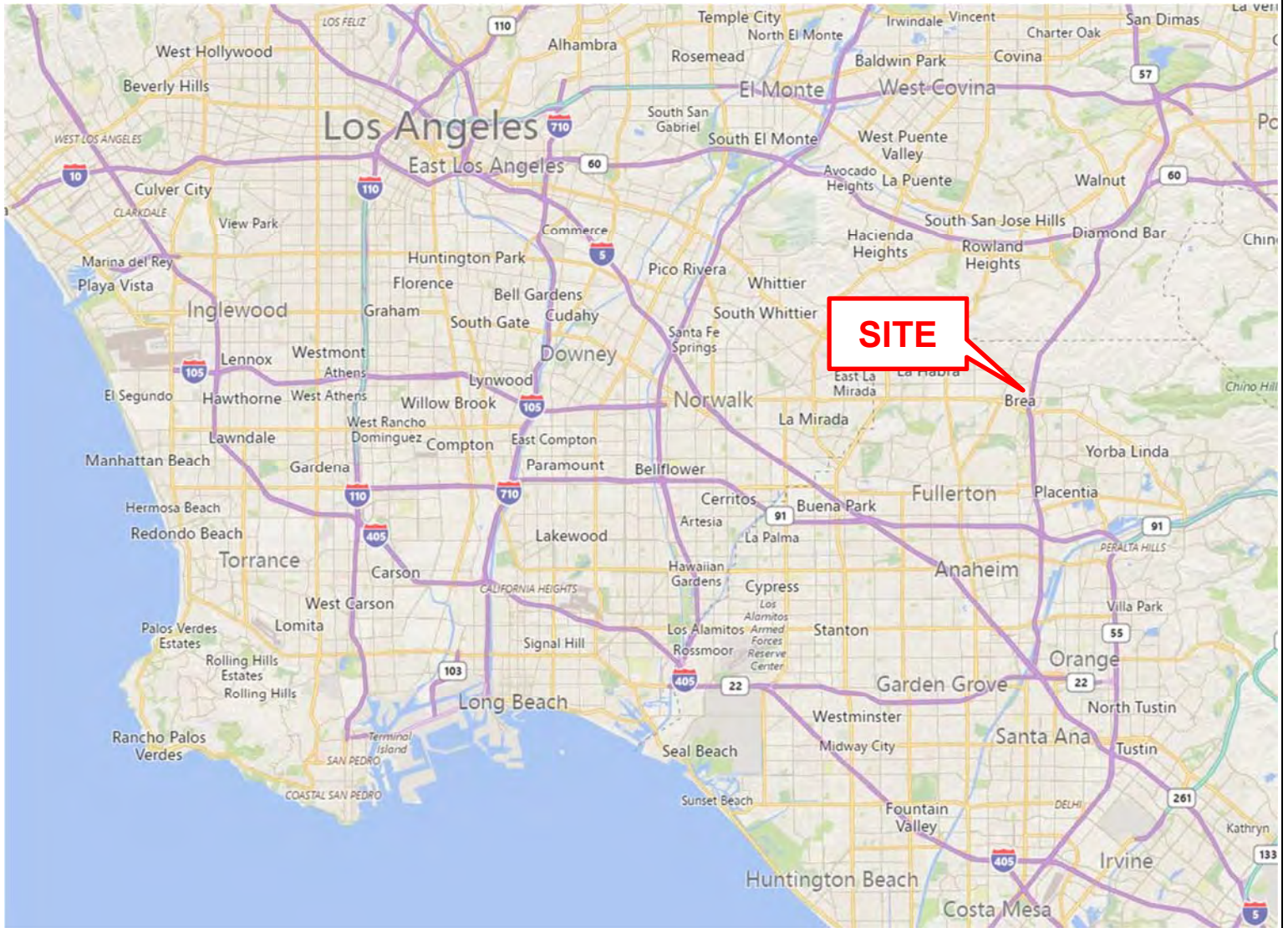
The proposed professional services have been performed, findings obtained, and preliminary recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices at the time of this report. PSI is not responsible for the conclusions, opinions, or recommendations made by others based on this data. No other warranties are implied or expressed. **Simon**, its subsidiaries and affiliates can rely upon the report under the same terms as if it was originally prepared for them.

The scope of exploration was intended to evaluate soil conditions within the influence of the proposed development. The analyses and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated. If any subsoil variations become evident during the course of this project, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature, or location of the proposed structural.

This report is considered preliminary based on limited knowledge of the proposed development. The preliminary recommendations provided herein are only intended for feasibility evaluations and conceptual designs and should not be relied upon for final design recommendations. Future design concepts and plans will require further focused geotechnical investigations to determine final design and construction recommendations for specific development structures.

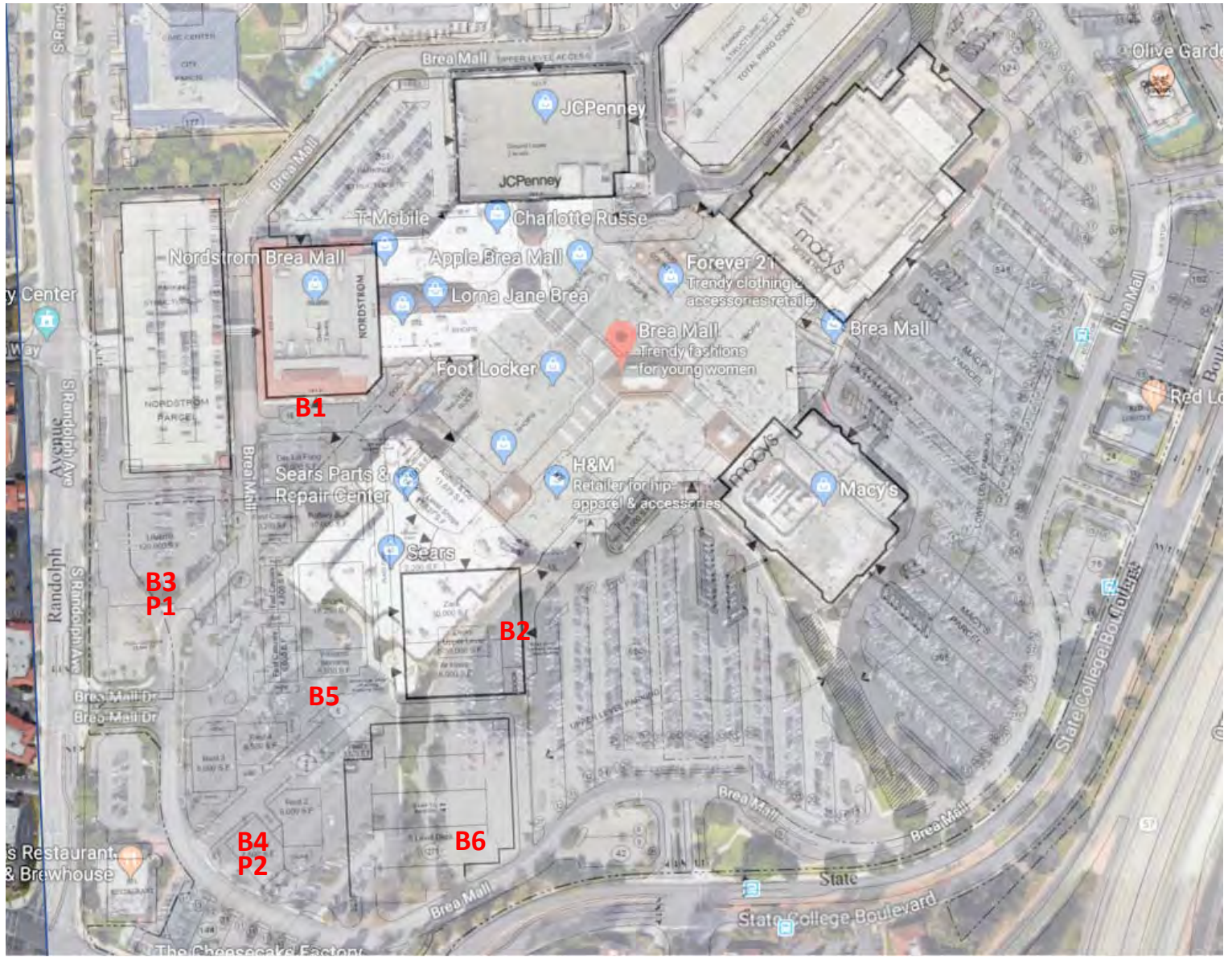


FIGURES



Reference – Bing Maps

	DATE: 2/27/2018	Proposed Brea Mall Development 1066 Brea Mall Brea, California 92821	PSI PROJECT NUMBER: 00661261	
PSI, INC. 11980 TELEGRAPH ROAD, UNIT 104 SANTA FE SPRINGS, CALIFORNIA	PREPARED BY: DTA	SITE VICINITY MAP	FIGURE 1	



Legend

- B6** Approximate Boring Location
P2 Approximate Percolation Location

Reference – Google Maps

	DATE: 2/27/2018	Proposed Brea Mall Development 1066 Brea Mall Brea, California 92821	PSI PROJECT NUMBER: 00661261	
PSI, INC. 11980 TELEGRAPH ROAD, UNIT 104 SANTA FE SPRINGS, CALIFORNIA	PREPARED BY: DTA	BORING LOCATION MAP	FIGURE 2	



APPENDIX A

BORING LOGS



GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.	☒ SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
HSA: Hollow Stem Auger - typically 3 1/4" or 4 1/4" I.D. openings, except where noted.	■ ST: Shelby Tube - 3" O.D., except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry	▮ RC: Rock Core
R.C.: Diamond Bit Core Sampler	↓ TC: Texas Cone
H.A.: Hand Auger	☞ BS: Bulk Sample
P.A.: Power Auger - Handheld motorized auger	☒ PM: Pressuremeter
	CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N ₆₀ : A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q _u : Unconfined compressive strength, TSF
Q _p : Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL), %
DD: Dry unit weight, pcf
▼, ▼, ▼ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS ANGULARITY OF COARSE-GRAINED PARTICLES

<u>Relative Density</u>	<u>N - Blows/foot</u>
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

<u>Description</u>	<u>Criteria</u>
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

GRAIN-SIZE TERMINOLOGY

<u>Component</u>	<u>Size Range</u>
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (3/4 in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to 3/4 in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

<u>Description</u>	<u>Criteria</u>
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%



GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

<u>Q_u - TSF</u>	<u>N - Blows/foot</u>	<u>Consistency</u>
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

<u>Description</u>	<u>Criteria</u>
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

<u>Description</u>	<u>Criteria</u>	<u>Description</u>	<u>Criteria</u>
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick	Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick	Lensed:	Inclusion of small pockets of different soils
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing	Layer:	Inclusion greater than 3 inches thick (75 mm)
Slickensided:	Fracture planes appear polished or glossy, sometimes striated	Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
		Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

<u>Q_u - TSF</u>	<u>Consistency</u>
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

<u>Description</u>	<u>Criteria</u>
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

<u>Voids</u>	<u>Void Diameter</u>
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

<u>(Typically Sedimentary Rock)</u>	
<u>Component</u>	<u>Size Range</u>
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION

<u>Rock Mass Description</u>	<u>RQD Value</u>
Excellent	90 - 100
Good	75 - 90
Fair	50 - 75
Poor	25 - 50
Very Poor	Less than 25

DEGREE OF WEATHERING

Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	



DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 11.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9153° LONGITUDE: -117.8883° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B1 Water BORING LOCATION:	
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Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
	0					5-inches Asphalt 13-inches Mix of Base with Silty Sand				X Moisture PL LL	
						FILL - Silty SAND , orange-brown, with pieces of brick, moist.	SM				
						Silty SAND , orange-brown, with gravel, little cohesion, loose, moist. [Possible Fill]	SM	3-3-3 N=4	10	X	DD = 112 pcf
	5					Silty CLAY , brown, soft, moist.	CL	2-1-2 N=3			
						Silty SAND , light brown, with trace gravel and cohesion, loose, moist.	SM	2-3-3 N=4	12	X	DD = 110 pcf
	10					SAND , light brown, dense, moist.	SP	6-12-18 N=30			
Boring Terminated at 11-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. No groundwater encountered. Soil cuttings used as backfill, with asphalt cold patch.											

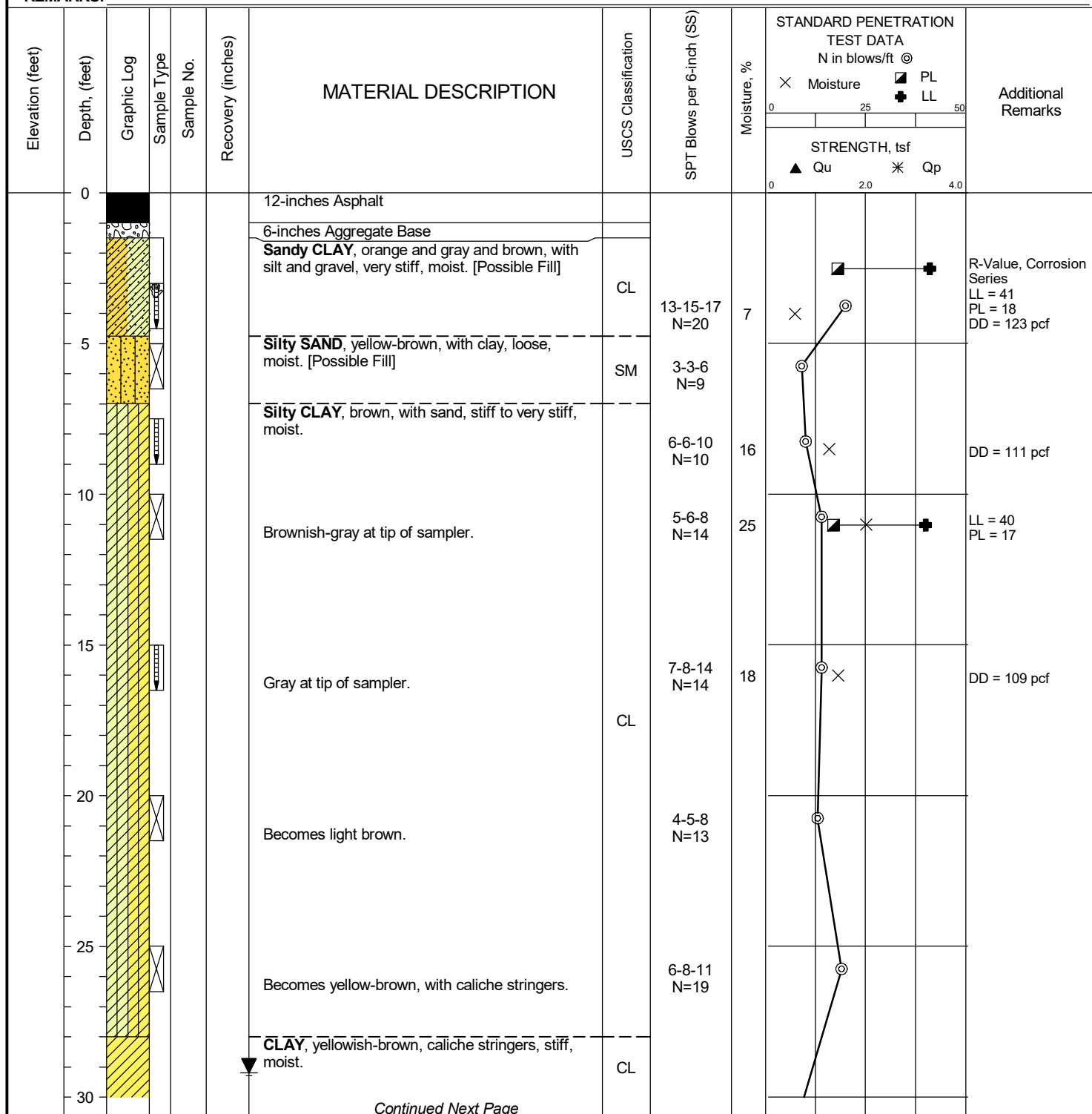
	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
--	--	--

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 11.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9143° LONGITUDE: -117.8871° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B2 Water ▽ ▽ ▽ BORING LOCATION: 	
--	--	---	--	---	--

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @			Additional Remarks
										X Moisture ▣ PL ▣ LL 0 25 50			
										STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0			
	0	[Graphic Log: 0-2.5 ft Asphalt, 2.5-4.5 ft Aggregate Base]				6-inches Asphalt 6-inches Aggregate Base FILL - Sandy SILT , light brown, with trace clay, moist.	ML						
						Clayey SILT , brown, with roots, moist. Silty CLAY , orange-brown, very stiff, moist.	ML CL	10-14-23 N=23	14				DD = 115 pcf
	5					Sandy CLAY , light orange-brown, hard, moist.	CL	8-15-27 N=42					
						Clayey SAND , light orange-brown, very dense to dense, moist.	SC	19-42-50/4" N=58	9				>> DD = 121 pcf
	10							14-14-23 N=37					
Boring Terminated at 11-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. No groundwater encountered. Soil cuttings used as backfill, with asphalt cold patch.													

	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
--	--	--

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 51.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9144° LONGITUDE: -117.8892° STATION: N/A OFFSET: N/A REMARKS:	DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR	BORING B3 <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="3" style="width: 5%; text-align: center; vertical-align: middle;">Water</td> <td style="width: 5%; text-align: center;">▽</td> <td style="width: 60%;">While Drilling</td> <td style="width: 30%; text-align: right;">41.2 feet</td> </tr> <tr> <td style="text-align: center;">▼</td> <td>Upon Completion</td> <td style="text-align: right;">29.2 feet</td> </tr> <tr> <td colspan="3"></td> </tr> </table> BORING LOCATION:	Water	▽	While Drilling	41.2 feet	▼	Upon Completion	29.2 feet			
Water	▽	While Drilling		41.2 feet								
	▼	Upon Completion		29.2 feet								



Continued Next Page



Professional Service Industries, Inc.
 11980 Telegraph Rd, Unit 104
 Santa Fe Springs, CA 90670
 Telephone: (714) 484-8600

PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 51.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9144° LONGITUDE: -117.8892° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B3 Water While Drilling Upon Completion 41.2 feet 29.2 feet	
				BORING LOCATION:	

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
30						CLAY, yellowish-brown, caliche stringers, stiff, moist.	CL	3-3-5 N=8	31	X Moisture ▲ Qu □ PL + LL STRENGTH, tsf * Qp	LL = 41 PL = 23
						SAND, yellowish-brown, fine grained, medium dense, saturated at 40 feet bgs.					
35						Lost Sample - Possibly wet sand. No recovery.	SP	7-10-14 N=24			
40						SILT, yellowish-brown, with trace clay, very stiff, moist.	ML	10-11-18 N=29			
45						SAND, yellowish-brown, with little silt, medium dense, saturated.	SP				
						Silty CLAY, yellowish-brown, very stiff, moist.		13-11-16 N=27			
50					...with caliche stringers.	CL	6-8-12 N=20				
Boring Terminated at 51-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. Groundwater encountered. Soil cuttings used as backfill, with asphalt cold patch.											

Professional Service Industries, Inc.
 11980 Telegraph Rd, Unit 104
 Santa Fe Springs, CA 90670
 Telephone: (714) 484-8600

PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 51.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9132° LONGITUDE: -117.8888° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B4 Water ▽ While Drilling ▽ Upon Completion ▽ 24.8 feet 30.3 feet BORING LOCATION:	
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Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @		Additional Remarks
										X Moisture PL ▽ LL		
										STRENGTH, tsf ▲ Qu * Qp		
										0 25 50 0 2.0 4.0		
0						3-1/2-inches Asphalt						
						6-inches Aggregate Base						
						Poorly Graded SAND, tan, fine grained, loose, slightly moist. [Possible Fill]	SP					
5						Poorly Graded SAND, tan, fine grained, with occasional gravel, dense to very dense, moist.	SP	19-26-50 N=48	4	X		Sieve
							SP	12-15-20 N=35				DD = 107 pcf
10								24-42-50/4" N=58	4	X		>> DD = 110 pcf Sieve
15						Sandy SILT, reddish-brown, with clay lens, hard, moist.	ML	18-28-30 N=58				>>
20						Silty CLAY, orange-brown, very stiff, moist.	CL	9-11-16 N=27				
25						Silty SAND, orange-brown, medium dense, saturated.	SM	8-10-13 N=23				
30						Continued Next Page						

	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
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DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 51.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9132° LONGITUDE: -117.8888° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B4 Water ∇ While Drilling 24.8 feet ▼ Upon Completion 30.3 feet ∇ BORING LOCATION: 								
Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @ × Moisture ▲ Qu ◻ PL + LL * Qp 0 25 50 0 2.0 4.0		Additional Remarks
	30				▼	Silty CLAY , yellow-brown, very stiff, moist. Poorly Graded SAND with Silt , yellow-brown, medium dense to very dense, with occasional saturated sand layers, wet. Silty CLAY , yellow-brown, hard to very stiff, moist. Boring Terminated at 51-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. Groundwater encountered. Soil cuttings used as backfill, with asphalt cold patch.	CL	6-9-13 N=22	19	LL = 36 PL = 17 Sieve >>		
	35						SP-SM	3-5-9 N=14				
	40							14-30-39 N=69				
	45						CL	7-15-17 N=32				
	50							5-7-12 N=19				

Professional Service Industries, Inc.
 11980 Telegraph Rd, Unit 104
 Santa Fe Springs, CA 90670
 Telephone: (714) 484-8600

PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 31.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9139° LONGITUDE: -117.8882° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B5 Water BORING LOCATION:	
--	--	---	--	---	--

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
0						5-inches Asphalt					
						5-inches Aggregate Base					
						Poorly Graded SAND with Silt , yellow-brown, medium dense to dense, moist.					
5						...with trace gravel.	SP-SM	10-11-16 N=17	10	X Moisture PL	Sieve
						...with caliche stringers.		10-6-11 N=17			DD = 107 pcf
10								16-24-35 N=37	14	X Moisture PL	DD = 114 pcf
						Silty CLAY , yellow-brown, hard to very stiff, moist.		13-13-24 N=37			
15								11-20-29 N=49			
20							CL	8-13-17 N=30			
25								9-12-17 N=29			
30											
Continued Next Page											

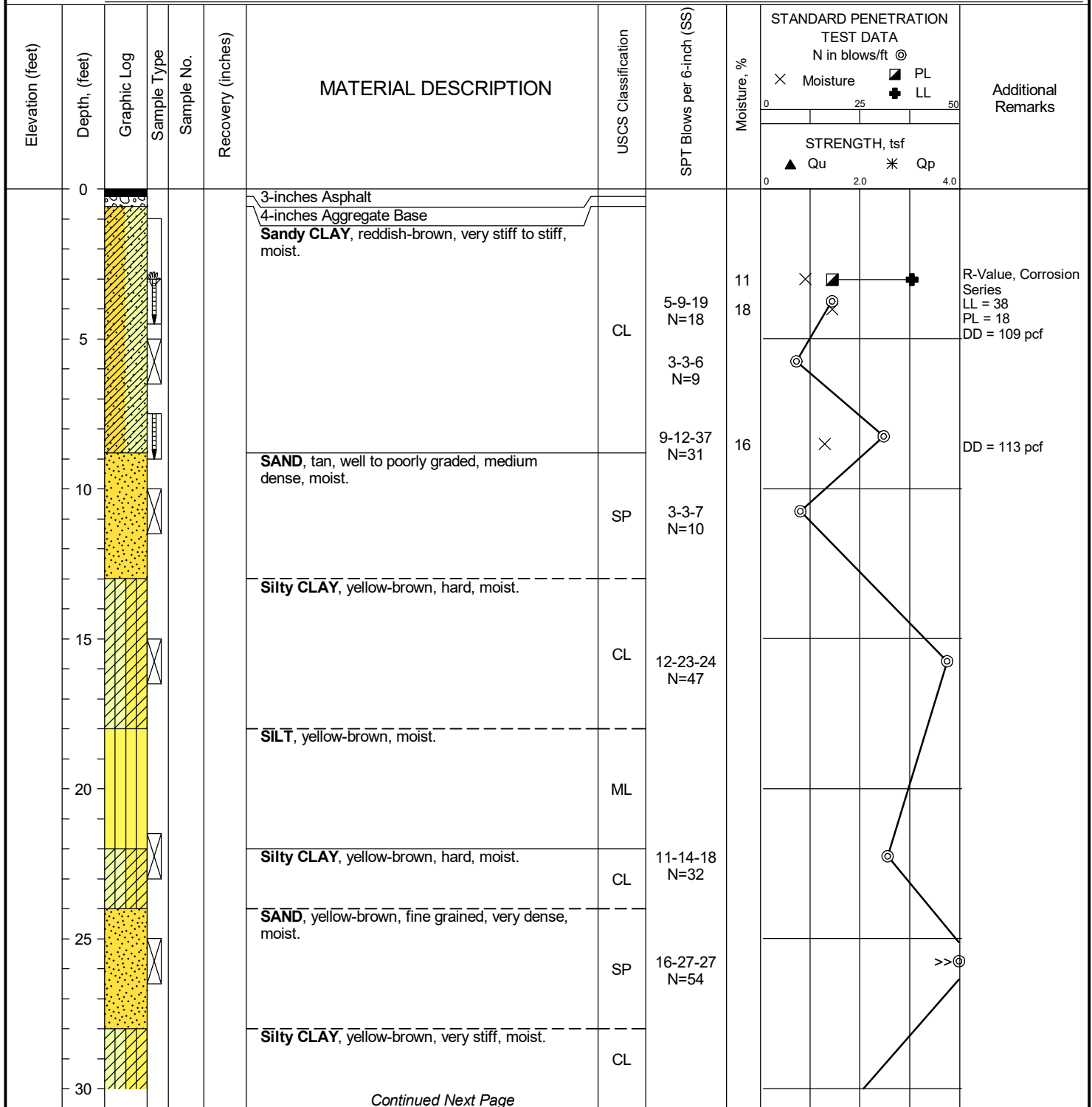
	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
--	--	--

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 31.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9139° LONGITUDE: -117.8882° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B5 Water									
				BORING LOCATION:									
Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @ × Moisture ▣ PL 0 25 50 ▲ Qu * Qp 0 2.0 4.0			Additional Remarks
	30					Silty CLAY , yellow-brown, hard to very stiff, moist. Boring Terminated at 31-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. Groundwater not encountered. Soil cuttings used as backfill, with asphalt cold patch.	CL	6-8-10 N=18					

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 Telephone: (714) 484-8600

PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 31.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9133° LONGITUDE: -117.8873° STATION: N/A OFFSET: N/A REMARKS:	DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR	BORING B6
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Continued Next Page



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 Santa Fe Springs, CA 90670
 Telephone: (714) 484-8600

PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 31.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9133° LONGITUDE: -117.8873° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B6 Water ▽ ▽ ▽	
BORING LOCATION:					

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
	30					Silty CLAY , yellow-brown, very stiff, moist. Boring Terminated at 31-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. Groundwater not encountered. Soil cuttings used as backfill, with asphalt cold patch.	CL	7-9-12 N=21		X Moisture 0 25 50 PL LL STRENGTH, tsf ▲ Qu * Qp 0 2.0 4.0	



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11980 Telegraph Rd, Unit 104
Santa Fe Springs, CA 90670
Telephone: (714) 484-8600

PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
Brea, CA



APPENDIX B

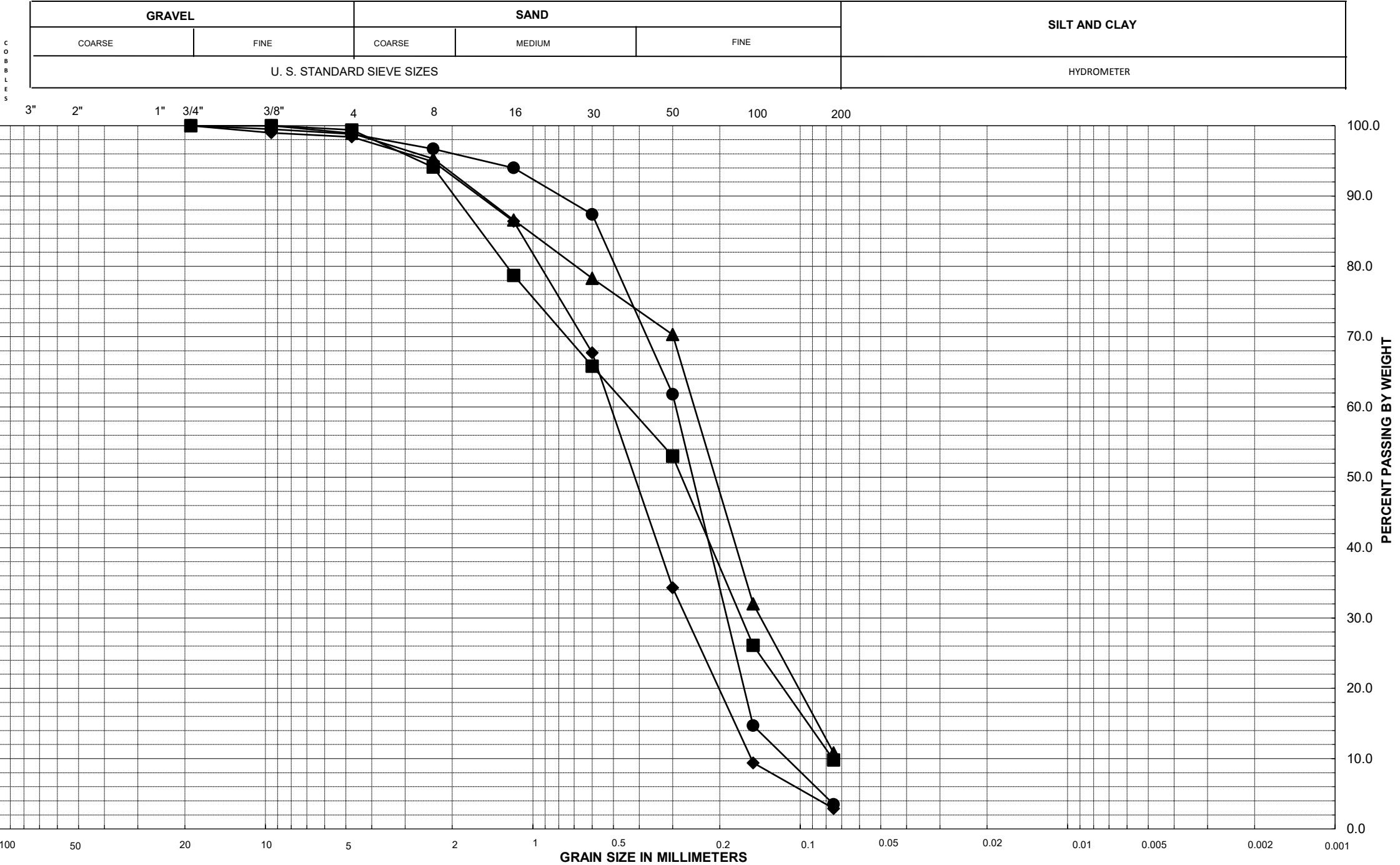
LABORATORY TEST RESULTS



LABORATORY TEST RESULTS

Boring	Depth (ft.)	Test	Result
B3	1½ - 5	Soluble Sulfate (ppm)	246
		Soluble Chloride (ppm)	145
		Minimum Resistivity (Ω-cm)	1100
		pH	7.5
		R-Value	11
		Liquid Limit (%)	41
		Plastic Limit (%)	18
		Plastic Index (%)	23
		Expansion Index	35
B3	8½	Consolidation	See Plot
B3	11	Liquid Limit (%)	40
		Plastic Limit (%)	17
		Plastic Index (%)	24
B3	31	Liquid Limit (%)	41
		Plastic Limit (%)	23
		Plastic Index (%)	17
B4	2½ - 5½	Sieve Analysis	See Plot
B4	11	Sieve Analysis	See Plot
B4	31	Liquid Limit (%)	36
		Plastic Limit (%)	17
		Plastic Index (%)	19
B4	36	Sieve Analysis	See Plot
B5	1 - 4	Sieve Analysis	See Plot
B6	1 - 5	Soluble Sulfate (ppm)	576
		Soluble Chloride (ppm)	230
		Minimum Resistivity (Ω-cm)	1050
		pH	7.4
		R-Value	6
		Liquid Limit (%)	38
		Plastic Limit (%)	18
		Plastic Index (%)	21
		Direct Shear	See Plot
		Expansion Index	34

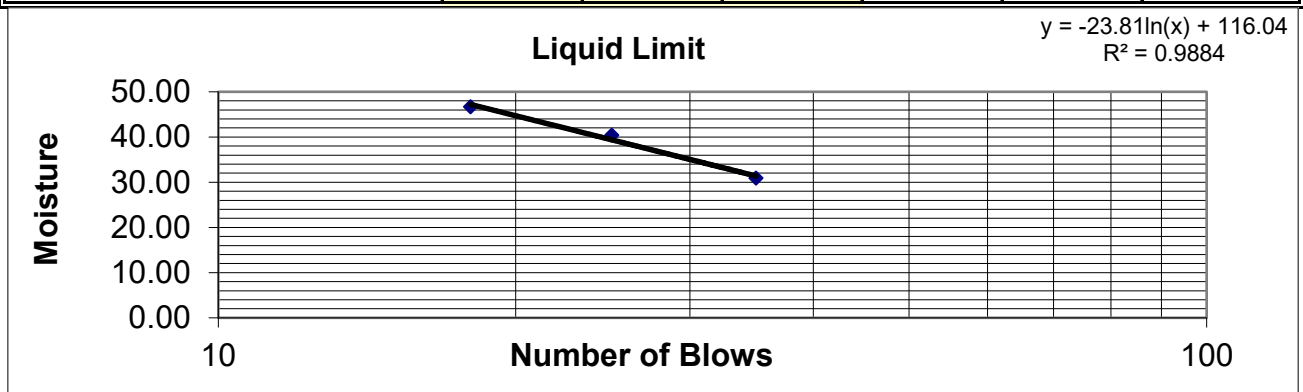
UNIFIED SOIL CLASSIFICATION



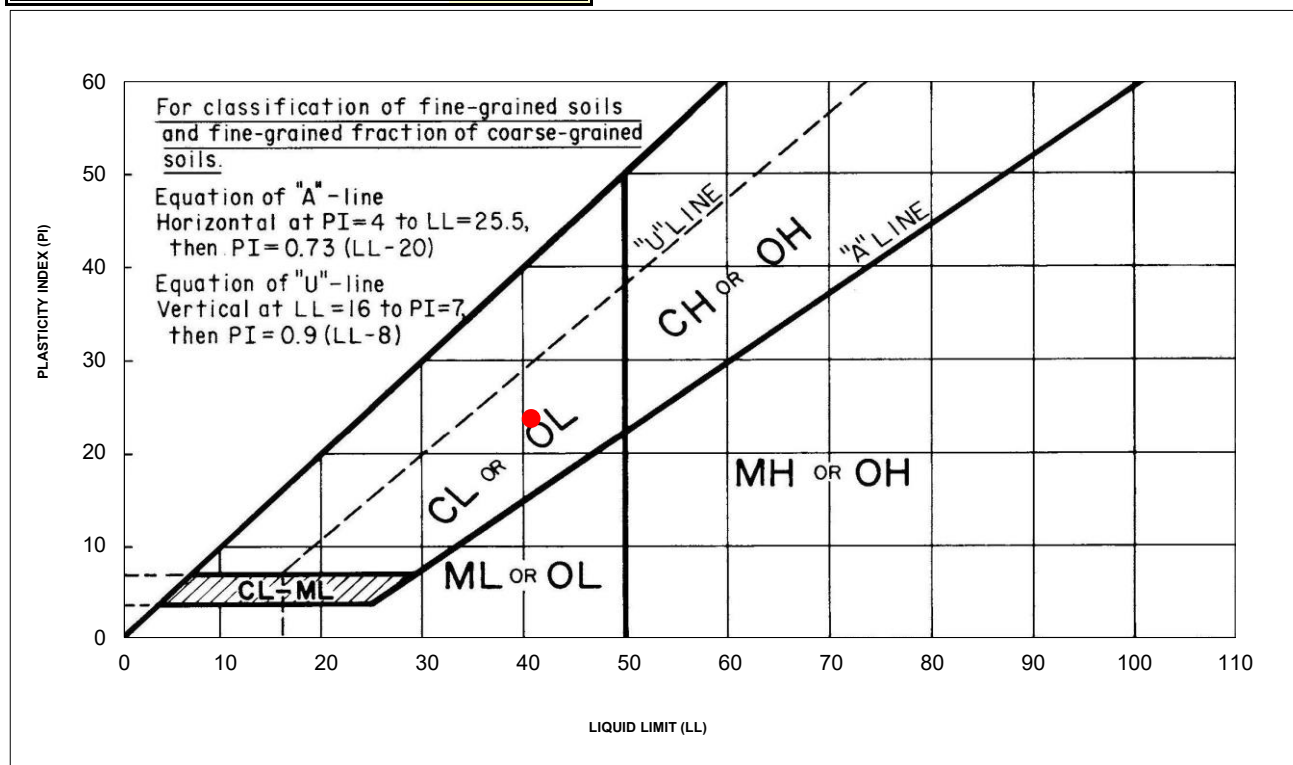
Exploration No.	Sample No.	Depth (ft)	SYMBOL	W _n (%)	LL	PI	% Clay	Description and Classification	D ₆₀	D ₃₀	D ₁₀	C _u	C _c
B4		2.5'-5.5'	●					Poorly Graded Sand (SP)	0.29	0.19	0.11	2.6	1.1
B4		11'	◆					Poorly Graded Sand (SP)	0.51	0.26	0.15	3.4	0.9
B4		36'	■					Poorly Graded Sand with Silt (SP-SM)	0.43	0.15	0.073	5.9	0.7
B5		1'-4'	▲					Poorly Graded Sand with Silt (SP-SM)	0.24	0.14	0.073	3.3	1.1
			□										
PROJECT NAME: Brea Mall									PARTICLE-SIZE DISTRIBUTION CURVES ASTM D422				
PROJECT NUMBER: 00661261													

Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/7/2018
Boring & Sample No.	B3 @ 11 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	46.70	42.10	44.00	19.5	19.7
WEIGHT OF CAN + DRY SOIL	40.40	35.60	36.20	17.9	18.2
WEIGHT OF CAN	20.00	19.50	19.50	8.60	8.8
WEIGHT OF WATER	6.30	6.50	7.80	1.6	1.5
WEIGHT OF DRY SOIL	20.40	16.10	16.70	9.3	9.4
MOISTURE CONTENT	30.88	40.37	46.71	17.2	16.0
NUMBER OF BLOWS	35	25	18		

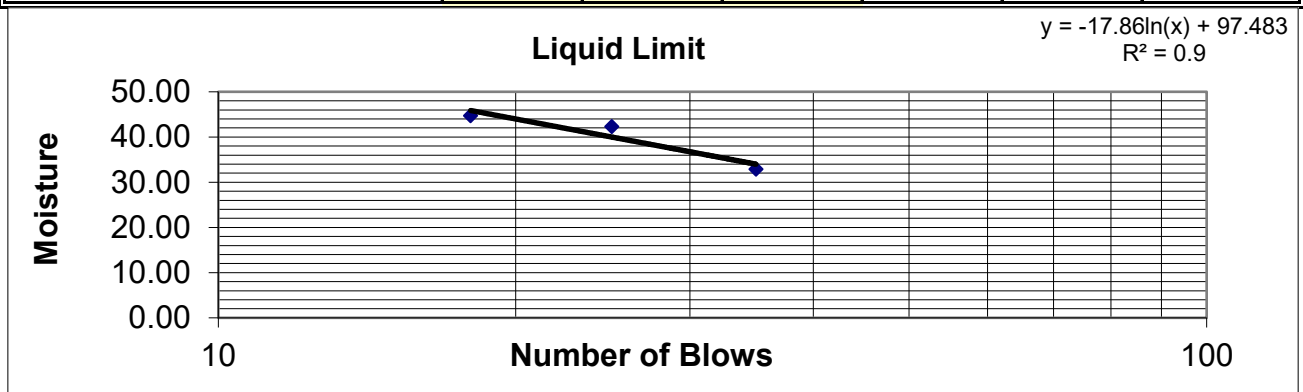


TEST RESULTS	
LIQUID LIMIT	40
PLASTIC LIMIT	17
PLASTICITY INDEX	24
Classification	CL

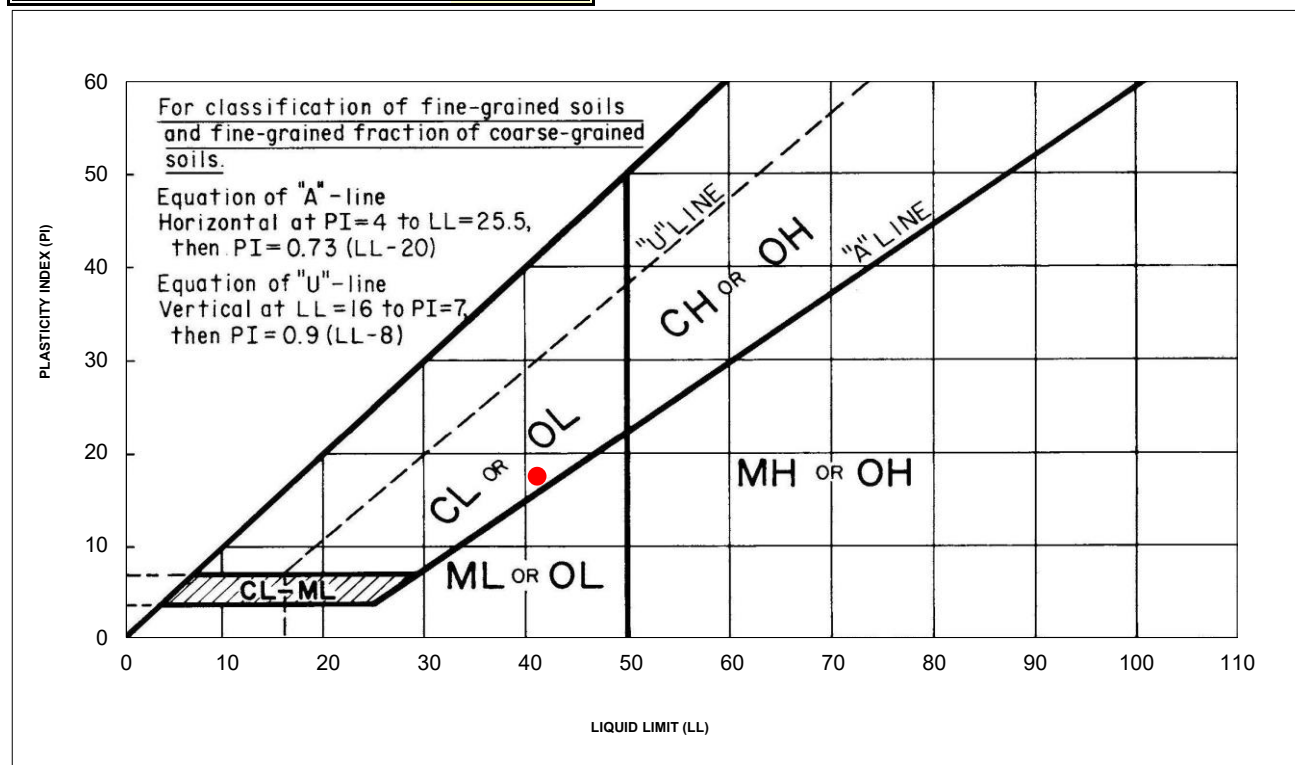


Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/7/2018
Boring & Sample No.	B3 @ 31 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	38.20	40.50	44.10	18.5	18
WEIGHT OF CAN + DRY SOIL	33.60	34.20	36.50	16.7	16.2
WEIGHT OF CAN	19.60	19.30	19.50	8.80	8.6
WEIGHT OF WATER	4.60	6.30	7.60	1.8	1.8
WEIGHT OF DRY SOIL	14.00	14.90	17.00	7.9	7.6
MOISTURE CONTENT	32.86	42.28	44.71	22.8	23.7
NUMBER OF BLOWS	35	25	18		

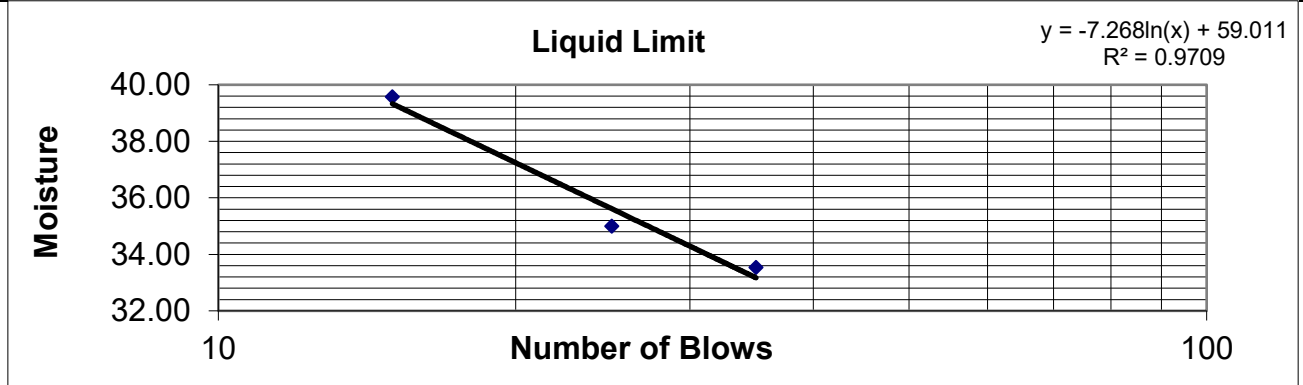


TEST RESULTS	
LIQUID LIMIT	41
PLASTIC LIMIT	23
PLASTICITY INDEX	17
Classification	CL

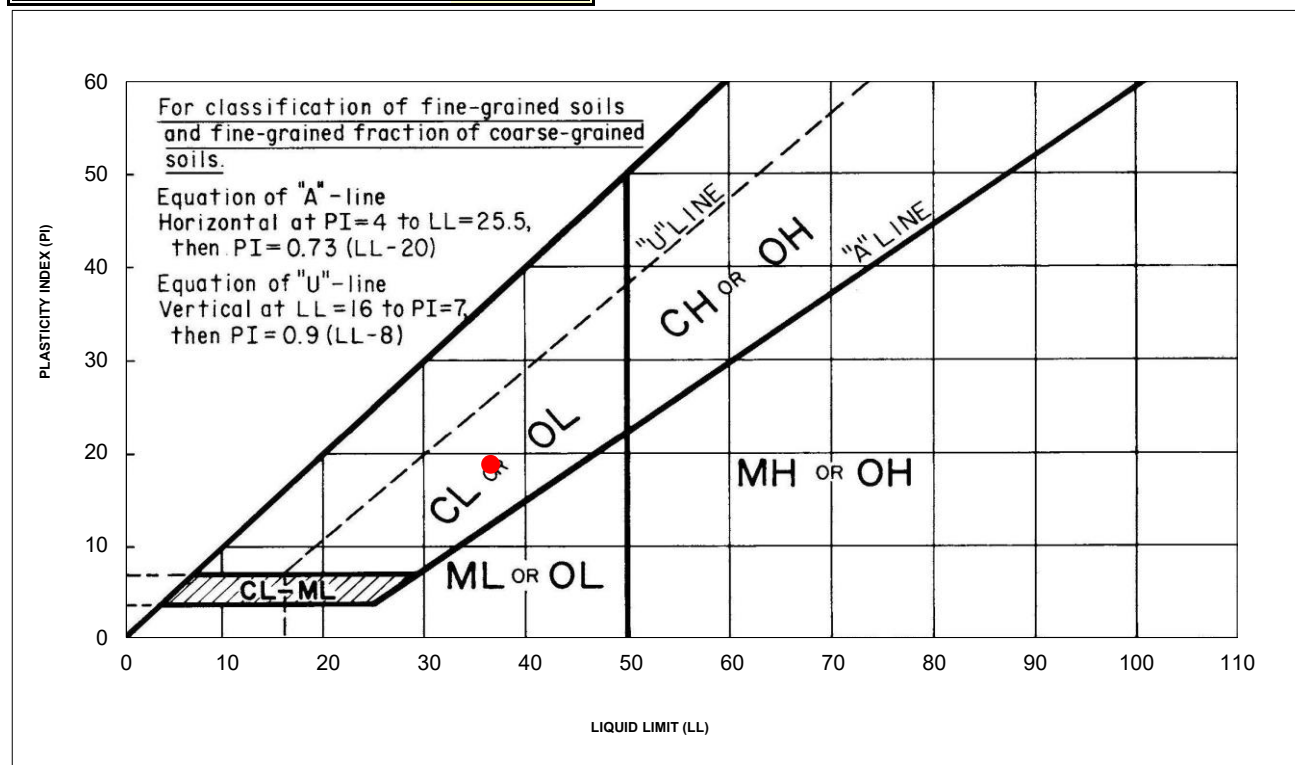


Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/7/2018
Boring & Sample No.	B4 @ 31 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	41.10	43.70	45.90	19.5	18.7
WEIGHT OF CAN + DRY SOIL	35.70	37.40	38.50	17.9	17.2
WEIGHT OF CAN	19.60	19.40	19.80	8.60	8.6
WEIGHT OF WATER	5.40	6.30	7.40	1.6	1.5
WEIGHT OF DRY SOIL	16.10	18.00	18.70	9.3	8.6
MOISTURE CONTENT	33.54	35.00	39.57	17.2	17.4
NUMBER OF BLOWS	35	25	15		

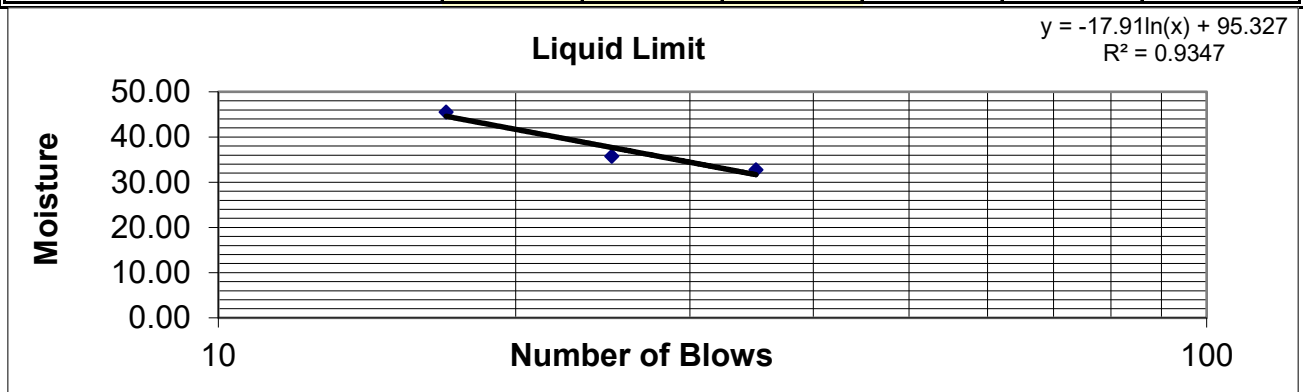


TEST RESULTS	
LIQUID LIMIT	36
PLASTIC LIMIT	17
PLASTICITY INDEX	19
Classification	CL

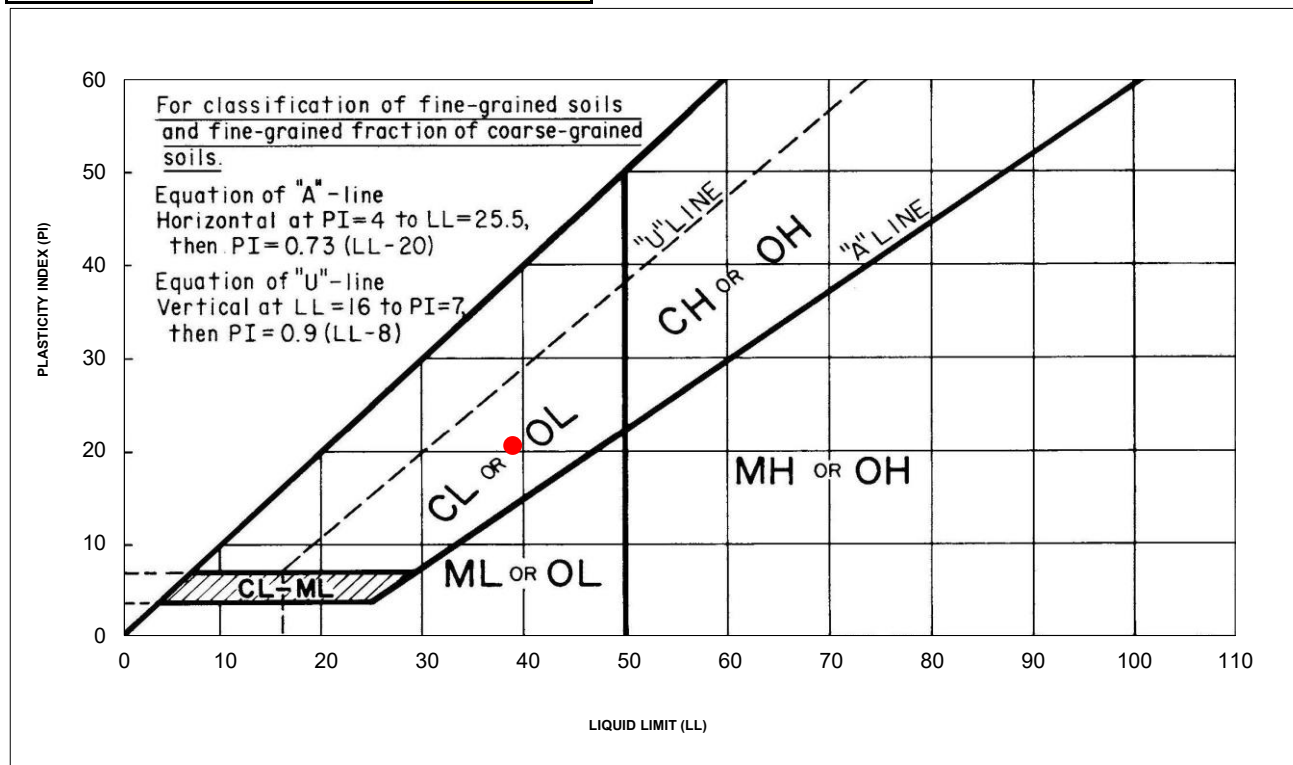


Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/7/2018
Boring & Sample No.	B6 @ 1-5 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	40.90	42.40	42.20	20.2	20.7
WEIGHT OF CAN + DRY SOIL	35.60	36.40	35.10	18.5	18.8
WEIGHT OF CAN	19.40	19.60	19.50	8.60	8.6
WEIGHT OF WATER	5.30	6.00	7.10	1.7	1.9
WEIGHT OF DRY SOIL	16.20	16.80	15.60	9.9	10.2
MOISTURE CONTENT	32.72	35.71	45.51	17.2	18.6
NUMBER OF BLOWS	35	25	17		

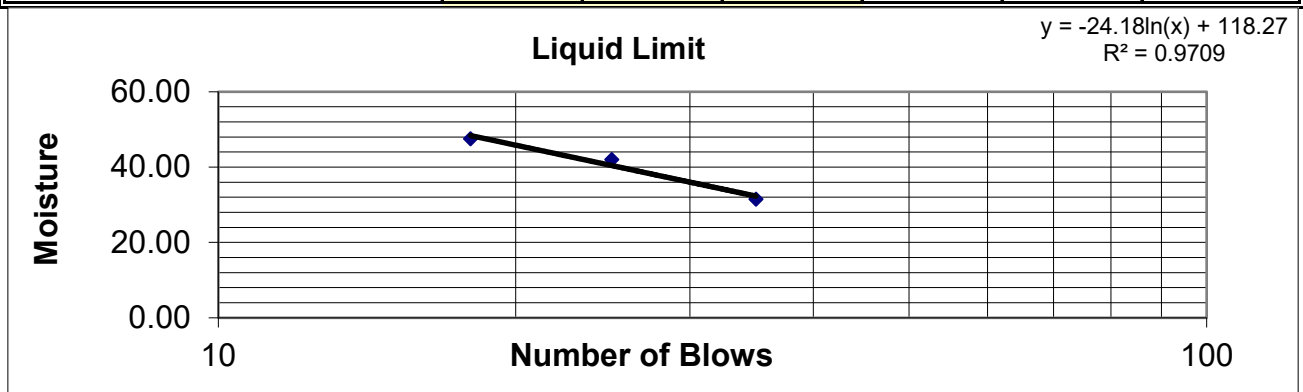


TEST RESULTS	
LIQUID LIMIT	38
PLASTIC LIMIT	18
PLASTICITY INDEX	21
Classification	CL

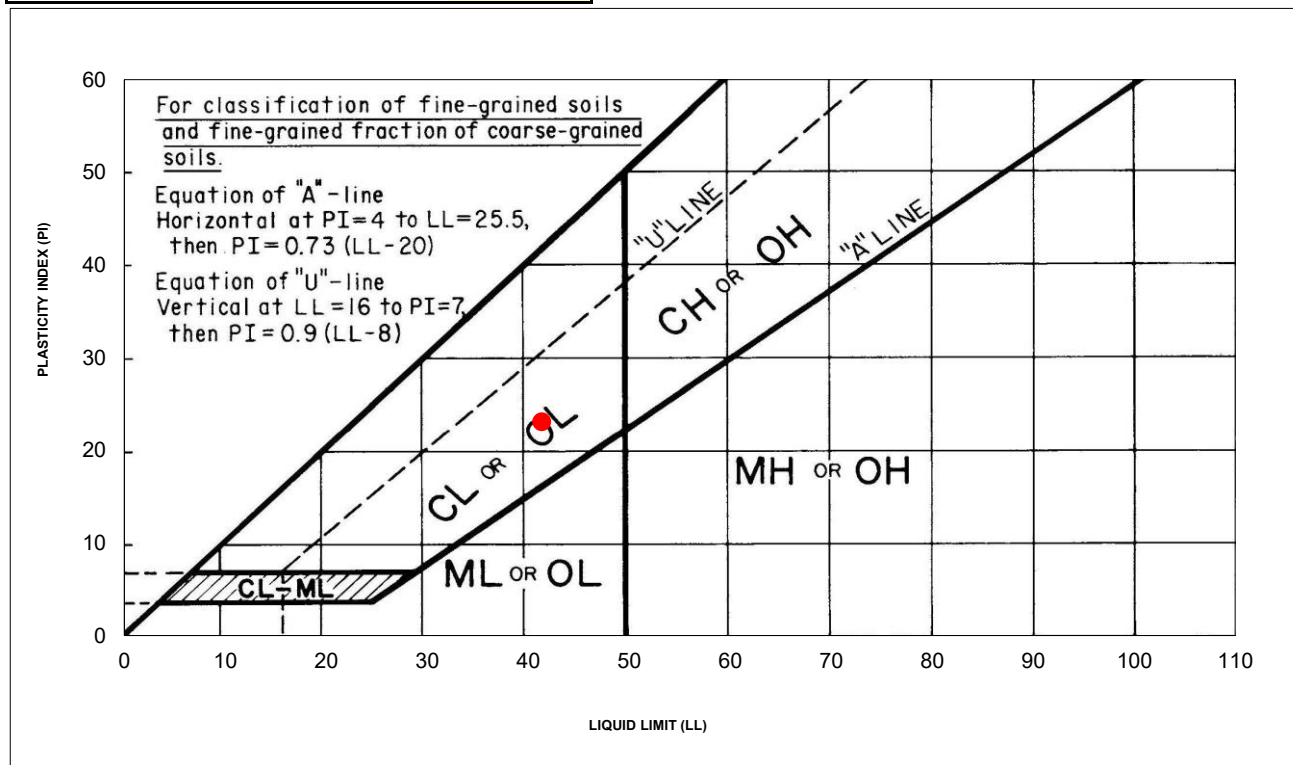


Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/9/2018
Boring & Sample No.	B3 @ 1.5-5 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	46.30	41.80	43.70	19.7	19.8
WEIGHT OF CAN + DRY SOIL	40.00	35.20	35.90	17.8	18.3
WEIGHT OF CAN	20.00	19.50	19.50	8.60	8.8
WEIGHT OF WATER	6.30	6.60	7.80	1.9	1.5
WEIGHT OF DRY SOIL	20.00	15.70	16.40	9.2	9.5
MOISTURE CONTENT	31.50	42.04	47.56	20.7	15.8
NUMBER OF BLOWS	35	25	18		

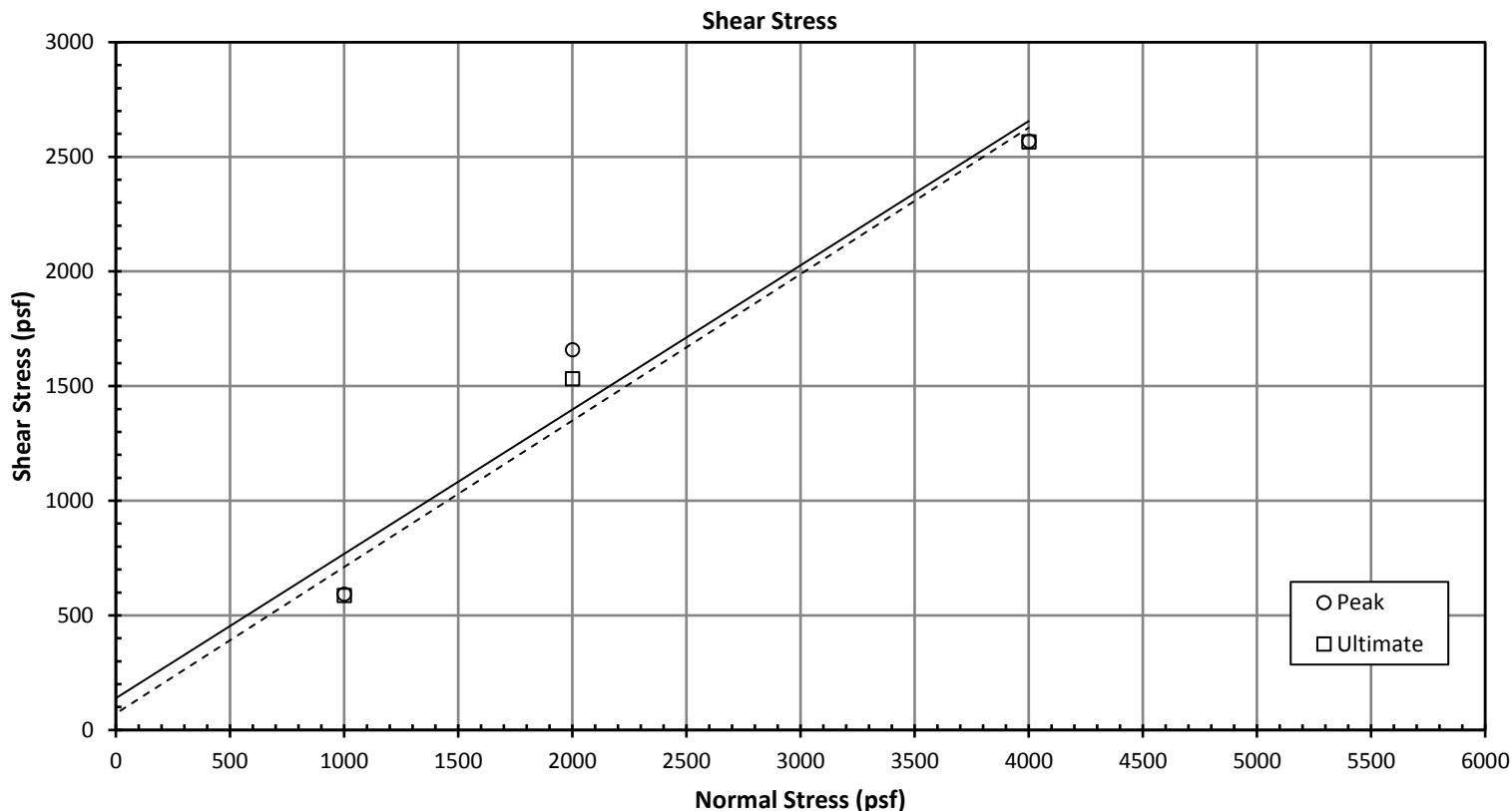
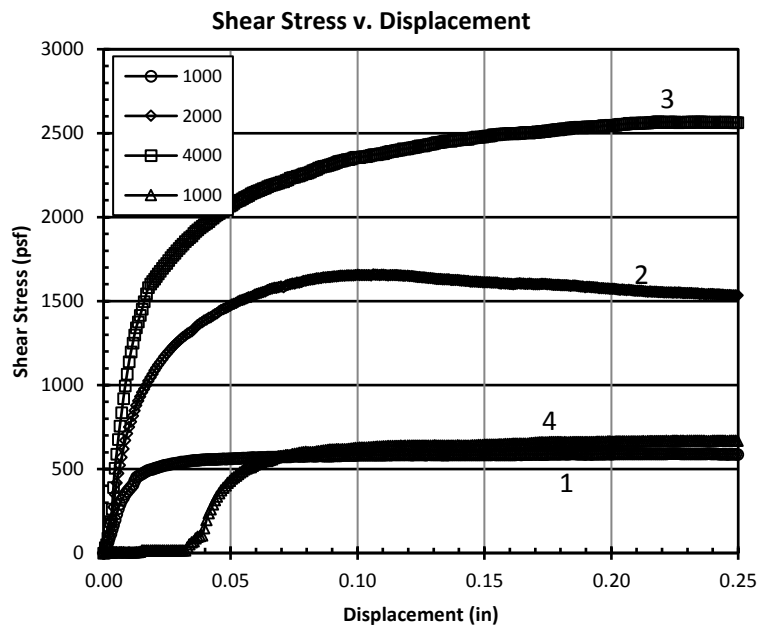
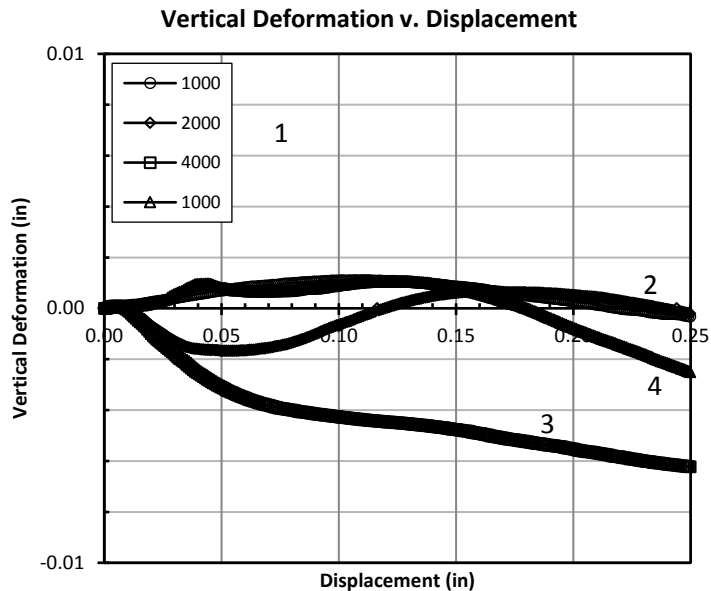


TEST RESULTS	
LIQUID LIMIT	41
PLASTIC LIMIT	18
PLASTICITY INDEX	23
Classification	CL



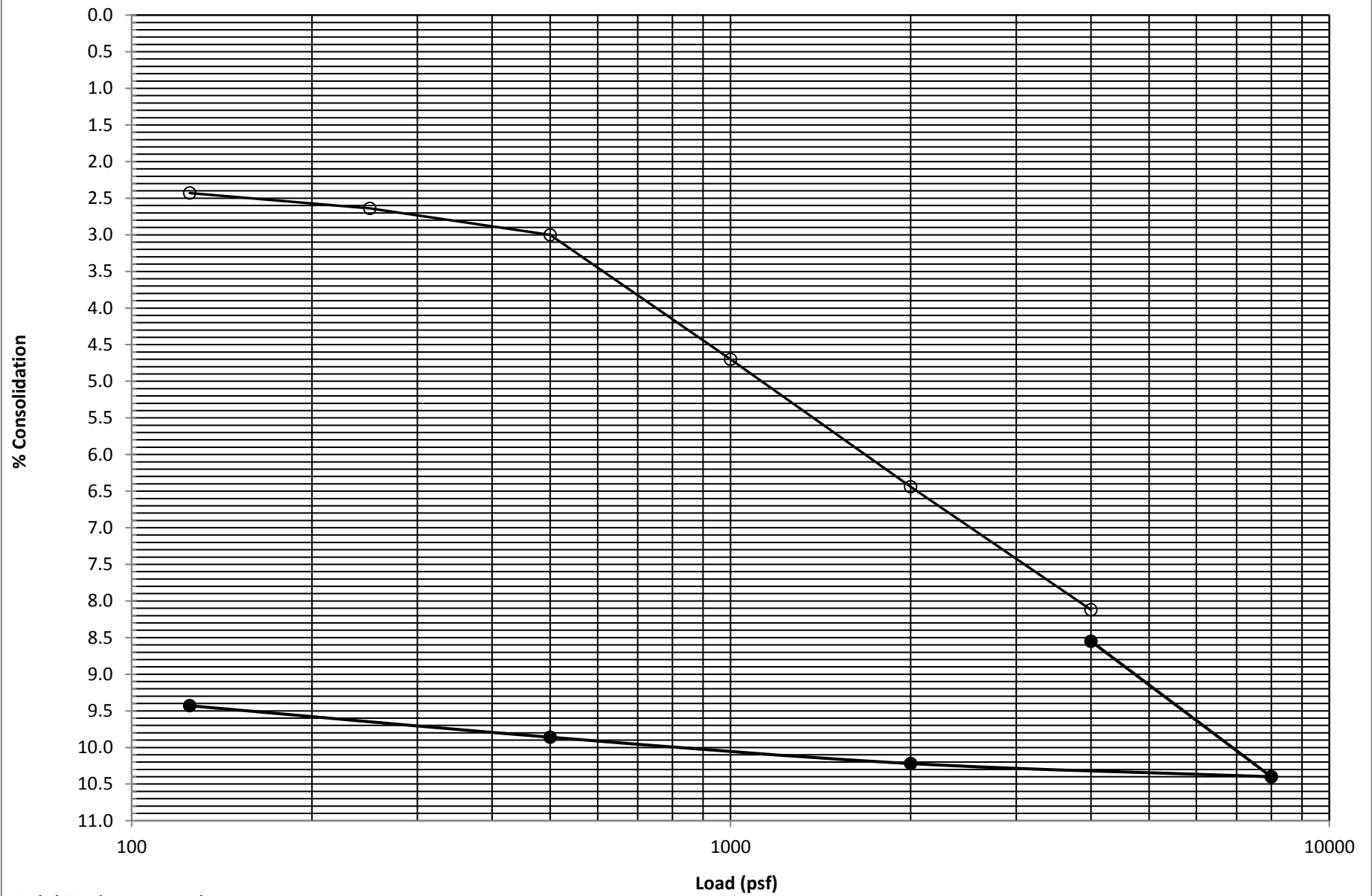
Samples Tested	1	2	3	4	
Boring ID	B6	B6	B6	B6	
Depth (ft.)	1-5	1-5	1-5	1-5	
Initial Moisture Content (%)	9.98	9.98	9.98	9.98	
Final Moisture Content (%)	21.75	20.91	19.67	17.62	
Normal Stress (psf)	1000	1000	2000	4000	
Maximum Shear Stress (psf)	594	670	1659	2569	
Ultimate Shear Stress (psf)	588	670	1533	2566	
ASTM D3080	Soil Type	Silty Clay	Silty Clay	Silty Clay	Silty Clay

	Peak	Ultim.
Friction, ϕ (Deg)	33	33
Cohesion (psf)	81	48
Sample Type:	Remolded	
Method:	Drained	
Consolidation:	Yes	
Saturation:	Yes	
Strain Rate (in/min):	0.0032	



B3
8.5 ft

Consolidation



Solid Circle = Wetted

'R' VALUE CA 301

Client: PSI

Date: 2/14/18

By: LD

Client's Job No.: # 00661261-5296

Sample No.: B-6 @ 1' - 5'

GLA Reference: 2008-026

Soil Type: Brown, Sandy Clay

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	70	55	50	
Initial Moisture Content	%	9.1	9.1	9.1	
Water Added	ml	80	110	130	
Moisture at Compaction	%	16.4	19.1	20.9	
Sample & Mold Weight	gms	3180	3165	3109	
Mold Weight	gms	2101	2110	2104	
Net Sample Weight	gms	1079	1055	1005	
Sample Height	in.	2.49	2.56	2.48	
Dry Density	pcf	112.8	104.8	101.5	
Pressure	lbs	6395	4070	2480	
Exudation Pressure	psi	509	324	197	
Expansion Dial	x 0.0001	75	38	21	
Expansion Pressure	psf	325	165	91	
Ph at 1000lbs	psi	40	60	68	
Ph at 2000lbs	psi	110	140	154	
Displacement	turns	3.34	3.82	4.21	
R' Value		25	9	2	
Corrected 'R' Value		25	9	2	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	8
By Expansion Pressure :	6
TI =	5

SAMPLE NO.:	B-6 @ 1' - 5'			B-3 @ 1.5' - 5'								
Depth:	Sandy Clay			Sandy Clay								
DIRECT SHEAR TEST (type)												
Initial Moisture Content %												
Dry Density (pcf)												
Normal Stress (psf)												
Peak Shear Stress (psf)												
Ultimate Shear Stress (psf)												
Cohesion (psf)												
Internal Friction Angle (degrees)												
EXPANSION TEST UBC STD 18-2												
Initial Dry Density (pcf)												
Initial Moisture Content %												
Final Moisture Content %												
Pressure (psf)												
Expansion Index	Swell	%										
CORROSIVITY TEST												
Resistivity (CTM643) (ohm-cm)	1050			1100								
pH (CTM643)	7.4			7.5								
CHEMICAL TESTS												
Soluble Sulfate (CTM 417) (ppm)	576			246								
Chloride Content (CTM 422) (ppm)	230			145								
Wash #200 Sieve (ASTM-1140) %												
Sand Equivalent (ASTM D2419)												

'R' VALUE CA 301

Client: PSI

Date: 2/14/18

By: LD

Client's Job No.: # 00661261-1

Sample No.: B-3 @ 1.5' - 5'

GLA Reference: 2008-026

Soil Type: Brown, Sandy Clay

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	120	60	50	
Initial Moisture Content	%	7.1	7.1	7.1	
Water Added	ml	80	120	140	
Moisture at Compaction	%	14.2	17.8	19.6	
Sample & Mold Weight	gms	3144	3173	3148	
Mold Weight	gms	2103	2098	2096	
Net Sample Weight	gms	1041	1075	1052	
Sample Height	in.	2.35	2.49	2.501	
Dry Density	pcf	117.5	111.0	106.6	
Pressure	lbs	9250	4100	2680	
Exudation Pressure	psi	736	326	213	
Expansion Dial	x 0.0001	93	20	4	
Expansion Pressure	psf	403	87	17	
Ph at 1000lbs	psi	26	56	66	
Ph at 2000lbs	psi	75	131	151	
Displacement	turns	2.89	3.82	4.09	
R' Value		50	13	4	
Corrected 'R' Value		50	13	4	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	11
By Expansion Pressure :	N/A
TI =	5



APPENDIX C
PERCOLATION TEST RESULTS

Boring Percolation Test Datasheet

Client: Simon

Test Date: 2/2/2018

Project: Brea Mall

Work Order No.: 00661261

Address: 100 Brea Mall

Technician: Lloyd Guss + Manny R.

Brea, CA

Weather: Sunny, Clear

Test Hole Number/Location: B3

Depth of Total Test Hole bottom below land surface (inches): 9.5 ft.

Test hole cross-section (check a box and indicate size):

☒ Diameter: 8 inches

☐ Square: _____ inches

The land surface at the top of the test hole is (check one):

☐ Undisturbed Native Soil

☐ Cut Surface

☐ Fill Surface

☒ Other (describe): Paved Parking Lot

Soil Data from Test Hole:

Depth (ft)	Soil Texture
0 - 4.75	Sandy Clay
4.75 - 7	Silty Sand
7 - 28	Silty Clay

Perforated PVC Pipe Diameter = 4"

Solid end cap on pipe.

Pipe Length = 10.25' (10'3")

Stick up above asphalt = 18"

Depth of water during testing =

35.16 inches

Average Head during testing =

35.1 inches

Test Hole Presoaking

Presoak >12in. = If drains away in 30 min. (x2), Test @10min. If not, Test @30min.

Run #	Start Time (H:M)	Start Depth to WL (ft) bgs	Start Time	End Depth to WL (ft)	End Time	Measured Water Drop (ft)	Measured Water Drop (in)	Elapsed Time (min)
1	9:05	8.38		8.38	9:30	0.0	0.00	0:25
2	9:30	8.38		8.38	10:00	0.0	0.00	0:30

Test Hole Percolation:

Fill to Presoak Level or below

Porchet Method

Run #	Start Time (H:M)	Start Depth to WL (ft) bgs	End Time (H:M)	End Depth to WL (ft)	Measured Water Drop (ft)	Measured Water Drop (in.)	WL % Change (<10 % ?)	Time Interval (min)	Infiltration Rate (in/hr)
1	10:00	8.38	10:35	8.38	0.00	0.0		35	0.0
2	10:35	8.38	11:05	8.38	0.00	0.0	0.0	30	0.0
3	11:05	8.38	11:35	8.38	0.00	0.0	0.0	30	0.0
4	11:35	8.38	12:11	8.39	0.01	0.1	0.3	36	0.0
5	12:17	8.39	12:51	8.42	0.03	0.4	0.7	34	0.0
6	12:56	8.00	13:26	8.00	0.00	0.0	1.0	30	0.0
7	13:26	8.00	13:56	8.00	0.00	0.0	0.0	30	0.0
8	13:56	8.00	14:26	8.02	0.02	0.2	0.7	30	0.0
9	14:26	8.02	14:56	8.04	0.02	0.2	0.0	30	0.0
10	14:56	8.04	15:26	8.07	0.03	0.4	0.3	30	0.0
11	15:26	8.07	15:56	8.08	0.01	0.1	0.7	30	0.0

Final Stabilized Infiltration Rate: 0.0 in/hour

Boring Percolation Test Datasheet

Client: Simon

Test Date: 2/2/2018

Project: Brea Mall

Work Order No.: 00661261

Address: 100 Brea Mall

Technician: Lloyd Guss + Manny R.

Brea, CA

Weather: Sunny, Clear

Test Hole Number/Location: B4

Depth of Total Test Hole bottom below land surface (inches): 9.7 ft.

Test hole cross-section (check a box and indicate size):

☒ Diameter: 8 inches

☐ Square: inches

The land surface at the top of the test hole is (check one):

☐ Undisturbed Native Soil

☐ Cut Surface

☐ Fill Surface

☒ Other (describe): Paved Parking Lot

Soil Data from Test Hole:

Depth (ft)	Soil Texture
0 - 5	Sand
5 - 12	Sand
12 -18	Sandy Silt

Perforated PVC Pipe Diameter = 4"

Solid end cap on pipe.

Pipe Length = 9.9' (9'11")

Stick up above asphalt = 0"

Depth of water during testing =

22.44 inches

Average Head during testing =

19.92 inches

Test Hole Presoaking

Presoak >12in. = If drains away in 30 min. (x2), Test @10min. If not, Test @30min.

Run #	Start Time (H:M)	Start Depth to WL (ft) bgs	Start Time	End Depth to WL (ft)	End Time	Measured Water Drop (ft)	Measured Water Drop (in)	Elapsed Time (min)
1	10:10	9.6		9.7	10:35	0.1	1.20	0:25
2	10:31	8.03		9.7	10:56	1.7	20.04	0:25

Test Hole Percolation:

Fill to Presoak Level or below

Porchet Method

Run #	Start Time (H:M)	Start Depth to WL (ft) bgs	End Time (H:M)	End Depth to WL (ft)	Measured Water Drop (ft)	Measured Water Drop (in.)	WL % Change (<10 % ?)	Time Interval (min)	Infiltration Rate (in/hr)
1	10:58	8.04	11:23	8.90	0.86	10.3		25	2.3
2	11:27	8.03	11:37	8.52	0.49	5.9	19.8	10	3.2
3	11:40	8.05	11:50	8.50	0.45	5.4	2.1	10	3.0
4	11:55	8.05	12:05	8.50	0.45	5.4	0.0	10	3.0
5	12:07	8.03	12:17	8.55	0.52	6.2	3.7	10	3.4
6	12:20	8.03	12:30	8.51	0.48	5.8	2.1	10	3.2
7	12:37	8.03	12:47	8.45	0.42	5.0	3.2	10	2.8

Final Stabilized Infiltration Rate: 2.8 in/hour



APPENDIX D

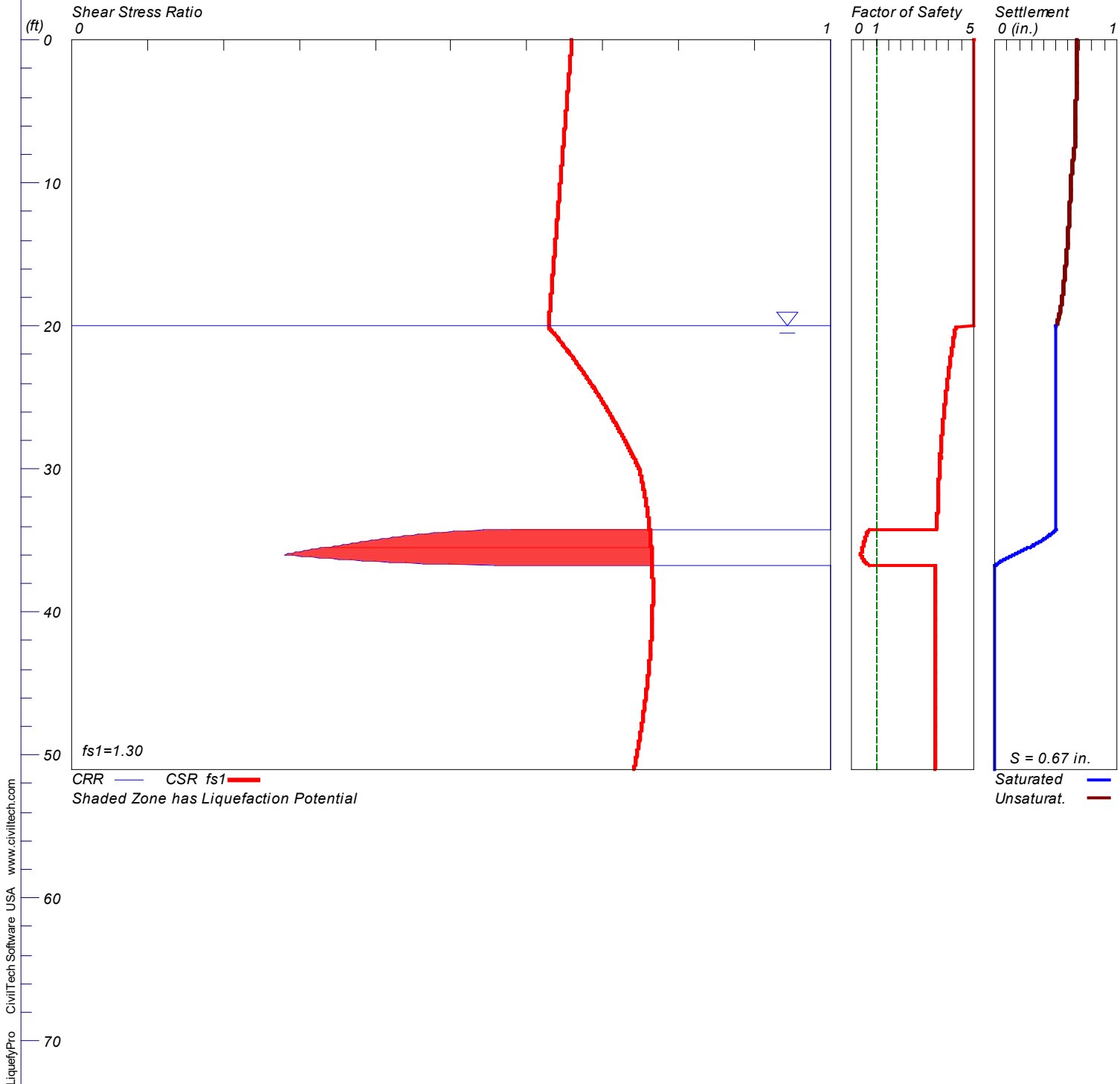
LIQUEFACTION ANALYSIS

LIQUEFACTION ANALYSIS

Simon ~ Brea Mall

Hole No.=B4 Water Depth=20 ft

Magnitude=6.69
Acceleration=0.78g



LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.

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Input File Name: P:\0066\GEO\2018\1261 Simon BreaMall GEO\Analysis\00661261 Liquef B4.liq

Title: Simon ~ Brea Mall

Subtitle: SW Development

Surface Elev.=

Hole No.=B4

Depth of Hole= 51.00 ft

Water Table during Earthquake= 20.00 ft

Water Table during In-Situ Testing= 25.00 ft

Max. Acceleration= 0.78 g

Earthquake Magnitude= 6.69

Input Data:

Surface Elev.=

Hole No.=B4

Depth of Hole=51.00 ft

Water Table during Earthquake= 20.00 ft

Water Table during In-Situ Testing= 25.00 ft

Max. Acceleration=0.78 g

Earthquake Magnitude=6.69

1. SPT or BPT Calculation.

2. Settlement Analysis Method: Ishihara / Yoshimine*

3. Fines Correction for Liquefaction: Idriss/Seed

4. Fine Correction for Settlement: During Liquefaction*

5. Settlement Calculation in: All zones*

6. Hammer Energy Ratio, $C_e = 1.25$

7. Borehole Diameter, $C_b = 1.15$

8. Sampling Method, $C_s = 1.2$

9. User request factor of safety (apply to CSR) , User= 1.3

Plot one CSR curve ($f_{s1} = \text{User}$)

10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT pcf	gamma %	Fines
-------------	------------	------------	-------

0.00	48.00	111.00	5.00
------	-------	--------	------

6.00	48.00	111.00	5.00
------	-------	--------	------

8.00	35.00	114.00	5.00
------	-------	--------	------

11.00	58.00	114.00	5.00
16.00	58.00	115.00	30.00
21.00	27.00	115.00	60.00
26.00	23.00	120.00	30.00
31.00	22.00	115.00	60.00
36.00	14.00	120.00	10.00
41.00	69.00	120.00	10.00
46.00	32.00	120.00	60.00
51.00	19.00	120.00	60.00

Output Results:

Settlement of Saturated Sands=0.50 in.
Settlement of Unsaturated Sands=0.17 in.
Total Settlement of Saturated and Unsaturated Sands=0.67 in.
Differential Settlement=0.336 to 0.444 in.

Depth ft	CRRm	CSRsf in.	F.S. in.	S_sat. in.	S_dry	S_all
-------------	------	--------------	-------------	---------------	-------	-------

0.00	2.68	0.66	5.00	0.50	0.17	0.67
1.00	2.68	0.66	5.00	0.50	0.17	0.67
2.00	2.68	0.66	5.00	0.50	0.17	0.67
3.00	2.68	0.65	5.00	0.50	0.17	0.67
4.00	2.68	0.65	5.00	0.50	0.16	0.67
5.00	2.68	0.65	5.00	0.50	0.16	0.66
6.00	2.68	0.65	5.00	0.50	0.16	0.66
7.00	2.68	0.65	5.00	0.50	0.15	0.66
8.00	2.68	0.65	5.00	0.50	0.15	0.65
9.00	2.68	0.65	5.00	0.50	0.13	0.63
10.00	2.68	0.64	5.00	0.50	0.12	0.62
11.00	2.68	0.64	5.00	0.50	0.12	0.62
12.00	2.68	0.64	5.00	0.50	0.11	0.61
13.00	2.68	0.64	5.00	0.50	0.10	0.61
14.00	2.68	0.64	5.00	0.50	0.10	0.60
15.00	2.68	0.64	5.00	0.50	0.09	0.59
16.00	2.68	0.63	5.00	0.50	0.08	0.58
17.00	2.68	0.63	5.00	0.50	0.06	0.57
18.00	2.68	0.63	5.00	0.50	0.05	0.55
19.00	2.68	0.63	5.00	0.50	0.03	0.53
20.00	2.68	0.63	5.00	0.50	0.00	0.50
21.00	2.68	0.64	4.17	0.50	0.00	0.50
22.00	2.68	0.66	4.08	0.50	0.00	0.50
23.00	2.68	0.67	3.99	0.50	0.00	0.50
24.00	2.68	0.68	3.92	0.50	0.00	0.50
25.00	2.68	0.70	3.85	0.50	0.00	0.50
26.00	2.68	0.71	3.79	0.50	0.00	0.50
27.00	2.68	0.72	3.73	0.50	0.00	0.50
28.00	2.68	0.73	3.68	0.50	0.00	0.50
29.00	2.68	0.74	3.63	0.50	0.00	0.50
30.00	2.69	0.75	3.59	0.50	0.00	0.50
31.00	2.68	0.75	3.56	0.50	0.00	0.50
32.00	2.67	0.76	3.54	0.50	0.00	0.50
33.00	2.67	0.76	3.51	0.50	0.00	0.50

34.00	2.66	0.76	3.49	0.50	0.00	0.50
35.00	0.39	0.76	0.52*	0.38	0.00	0.38
36.00	0.28	0.76	0.37*	0.15	0.00	0.15
37.00	2.64	0.77	3.44	0.00	0.00	0.00
38.00	2.63	0.77	3.43	0.00	0.00	0.00
39.00	2.62	0.77	3.42	0.00	0.00	0.00
40.00	2.61	0.77	3.41	0.00	0.00	0.00
41.00	2.61	0.76	3.41	0.00	0.00	0.00
42.00	2.60	0.76	3.40	0.00	0.00	0.00
43.00	2.59	0.76	3.40	0.00	0.00	0.00
44.00	2.58	0.76	3.40	0.00	0.00	0.00
45.00	2.58	0.76	3.40	0.00	0.00	0.00
46.00	2.57	0.76	3.40	0.00	0.00	0.00
47.00	2.56	0.75	3.40	0.00	0.00	0.00
48.00	2.55	0.75	3.40	0.00	0.00	0.00
49.00	2.55	0.75	3.41	0.00	0.00	0.00
50.00	2.54	0.74	3.41	0.00	0.00	0.00
51.00	2.53	0.74	3.42	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft²)

CRRm Cyclic resistance ratio from soils

CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)

F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf

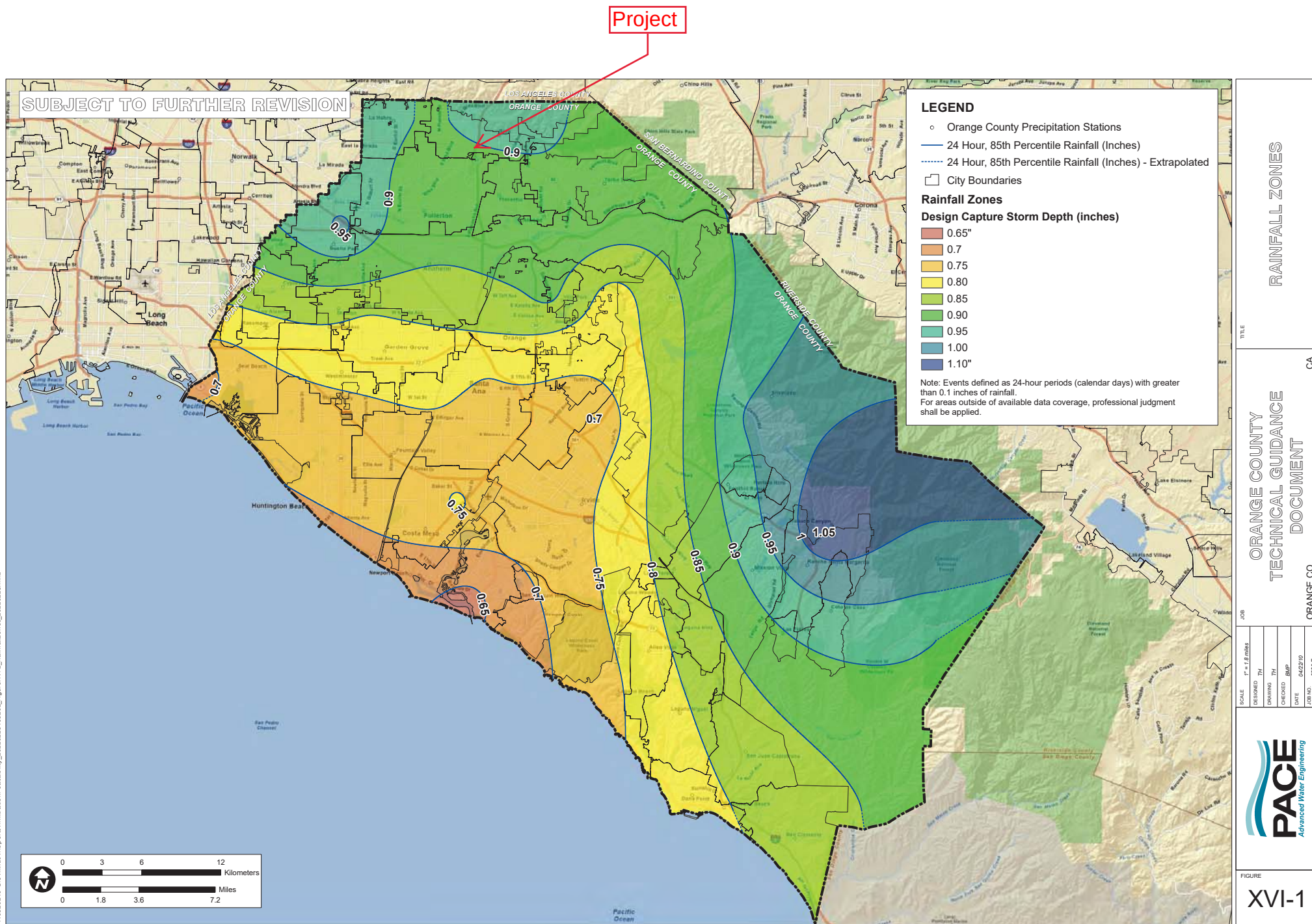
S_sat Settlement from saturated sands

S_dry Settlement from Unsaturated Sands

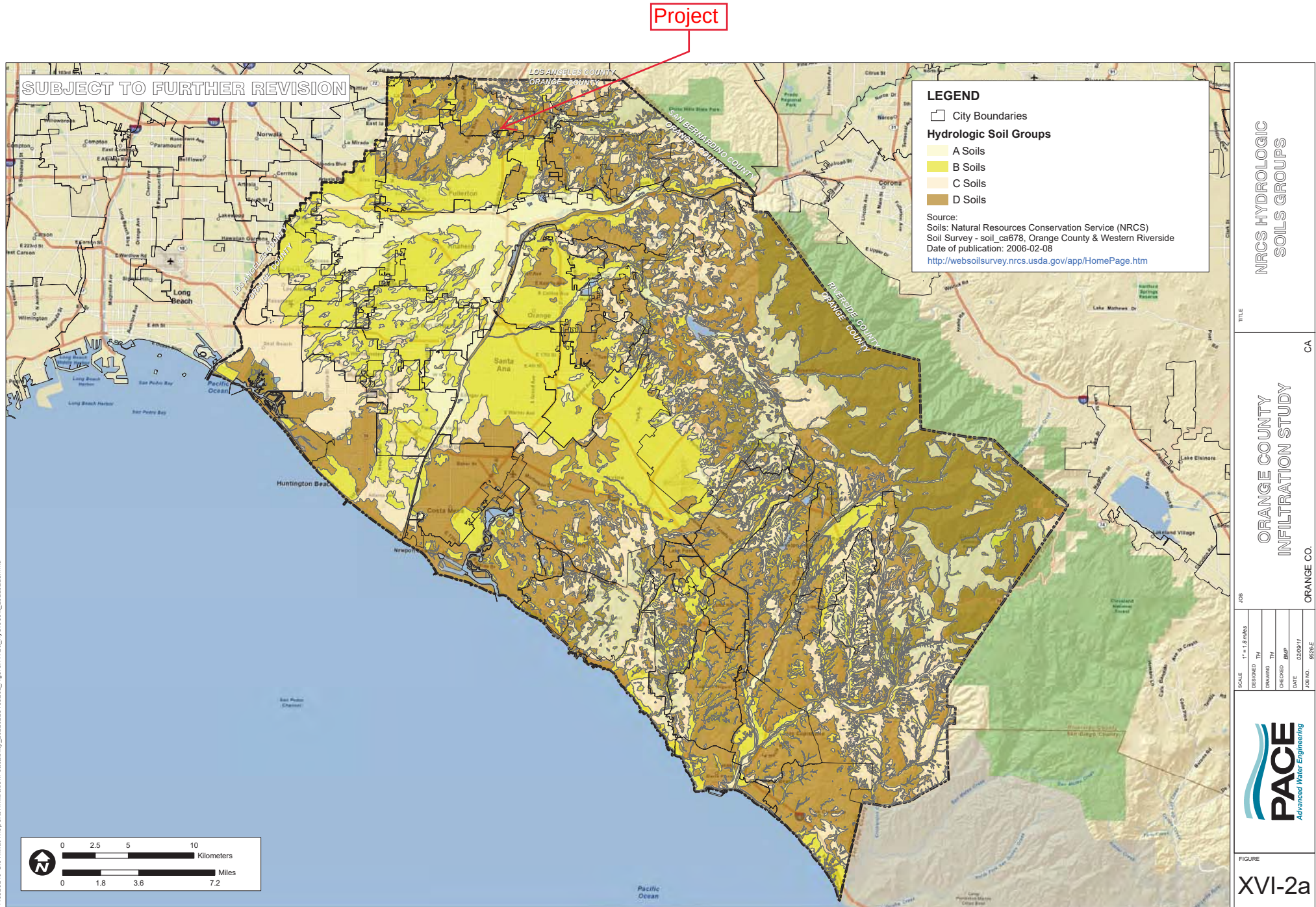
S_all Total Settlement from Saturated and Unsaturated Sands

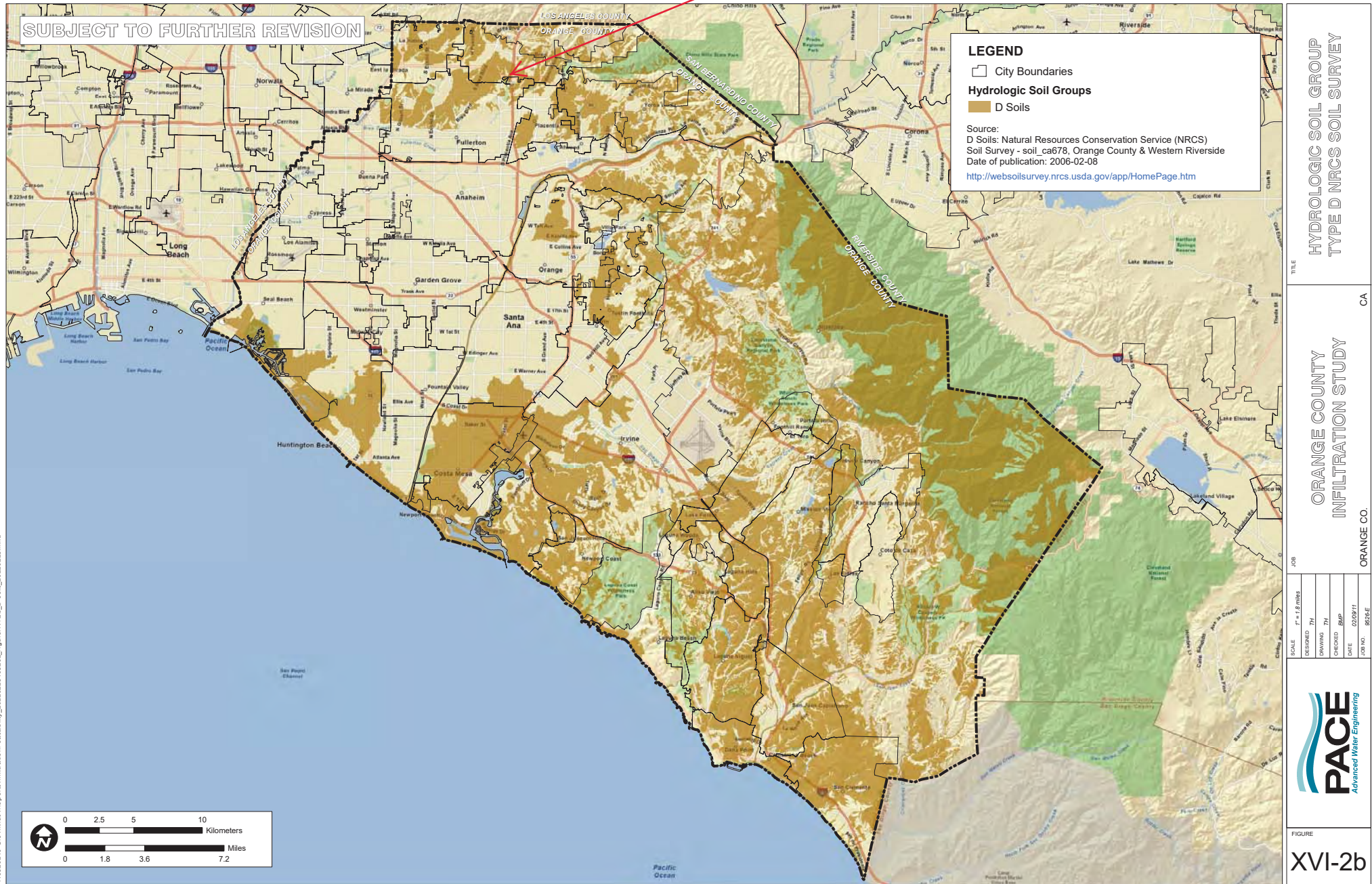
NoLiq No-Liquefy Soils

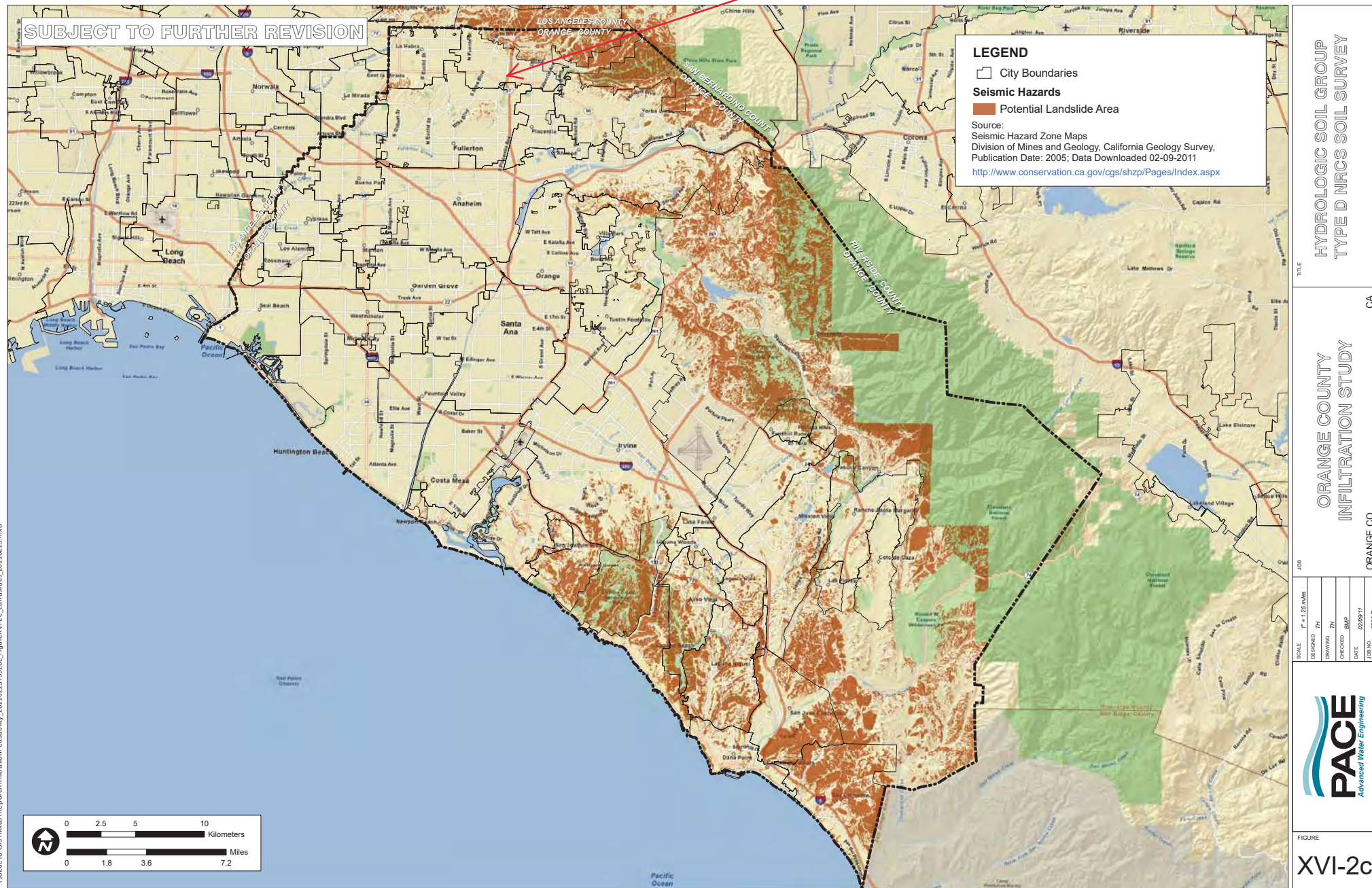
Attachment 3 – Applicable Maps from TGD



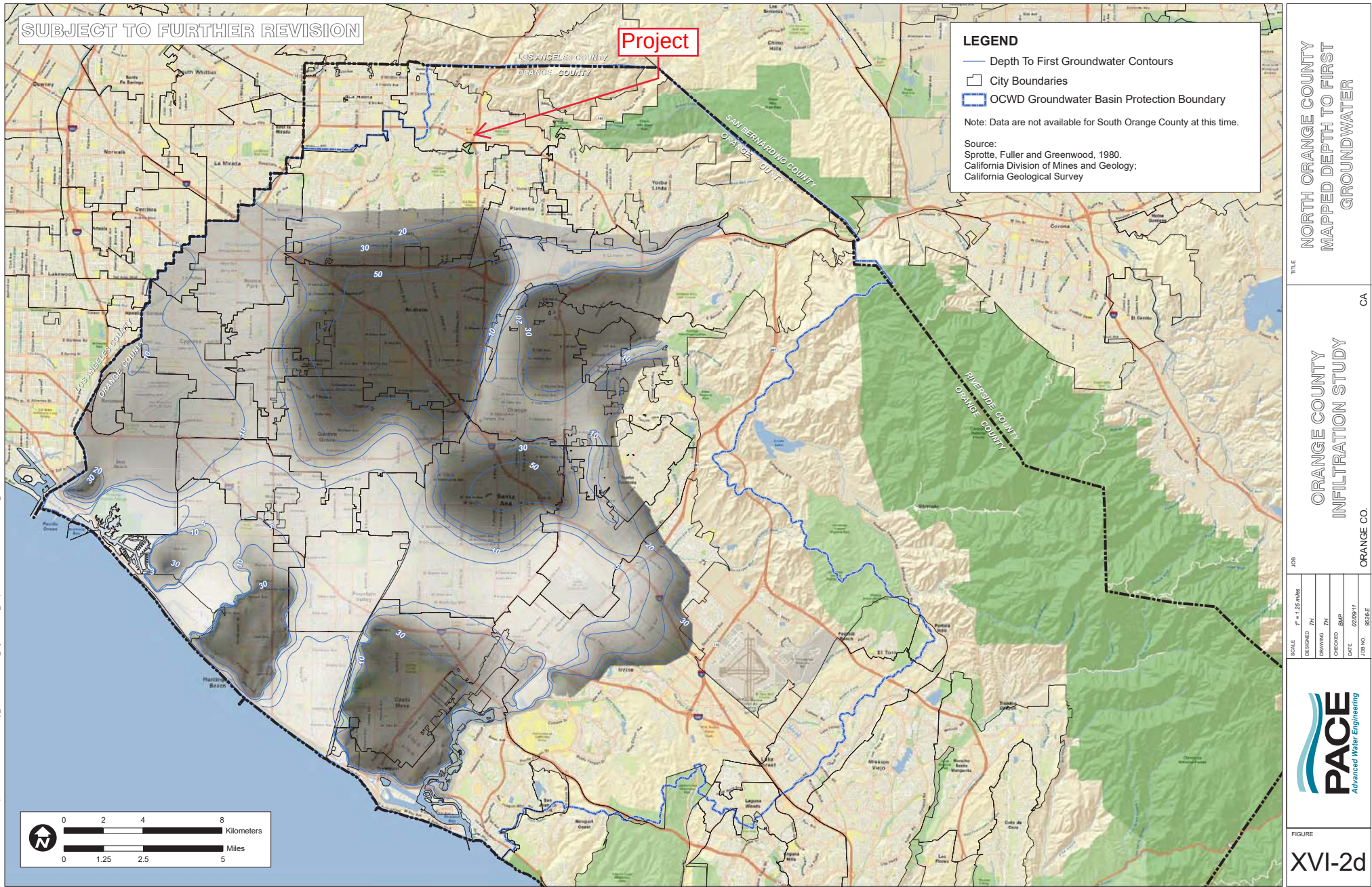
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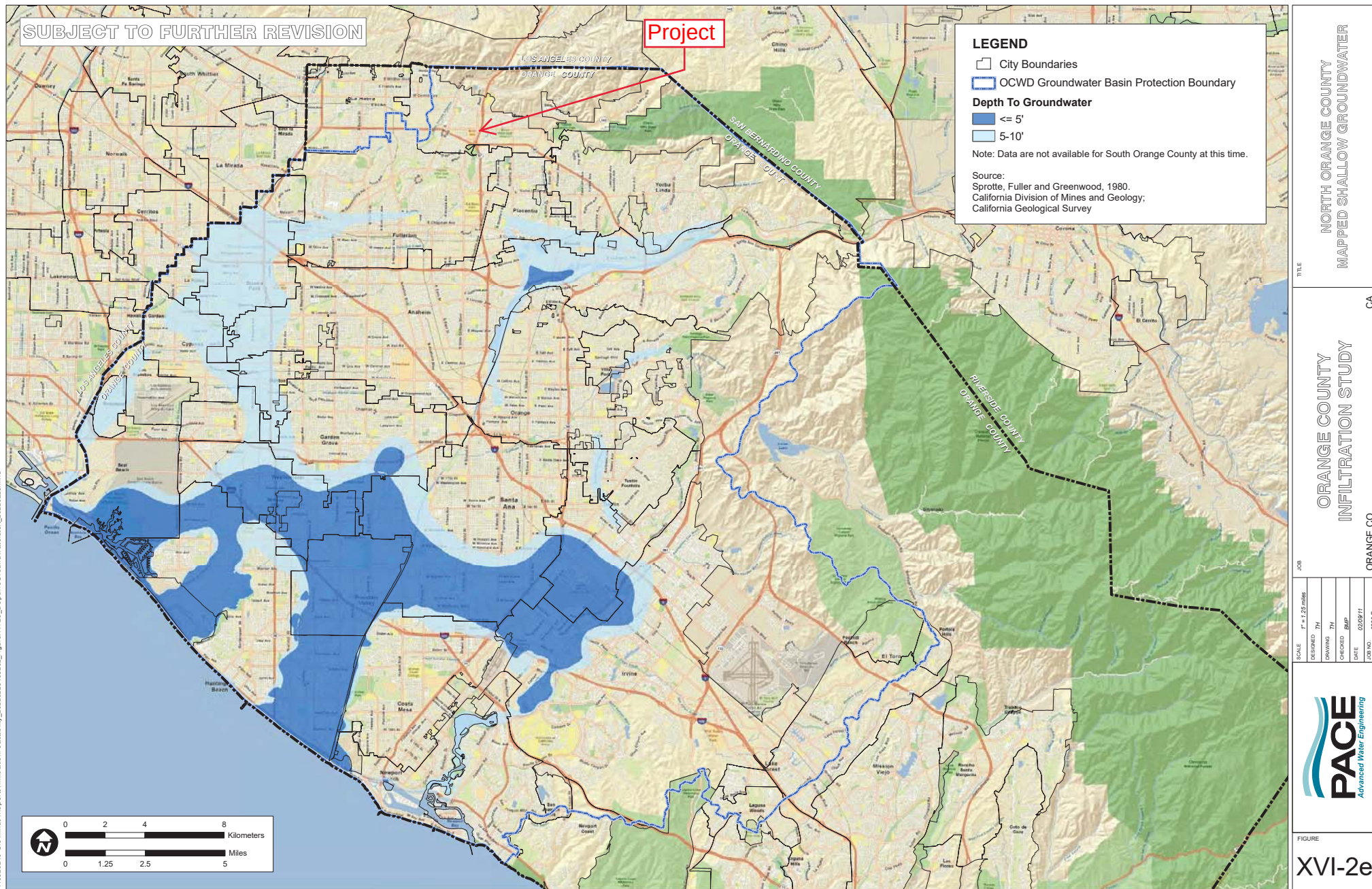


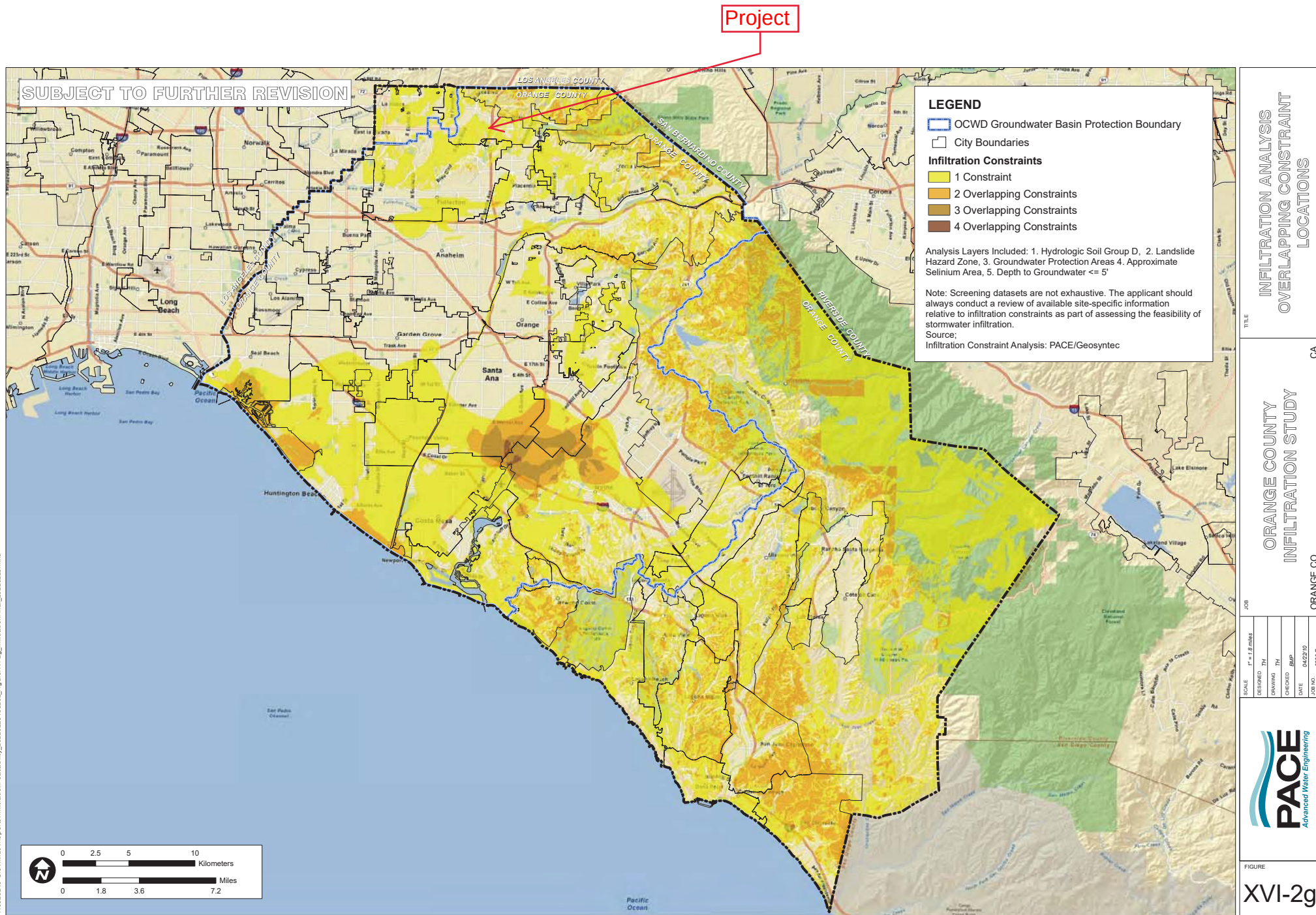


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Attachment 4 – Infiltration Feasibility Screening

Table 2.7: Infiltration BMP Feasibility Worksheet

	Infeasibility Criteria	Yes	No
1	Would Infiltration BMPs pose significant risk for groundwater related concerns? Refer to Appendix VIII (Worksheet I) for guidance on groundwater-related infiltration feasibility criteria.		XX
Provide basis: Per Geotechnical Report Groundwater was encountered at at depth of 25-30 feet deep. Additionally, the project is not located within any groundwater basin protection area per TGD Maps provided in Attachment 3. Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
2	Would Infiltration BMPs pose significant risk of increasing risk of geotechnical hazards that cannot be mitigated to an acceptable level? (Yes if the answer to any of the following questions is yes, as established by a geotechnical expert): • The BMP can only be located less than 50 feet away from slopes steeper than 15 percent • The BMP can only be located less than eight feet from building foundations or an alternative setback. • A study prepared by a geotechnical professional or an available watershed study substantiates that stormwater infiltration would potentially result in significantly increased risks of geotechnical hazards that cannot be mitigated to an acceptable level.		XX
Provide basis: Per Geotechnical Report infiltration is feasible (provided that it is within area with suitable infiltration rate). Chambers not located within 50' of slopes or within 8' of foundation Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
3	Would infiltration of the DCV from drainage area violate downstream water rights?		XX
Provide basis: There are no downstream water rights restricting infiltration Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Table 2.7: Infiltration BMP Feasibility Worksheet (continued)

	<i>Partial Infeasibility Criteria</i>	Yes	No
4	Is proposed infiltration facility located on HSG D soils or the site geotechnical investigation identifies presence of soil characteristics which support categorization as D soils?		XX
Provide basis: <i>There are areas onsite that are HSG D Soils. However, the BMPs are not located within those areas.</i> Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
5	Is measured infiltration rate below proposed facility less than 0.3 inches per hour? This calculation shall be based on the methods described in Appendix VII .		XX
Provide basis: <i>Measured infiltration rate is 2.8 in/hr in Chamber Area per Geotechnical Report</i> Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
6	Would reduction of over predeveloped conditions cause impairments to downstream beneficial uses, such as change of seasonality of ephemeral washes or increased discharge of contaminated groundwater to surface waters?		XX
Provide citation to applicable study and summarize findings relative to the amount of infiltration that is permissible: <i>There are no identified ephemeral washes or contaminated groundwater at the project site or discharge location.</i> Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			
7	Would an increase in infiltration over predeveloped conditions cause impairments to downstream beneficial uses, such as change of seasonality of ephemeral washes or increased discharge of contaminated groundwater to surface waters?		XX
Provide citation to applicable study and summarize findings relative to the amount of infiltration that is permissible: <i>There are no identified ephemeral washes or contaminated groundwater at the project site or discharge location.</i> Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.			

Table 2.7: Infiltration BMP Feasibility Worksheet (continued)

Infiltration Screening Results (check box corresponding to result):		
8	Is there substantial evidence that infiltration from the project would result in a significant increase in I&I to the sanitary sewer that cannot be sufficiently mitigated? (See Appendix XVII) Provide narrative discussion and supporting evidence: No. There is no recorded I&I of the sanitary sewer system in the area. The Sanitary Sewer is not located near the proposed chamber systems. Summarize findings of studies provide reference to studies, calculations, maps, data sources, etc. Provide narrative discussion of study/data source applicability.	NO
9	If any answer from row 1-3 is yes: infiltration of any volume is not feasible within the DMA or equivalent. Provide basis: Answers 1-3 are all marked "NO". Summarize findings of infeasibility screening	
10	If any answer from row 4-7 is yes, infiltration is permissible but is not presumed to be feasible for the entire DCV. Criteria for designing biotreatment BMPs to achieve the maximum feasible infiltration and ET shall apply. Provide basis: Answers 4-7 are all marked "NO". Summarize findings of infeasibility screening	
11	If all answers to rows 1 through 11 are no, infiltration of the full DCV is potentially feasible, BMPs must be designed to infiltrate the full DCV to the maximum extent practicable.	Infiltration of Full DCV is Feasible

Harvest and Use Infeasibility

Harvest and use infeasibility criteria include:

- If inadequate demand exists for the use of the harvested rainwater. See [Appendix X](#) for guidance on determining harvested water demand and applicable feasibility thresholds.
- If the use of harvested water for the type of demand on the project violates codes or ordinances most applicable to stormwater harvesting in effect at the time of project application and a waiver of these codes and/or ordinances cannot be obtained. It is noted that codes and ordinances most applicable to stormwater harvesting may change

Worksheet H: Factor of Safety and Design Infiltration Rate and Worksheet

Factor Category		Factor Description	Assigned Weight (w)	Factor Value (v)	Product (p) p = w x v
A	Suitability Assessment	Soil assessment methods	0.25	1.0	0.25
		Predominant soil texture	0.25	1.0	0.25
		Site soil variability	0.25	1.0	0.25
		Depth to groundwater / impervious layer	0.25	1.0	0.25
		Suitability Assessment Safety Factor, S _A = Σp			
B	Design	Tributary area size	0.25	3.0	0.75
		Level of pretreatment/ expected sediment loads	0.25	2.0	0.5
		Redundancy	0.25	3.0	0.75
		Compaction during construction	0.25	2.0	0.5
		Design Safety Factor, S _B = Σp			
Combined Safety Factor, S _{Total} = S _A x S _B				2.5	
Observed Infiltration Rate, inch/hr, K _{observed} (corrected for test-specific bias)				2.8	
Design Infiltration Rate, in/hr, K _{DESIGN} = K _{Observed} / S _{Total}				1.12	
Supporting Data					
Briefly describe infiltration test and provide reference to test forms:					
In-situ percolation testing was performed in accordance with the Technical Guidance Document for the preparation of this WQMP. See Section 2.9 of Geotechnical Report in Attachment 2 of this WQMP.					

Note: The minimum combined adjustment factor shall not be less than 2.0 and the maximum combined adjustment factor shall not exceed 9.0.

Worksheet I: Summary of Groundwater-related Feasibility Criteria

1	Is project large or small? (as defined by Table VIII.2) circle one	Large	Small
2	What is the tributary area to the BMP?	A	17.80 acres
3	What type of BMP is proposed?	Infiltration Chambers	
4	What is the infiltrating surface area of the proposed BMP?	A _{BMP}	12,246 sq-ft
5	What land use activities are present in the tributary area (list all) Retail, Restaurant, Residential, Parking Lot and Open Space		
6	What land use-based risk category is applicable?	L	M H
7	If M or H, what pretreatment and source isolation BMPs have been considered and are proposed (describe all): Inlet Filters are proposed on the proposed storm drain inlets and trench drain inlet		
8	What minimum separation to mounded seasonally high groundwater applies to the proposed BMP? See Section VIII.2 (circle one)	5 ft	10 ft
9	Provide rationale for selection of applicable minimum separation to seasonally high mounded groundwater: Proposed BMPs are "Subsurface Infiltration Galleries or vaults". Per Section VIII.2 the depth to high groundwater is 10' minimum.		
10	What is separation from the infiltrating surface to seasonally high groundwater?	SHGWT	11-16 ft
11	What is separation from the infiltrating surface to mounded seasonally high groundwater?	Mounded SHGWT	11-16 ft
12	Describe assumptions and methods used for mounding analysis: Chamber Systems are approximately 14' deep to bottom of chamber. High groundwater is expected at 25-30' deep.		
13	Is the site within a plume protection boundary (See Figure	Y	N N/A

Worksheet I: Summary of Groundwater-related Feasibility Criteria

	VIII.2)?	
14	Is the site within a selenium source area or other natural plume area (See Figure VIII.2)?	Y N N/A
15	Is the site within 250 feet of a contaminated site?	Y N N/A
16	If site-specific study has been prepared, provide citation and briefly summarize relevant findings: No site-specific study has been prepared. Answers 13-15 based on available data	
17	Is the site within 100 feet of a water supply well, spring, septic system?	Y N N/A
18	Is infiltration feasible on the site relative to groundwater-related criteria?	Y N
Provide rationale for feasibility determination: Per the Geotechnical Report Groundwater is expected at 25-30 bgs. Site does not have any groundwater infiltration constraints based on the available maps in the TGD.		

Note: if a single criterion or group of criteria would render infiltration infeasible, it is not necessary to evaluate every question in this worksheet.



City of Brea

Project Specific WQMP Summary Report

INSTRUCTIONS: Project applicant, please fill out and check all that apply.

Project Name: Brea Mall Expansion	Project Address: 1066 Brea Mall, Brea, CA 92821
WQMP Application Number (DS or CD): TBD	APN(s): 319-101-37
Watershed: Coyote Creek-San Gabriel River	Project Size (Acres): 17.04 (disturbed) 17.80 (treated)
New Development or Redevelopment: Redevelopment	Design Capture Volume (ft ³): 40,335 cf (DMA 1), 12,014cf (DMA 2)
Land Use Type (check one): ☐ Industrial (SIC Code): _____ ☐ Commercial (SIC Code): _____ ☒ Mixed Use ☐ Residential ☐ Municipal (i.e. CIP) ☐ Other (specify): _____	Total BMP Treatment Capacity (ft ³): 52,501 cf (combined) Hydromodification (Yes/No): Yes Owner/Company Name: Simon Property Group Owner Address: 225 West Washington Street, Indianapolis, IN 46204 Contact Name: Clif Poynter Contact Phone: (317) 263-7312 HOA/POA (Yes/No): No

LID BMP SUMMARY TABLE

Provide an itemized list of each LID BMP for each DMA proposed on the project. Expand table as needed.

LID BMP Description (i.e. HSC-1, BIO-2, include manufacturer and model number if possible)	DMA ID (as noted on BMP Plot Plan)	DMA Acres	DCV (indicate units)	BMP Treatment Capacity (indicate units)	BMP GPS Coordinates
1. INF-7 (ADS MC-4500)	DMA 1	13.72	40,335 cf	40,445 cf	33° 54' 47" N; 117° 53' 18" W
2. INF-7 (ADS MC-4500)	DMA 2	4.09	12,014 cf	12,056 cf	33° 54' 49" N; 117° 53' 11" W
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
TOTAL		17.81 ac	52,349 cf	52,501 cf	
Does BMP Capacity Exceed DCV (Y/N)?			Yes		

Non-Structural Source Control BMP's (check all that apply):

- | | |
|--|--|
| ☒ N1 Owner, Tenant, Occupant Education | ☐ N9 Hazardous Materials Disclosure |
| ☒ N2 Activity Restrictions | ☒ N10 Uniform Fire Code |
| ☒ N3 Common Area Landscape Mgmt | ☒ N11 Common Area Litter Control |
| ☒ N4 BMP Maintenance | ☒ N12 Employee Training |
| ☐ N5 Title 22 CCR Compliance | ☒ N13 Loading Dock Good Housekeeping |
| ☐ N6 Local Water Quality Permit | ☒ N14 Common Area Catch Basin Inspection |
| ☐ N7 Spill Contingency Plan | ☒ N15 Street Sweeping Private Streets & Parking Lots |
| ☐ N8 Underground Storage Tank | ☐ N16 Retail Gasoline Outlets |

Structural Source Control BMP's (check all that apply):

- | | |
|--|--|
| ☒ S1 Storm Drain System Stenciling/Signage | ☐ S8 Vehicle Wash Areas |
| ☐ S2 Outdoor Material Storage Areas | ☐ S9 Outdoor Process Areas |
| ☒ S3 Trash Storage Areas | ☐ S10 Equipment Wash Areas |
| ☒ S4 Efficient Irrigation Systems & Landscape Design | ☐ S11 Fueling Areas |
| ☒ S5 Protect Slopes & Channels | ☐ S12 Hillside Landscaping |
| ☒ S6 Loading Dock Areas | ☐ S13 Wash Water Controls for Food Prep Areas |
| ☒ S7 Maintenance Bays | ☐ S14 Community Car Wash Racks |

BMP Maintenance Self-Certification Form for the City of Brea

In addition to routine annual inspections conducted by the City for proper maintenance of post-construction stormwater control measures or Best Management Practices (BMPs) on the property, the City of Brea requires that the party responsible for maintenance of these BMPs receive proper orientation and training on their operations and maintenance. This form is to be completed by the owner representative and shall be made available to the City Authorized Inspector upon request. Should the maintenance provider or facility maintenance representative change at any time, the owner representative shall complete this form with the new responsible party for BMP maintenance.

Property Information	BMP O&M
Project Name: Brea Mall Expansion	Responsible Party: (Owner, management company or HOA/POA) Owner
Legal Owner of Record: Simon Property Group	Contact Name: Clif Poynter
Address: 225 West Washington Street Indianapolis, IN 46204	Address:
Telephone: (317) 263-7312	Telephone:
Email: Clif.Poynter@Simon.Com	Email:

As the party responsible for operation and maintenance of the BMPs specified in the approved Water Quality Management Plan (WQMP) for the subject property, I hereby certify under penalty of law that I, or persons under my supervision, are qualified and competent to carry out the inspection and maintenance the BMPs in a manner consistent with the approved WQMP Operation and Maintenance (O&M) Plan.

Maintenance Representative Signature

Date

As the owner representative of the Brea Mall Expansion of which a Water Quality Management Plan (WQMP) was approved by the City, I hereby certify under penalty of law that all BMPs contained within the approved Project WQMP have been maintained and inspected in accordance with the schedule and frequency outlined in the approved WQMP Operation and Maintenance (O&M) Plan. The maintenance activities and inspections conducted have been performed by qualified and knowledgeable individuals listed above. To the best of my knowledge, the information submitted is

true and accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fines and citations for violating water quality regulations.

Owner/Representative Signature

Date

Appendices

Appendix N: Soils Report

Appendices

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Report of

PRELIMINARY GEOTECHNICAL INVESTIGATION

Proposed Brea Mall Development

1066 Brea Mall
Brea, California 92821

Prepared for

Simon

225 West Washington Street
Indianapolis, Indiana 46204

Prepared by

Professional Service Industries, Inc.

11980 Telegraph Road
Unit 104
Santa Fe Springs, California

February 27, 2018

PSI Project No. 00661261

February 27, 2018

Mr. Clif Poynter

Senior Civil Engineer

Simon

225 West Washington Street

Indianapolis, Indiana 46204

Subject: **Preliminary Geotechnical Investigation**
Proposed Brea Mall Development
1066 Brea Mall
Brea, California 92821
PSI Project No. 00661261

Dear Mr. Poynter;

As requested, Professional Service Industries, Inc. (PSI), an Intertek Company, is pleased to provide this report summarizing our Preliminary Geotechnical Investigation for the above referenced project in Brea, California. This report includes the results of our review of published and unpublished geologic information, subsurface exploration, laboratory testing, and our preliminary conclusions and recommendations as they pertain to the proposed development of the property.

We appreciate the opportunity to perform this Preliminary Geotechnical Investigation and look forward to continued participation during the design and construction phases of this project. If you have any questions pertaining to this report, or if we may be of further service, please contact our office.

Respectfully submitted,

PROFESSIONAL SERVICE INDUSTRIES, INC.



Douglas T. Abernathy, PE, GE
Senior Project Engineer



Robert R. Russell, PE
Principal Consultant

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FIGURES

FIGURE 1 – SITE VICINITY MAP

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APPENDIX B – LABORATORY TEST RESULTS

APPENDIX C – PERCOLATION TEST RESULTS

APPENDIX D – LIQUEFACTION ANALYSIS



1 PROJECT INFORMATION

1.1 PROJECT AUTHORIZATION

Professional Service Industries, Inc. (PSI) has completed a Preliminary Geotechnical Investigation for the proposed Brea Mall Development to be located in the southwest corner of the Brea Mall property in Brea, California. Our work was performed in general accordance with our proposal revised January 22, 2018 and signed February 2, 2018.

1.2 PROJECT DESCRIPTION

PSI understands that conceptually the site is proposed to be improved with several buildings ranging from 3,000 square feet (sf) to 120,000 sf along with a 5 to 6-Level parking garage holding 1,000 to 1,300 vehicles. Development of the site will also include paving, hardscape, landscaping, utilities, possibly a pool, and various other improvements. The existing Sears store is proposed to be demolished. Grading plans have not been developed but we assume grades will remain relatively level with minor adjustments of less than ± 2 feet as the site consists of an active mall and parking lots. The proposed developments may have maximum column loadings of roughly 150 to 200 kips for one-story, 200 to 250 kips for two-story, and 300 to 400 kips for three-story structures. The parking structure may induce loadings of 750 to 1,000 kips. Wall loadings are anticipated to be 3 to 15 kips/ft. Shallow foundations including slab-on-grade construction is anticipated. Slabs may support loadings of up to 150 pounds per square foot.

The preliminary geotechnical recommendations presented in this report are based on the available project information, site location, laboratory testing, and the subsurface materials encountered. If any of the noted information is incorrect, please inform PSI in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. PSI will not be responsible for the implementation of its recommendations when it is not notified of changes to the project. We understand that future, more detailed plans and designs are proposed and therefore, more detailed geotechnical investigations will need to be performed for select buildings.

1.3 PURPOSE AND SCOPE OF SERVICES

The purpose of this preliminary geotechnical investigation was to explore the subsurface conditions and provide suitable preliminary design recommendations for the proposed developments. The investigation for this project involved drilling six geotechnical soil borings, perform percolation testing in two of the borings, laboratory testing, and geotechnical analyses. This report briefly outlines the testing procedures, presents available project information,

describes the site and subsurface conditions, and presents preliminary geotechnical recommendations for the following:

- Seismic hazards on the property;
- Site preparation and grading;
- General foundation types, depths, allowable bearing capacities, and estimates of settlement;
- Concrete floor slabs;
- Paving recommendations;
- Retaining wall recommendations;
- Percolation test results; and
- Comments regarding factors that may impact construction and performance of the proposed development.

This report is **not** intended to be used for final design purposes. Additional geotechnical investigations will be necessary based on future grading plans and foundation plans proposed for the development.

The scope of services did not include environmental assessments for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes. PSI can perform Phase I/ESA, asbestos, lead, and mold surveys of the existing site improvements and property if desired with an additional budget.

2 SITE AND SUBSURFACE CONDITIONS

2.1 SITE LOCATION AND DESCRIPTION

The project site is situated at 1066 Brea Mall in Brea, California in the southwest corner of the mall property. The proposed development spans across an area of roughly 800-feet by 800-feet. The property is bounded to the west by Randolph Avenue, to the south by other commercial developments and Imperial Highway and State College Boulevard, to the east by parking areas, and to the north and east by the main mall development. At the time of our fieldwork, the site consisted of an existing two to three-story Sears store with surface parking areas, drive aisles, landscaping, hardscaping, and a roughly 15-foot high slope. The site appears to slope to the southwest with elevations (estimated from Google Earth) ranging from roughly 330 to 350 feet above mean sea level. The site is located at approximate latitude 33.9137° and longitude -117.8883°. A Site Vicinity Map showing the site location is included as Figure 1.

2.2 PREVIOUS INVESTIGATIONS

Previously Converse Consultants Orange County (Converse) performed several geotechnical investigations for the mall development as listed below:

Table 1 – Converse Consultants Reports

Year	Report
1974	Original geotechnical report for the mall development.
1974 – 1978	Grading reports for earthwork.
1975	Fill compaction reports.
1977	Fill compaction reports.
1978	Geotechnical investigation for Nordstrom.
1980	Geotechnical investigation for restaurant on perimeter access road on State College Boulevard.
1984	Geotechnical investigation for repaving perimeter road, south and east.
1985	Geotechnical investigation for hotel and parking structure on Bristol St.
1986	Geotechnical investigation for restaurant on perimeter access road on State College Boulevard.
1987	Geotechnical investigation for mall expansion to northwest and southeast.

The 1987 report describes encountering compacted fill and native terrace deposits. Soils encountered by Converse predominantly consisted of sandy clay beneath the site. Other soils were also encountered including silty sand, clayey sand, clay, silt, and sandy silt. The majority of the fill soils were encountered southwest of the Macy's store (5 to 33 feet bgs). Relatively moderate amounts of fill were encountered beneath the parking structure west of Nordstrom (0 to 13 feet bgs). Groundwater was described by Converse as being deeper than 50 feet bgs (Orange County Water District, 1976) with perched water encountered at depths ranging from 23½ to 42½ feet bgs. Existing pavements consisted of roughly 3 inches of asphalt concrete over 4 inches of aggregate base. Sulfate testing of the soils indicated 160 to 224 ppm. Expansion index testing (generally 40 to 50) indicated low to medium expansion potential. R-values ranged from 6 to 13 for sandy clay and clayey sand respectively.

2.3 REGIONAL GEOLOGY

The site is located within the La Habra 7½ minute quadrangle within the Los Angeles Basin Geomorphic Province boundary. Based on a review of the Dibblee Geologic Map of the area (2001), the site is underlain by elevated older alluvial deposits. Areas nearby (outside the proposed development area) to the southwest and southeast consist of younger alluvium that is considered potentially liquefiable.

2.4 REGIONAL SEISMICITY

The project site is located in Southern California, which has undergone a complex multiphase structural history and remains an active tectonic region with documented historic earthquakes. Generally, the seismicity within California can be attributed to faulting due to regional tectonic movement. This includes the San Andreas Fault and other sub-parallel strike-slip faults, as well as normal and thrust faulting within the State. The area of the subject site is considered seismically active. Seismic hazards within the area can be attributed to potential ground shaking resulting from earthquake events along nearby or more distant faulting.

2.5 SEISMIC HAZARD ASSESSMENT

2.5.1 Alquist-Priolo Fault Zone

The seismicity of the site was evaluated utilizing deterministic methods for active faults within the regional vicinity. According to the Alquist-Priolo Special Studies Zones Act of 1972 (revised

1994) faults have been classified as active faults which show apparent movement during the last 11,000 years (i.e., Holocene time). The site is not located within a currently designated Earthquake Fault Zone per the Alquist-Priolo Special Studies Zone Map produced by the California Geological Survey (CGS). Based on CGS mapping, the closest active fault is the Whittier Fault (Elsinore fault zone, Whittier section) located approximately 1.7 miles to the northeast from the site.

2.5.2 Liquefaction-Induced Settlement

The primary causes of damage in this general area during seismic events include ground shaking and liquefaction of the subsurface strata. Liquefaction occurs when loose granular and low plastic materials below the groundwater table are subjected to cyclic shear forces resulting from seismic events. Water pressure within the pore spaces of the soil increases with a corresponding decrease in the soil's effective stress and individual grains of soil lose contact with each other. Excess pore pressures ultimately dissipate and the soil consolidates, often causing significant total and differential settlement of the ground surface.

Liquefaction potential is greatest where the ground water level is shallow and submerged loose fine sands and silts and soft low plasticity clays occur within a depth of about 50 feet or less. Liquefaction potential decreases as grain size and clay and gravel content increase. As ground acceleration and shaking duration increase during an earthquake, liquefaction potential increases.

A review of the California Geologic Survey (CGS) map indicates that the site is not in an area designated as having a liquefaction potential. Areas of potentially liquefiable younger alluvium exist to the southwest and southeast offsite. Liquefaction analyses were performed onsite at one boring location due to high groundwater levels and questionable soil strengths. Our liquefaction analysis indicates that a zone of poorly graded sand between depths of 33 to 37 feet bgs may liquefy during the design earthquake with high groundwater levels. Seismic settlements induced from such liquefaction may result in 0.7-inch of displacement with an estimated differential settlement of less than ½ inch over a 40 foot span. Our liquefaction analysis is provided in Appendix D.

We do not believe lateral spreading or surficial disturbances will be an issue at this site due to potential liquefaction.

2.5.3 Landsliding

A review of the CGS map indicates that the site is not in an area designated as having a landslide potential. Due to the generally flat nature of the site and surrounding properties, it is our opinion that the site is not susceptible to landsliding.

2.5.4 Tsunamis and Seiches

Inundation by tsunamis (seismic or "tidal waves") are not likely to be considered a significant threat to the subject site due to the distance from the coast. The elevation of the project site is also significantly above sea level. Based on there being no bodies of water near the site, the site is also not considered subject to seiches.

2.6 SUBSURFACE CONDITIONS

2.6.1 GENERAL

The boring locations were marked in the field by a PSI representative by referencing existing landmarks based on the information provided by the client. A truck-mounted drill rig and continuous flight, hollow-stem augers were used to advance the soil borings.

During the sampling procedure, Standard Penetration Tests (SPT) were performed in accordance with ASTM D1586 and relatively undisturbed samples were obtained in general accordance with ASTM D3550. The SPT for soil borings is performed by driving a split-spoon sampler, with an outside diameter of 2 inches, into the undisturbed formation located at the bottom of the advanced borehole with repeated blows of a 140-pound hammer falling a vertical distance of 30 inches. The number of blows required to drive the sampler the last 12 inches of an 18-inch penetration depth is a measure of the soil consistency (N-value). If 50 blows are performed before reaching the end of a 6 inch increment this is referred to as refusal and the number of blow per inches driven is recorded, i.e. 50/4 inches. For ASTM D3550 (California Modified Sampler) the split barrel sampler possesses a 3-inch O.D. and is driven in the same manner as the SPT. The field blow counts obtained from the California Modified sampler, as indicated in the boring logs, were adjusted by 63 percent to obtain a rough correlation to SPT blow counts (SPT-N value). Samples were identified in the field, placed in sealed containers and transported to the laboratory for further classification and testing.

2.6.2 SOIL BORINGS

The subsurface conditions were explored by drilling six soil borings (B1 through B6) at the site for geotechnical exploration purposes. Two borings (B1 and B2) were drilled closer to the mall for correlations with previous borings performed by Converse Consultants in 1987. Two borings (B3 and B4) were drilled in the southwest region of the proposed development to depths of approximately 51½ feet below the ground surface (bgs) for purposes of liquefaction analysis. Percolation testing was also performed near these two borings (B3 and B4) to depths of 10 feet bgs. Two borings (B5 and B6) were drilled to depths of 31½ feet at mid-elevation portions of the site for general geotechnical analysis. Figure 2 shows the approximate boring locations. The soil types encountered at the specific boring locations are presented on the attached Boring Logs provided in Appendix A.

As indicated on the boring logs, the subsurface soils consisted of many types of soils ranging from sands to silts to clays and combinations of each. Coarse grained soils had relative densities ranging from loose to very dense while fine grained soils had consistencies ranging from soft to hard. Fill was encountered at boring locations B1 (2.3 feet bgs) and B2 (2½ feet bgs). Possible fill was encountered at boring locations B1 (2.3 to 4.7 feet bgs), B3 (1½ to 7 feet bgs), and B4 (0.8 to 5 feet bgs). Near surface loose and soft soils were encountered at boring locations B1 (1½ to 9 feet bgs) and B3 (4.7 to 7 feet bgs).

The stratification presented on the boring logs is based on a visual examination of the recovered soil samples and the interpretation of field logs by a geotechnical professional. Included on the boring logs are the standard penetration resistances (SPT N-values and California Modified sampler blows) recorded in the individual borings at standard testing intervals to the boring termination depths.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs, included in Appendix A, should be reviewed for specific information at individual boring locations. These records include soil descriptions, stratification, penetration resistance, locations of the samples and laboratory test data. The stratification shown on the boring logs represents the conditions only at the actual boring locations at the time of our exploration. Variations may occur and should be expected between boring locations. The stratification that represents the approximate boundary between subsurface materials and the actual transition may be gradual.

2.7 GROUNDWATER

Groundwater was encountered in two of our soil borings during our investigation at depths ranging from approximately 25 feet bgs (at boring location B4) to 30 feet bgs (at boring location B3). These depths are approximate as the drilling operations continued and monitoring equipment was not installed. Groundwater is not expected to impact the proposed construction. It is possible, however, that transient, saturated ground conditions at shallower depths could develop at a later time due to periods of heavy precipitation, landscape watering, leaking water lines, or other unforeseen causes. Variations in groundwater levels should be expected seasonally, annually, and from location to location.

2.8 LABORATORY TESTING

The soil samples obtained during the field exploration were transported to our laboratory and selected soil samples were tested in the laboratory to determine the material properties for evaluation. Laboratory testing on selected samples included moisture content (ASTM D2216), density (ASTM D2937), grain size distribution (ASTM D422), Atterberg Limits (ASTM D4318), expansion index (ASTM D4829), R-value (CTM 301), consolidation (ASTM D2435), direct shear (ASTM D3080), and corrosion testing [soluble sulfate (CTM 417), soluble chloride (CTM 422), pH (ASTM D4972), and minimum resistivity (CTM 643)]. Laboratory testing was performed in general accordance with ASTM and Caltrans procedures. Unless otherwise informed, the soil samples will be discarded 60 days from the issuance of this report. Laboratory test results are included in Appendix B.

2.9 PERCOLATION TESTING

A limited program of in-situ percolation testing was performed at two boring locations [B3(P1) and B4(P2)] as shown on Figure 2. Testing was performed in general accordance with the Technical Guidance Document for the Preparation of Conceptual/Preliminary and/or Project Water Quality Management Plans for the Santa Ana Regional Water Quality Control Board (September, 2013). Results of the testing are provided below in Table 1 and are attached in an Appendix C.

Table 2 – Percolation Test Results

Test Location	Raw Infiltration Rate (in/hr)	Design Infiltration Rate (in/hr)
P1 (B3)	0.0	0.0
P2 (B4)	2.8	1.4

Measured percolation rates were reduced to determine design values that will represent long-term performance of the proposed infiltration BMPs. The recommended factor values used were obtained from the Technical Guidance Document referenced above. We have assumed that maintenance of the designed system will be performed regularly. The following assumptions were made:

Table 3 – Percolation Assumptions

Factor Category	Factor Description	Factor Value Location P1/B3	Factor Value Location P2/B4
Suitability Assessment	Soil Assessment Methods	2	2
	Predominant Soil Texture	3	1
	Site Soil Variability	4	2
	Depth to Groundwater or Impervious Layer	1	1
Design	Tributary Area Size	1	1
	Level of Pretreatment	1	1
	Redundancy	1	1
	Compaction During Constr.	1	1
Combined FS	$\sum S_{Total}$	2	1.5
Measured Rate	(in/hr)	0.0	2.8
Design Rate	(in/hr)	0.0	1.4

Use a minimum FS of 2 for design

Please note that percolation/infiltration rates are representative of the location and depth at which the tests were conducted. If infiltration is to occur at different locations or depths, different rates may exist and further testing will be necessary. Individual counties and

municipalities may have stricter guidelines and applicable correction factors for infiltration rates and, if applicable, should be utilized for design. Rates will vary depending on head applied. For calculating “time to empty”, the design infiltration rates above should be reduced by half.

The Technical Guidance Document requires that testing be performed at several locations within the proposed drainage area depending on the quantity of design flow anticipated and the size of the BMP. For slow flow areas, tests are required to be performed over several days. The limited testing performed for this investigation should be repeated several times over several days at the proposed BMP location to adequately characterize the site soils in question for infiltration purposes. Testing and design factors assumed above are subject to change and may not be representative of actual conditions anticipated for the development.

3 CONCLUSIONS AND RECOMMENDATIONS

The subject property is considered a suitable site for the proposed development from a geologic and soils engineering standpoint. We believe that development of the site will not cause adverse effects on adjacent properties. It is our opinion that the proposed facility can be constructed provided the recommendations stated in the report are followed. Test findings and statements of professional opinion do not constitute a guarantee or warranty, expressed or implied.

The following preliminary geotechnical design recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there are any changes in these project criteria, PSI should be contacted to determine if modifications to the recommendations are warranted.

Based on the results of the fieldwork, laboratory evaluation, and engineering analyses, the site can be adapted for the proposed facility. Based on the observed site conditions PSI believes that conventional spread footings are suitable to support the proposed structure. Details related to site preparation, foundation design, and construction are presented in the following sections.

3.1 EARTHQUAKE AND SEISMIC DESIGN CONSIDERATION

We have employed the 2016 California Building Code (CBC), the locally adopted version of the International Building Code, 2015 edition. As part of this code, the design of structures must consider dynamic forces resulting from seismic events. These forces are dependent upon the magnitude of the earthquake event as well as the properties of the soils that underlie the site.

As part of the procedure to evaluate seismic forces, the code requires the evaluation of the Seismic Site Class, which categorizes the site based upon the characteristics of the subsurface profile within the upper 100 feet of the ground surface. PSI's deepest boring extended to 51 ½ feet bgs, but to define the Site Class for this project, we have interpreted the results of soil test borings drilled within the project site and estimated appropriate soil properties below the base of the borings to a depth of 100 feet as permitted by the code. The estimated soil properties were based upon data available in published geologic reports as well as our experience with subsurface conditions in the general site area.

Based upon our evaluation, the subsurface conditions within the site are consistent with the characteristics of a **Site Class "D"** as defined in Chapter 20.3-1 of the ASCE 7-10. The associated probabilistic ground acceleration values and site coefficients for the general site area were

obtained from the USGS geohazards web page, <http://earthquake.usgs.gov/designmaps/us/application.php>, and are presented in the table below.

Table 4 - Ground Motion Values*

Period (sec)	Mapped MCE Spectral Response Acceleration** (g)		Site Coefficients		Adjusted MCE Spectral Response Acceleration (g)		Design Spectral Response Acceleration (g)	
0.2	S_s	2.018	F_a	1.0	S_{Ms}	2.018	S_{Ds}	1.345
1.0	S_1	0.741	F_v	1.5	S_{M1}	1.111	S_{D1}	0.741

*2% Probability of Exceedance in 50 years

MCE = Maximum Considered Earthquake

The Site Coefficients, F_a and F_v presented in the above table were also obtained from the noted USGS webpage as a function of the site classification and mapped spectral response acceleration at the short (S_s) and 1-second (S_1) periods, but can also be interpolated from ASCE Tables 11.4-1 and 11.4-2.

Considering the use of the proposed structures and the values of S_{Ds} and S_{D1} shown above, we expect the structures to fall within **Seismic Design Category D**, as defined by ASCE Tables 11.6-1 and 11.6-2 of the code. Design of structures should comply with the requirements of the governing jurisdiction's building codes and standard practices of the Structural Engineering Association of California.

3.2 SITE PREPARATION & GRADING

The following recommendations are provided for general grading of the site. More detailed geotechnical investigations may be required depending on the proposed development.

3.2.1 SITE PREPARATION

The site should be cleared of all man-made structures, surface vegetation, utilities, and construction debris. Any previous utilities, foundations, seepage pits, or other site improvements found on site in conflict with the new construction should be removed or abandoned in place

below the proposed structures. As a minimum, it is recommended the clearing operations extend at least five feet beyond the building and a few feet beyond the development perimeters.

We recommend that at the time of initial site stripping and grading, that PSI be retained to observe proof-rolling of excavations and subgrade conditions to verify that no potentially deleterious soft soils or unforeseen conditions are present. All excavation bottoms should be firm and unyielding prior to fill being placed above.

Though PSI was not provided with project-specific grading plans, proposed cuts and fills are anticipated within the project site to establish design grades. Any new fill should be placed in accordance with the Engineered Fill section of this report.

If grading occurs in the winter rainy season, unstable subgrade conditions may be present. These conditions may require stabilizing the subgrade with by adding coarse aggregate or admixtures such as cement kiln dust. Isolated areas may be stabilized using a geogrid, such as Tensar TX160 or equal, with one foot compacted Class II aggregate base over the geogrid. Additional recommendations can be provided, as required, during construction.

Asphalt and concrete debris will likely be generated from demolition at the site during construction. These materials may require hauling offsite or may be crushed for placement onsite per geotechnical recommendations or local building authorities.

3.2.2 REMEDIAL GRADING

All undocumented fill materials, within the limits of proposed structures, should be removed and replaced as evaluated by the Geotechnical Engineer or their representative. Existing unsuitable fill soils extending to a depth of 2½ feet bgs near boring location B1 and B2 should be removed and replaced with compacted engineered fill. Areas near boring locations B1, B3, and B4 should be evaluated closely as some soils appear to possibly consist of fill materials to depths of roughly 5 to 7 feet bgs. Loose or soft soils should also be removed and replaced near boring location B1 to a depth of roughly 9 feet bgs. The soils exposed at the base of all excavations should also be scarified to a depth of at least 12 inches, be compacted as described below in Section 3.2.3.

Dependent upon the building locations and their structural loads, some over-excavation of the existing soil and replacement as a properly compacted engineered fill beneath footings may be necessary to limit static settlements to acceptable levels. The need for this over-excavation

should be determined at the time of more detailed investigations and based on specific structural loading information to be provided.

Site grades may then be raised with Engineered Fill to achieve the design elevations proposed for the site. A PSI representative should be on-site during site grading to evaluate the degree of compaction obtained by the contractor.

3.2.3 ENGINEERED FILL

Engineered Fill materials required at this site, including both native and import soil, should not contain rocks greater than 3-inches in diameter or have greater than 30 percent retained on the $\frac{3}{4}$ -inch sieve, and should not contain more than 3 percent (by weight) of organic matter or other unsuitable material. Engineered Fill soils should also have an Expansion Index (EI) that does not exceed 40. Based on our subsurface investigation, existing on-site soils are generally suitable for use as Engineered Fill provided they can be properly moisture conditioned to meet the compaction requirement. This should be confirmed by a PSI representative during grading. Import materials meeting the above requirements should be approved by the Geotechnical Engineer prior to importing to the site. Soil that are environmentally impacted should not be used as Engineered Fill onsite.

Engineered Fill should be compacted to at least 90 percent of the maximum dry density as determined by the modified Proctor (ASTM D1557). The moisture content of Engineered Fill should be maintained between 0 to 2 percent above the material's optimum moisture content during compaction. If the Engineered Fill is too dry, water should be uniformly applied across the affected fill area. If the Engineered Fill is too wet, it must be dried. Engineered Fill should be thoroughly mixed by diskings, or other approved methods, to obtain relatively uniform moisture content throughout the lift immediately prior to compaction.

Engineered Fill should be placed in maximum lifts of 8-inches of loose material. Each lift of Engineered Fill should be tested by a PSI soils technician, working under the direction of our Project Geotechnical Engineer, prior to placement of subsequent lifts. If smaller compaction equipment such as jumping jacks or plate compactors are used thinner lifts may be required to achieve compaction.

Compaction of the backfill should be checked with a sufficient number of density tests by a representative of the Geotechnical Engineer to determine if adequate compaction is being

achieved by the contractor. The properly compacted Engineered Fill should extend horizontally outward beyond the exterior perimeter of the building and foundations a distance equal to the height of fill or 5-feet, whichever is greater, prior to significant sloping. In addition, Engineered Fill should extend horizontally outward beyond the exterior perimeter of pavements and hardscape a distance equal to the height of fill or 3-feet, whichever is greater, prior to significant sloping.

3.3 UTILITY TRENCH CONSTRUCTION

Utility trenches can be backfilled with on-site soils above the utility bedding and shading materials. Trench backfill should be moisture conditioned to between 0 to 2 percent above the optimum moisture content, compacted in 4- to 6-inch lifts to a minimum of 90 percent of the maximum dry density as determined by the modified Proctor (ASTM D1557). If rocks larger than 3-inches in maximum size are encountered, they should be removed from the fill material prior to placement in the utility trenches. Utility bedding and shading compaction requirements should be in conformance with the requirements of the local agencies having jurisdiction, but typically require clean granular material having a sand equivalent equal to or above 30. Jetting or flooding of utility backfill is not recommended.

3.4 SOIL EXPANSION

The expansion potential of representative samples of the existing site soils is low (EI=34 & 35). Such soils must be kept at a constant moisture content to avoid shrinkage and swelling near improvements. Foundation and slab subgrades must be designed for such soils. Landscaping, irrigation, and site grading/drainage must also be designed for such soils as mentioned below. Following site grading, testing of site soils should be performed by the project geotechnical consultant to confirm the basis of these recommendations. Depending upon the distribution of soil types and expansion characteristics, differing design recommendations may be developed to better suit the types of conditions present at the site.

3.5 CORROSION

Testing was performed to evaluate the corrosivity of the on-site soils and the potential for attack on concrete and subsurface cast iron and ductile iron utility pipes. The testing included pH, sulfate, chloride and minimum electrical resistivity. The results of the chemical analysis are as follows:

Table 3 – Corrosion Analyses

Boring Number	Sample Depth (feet)	pH	Minimum Resistivity (Ω -cm)	Soluble Sulfate (ppm)	Soluble Chlorides (ppm)
B3	1½ - 5	7.5	1100	246	145
B6	1 - 5	7.4	1050	576	230

Notes: ppm = parts per million.

Concrete mix design should follow the minimum requirements of the 2016 California Building Code and ACI 318. Laboratory testing of representative near surface soil samples indicates that the on-site soils have very low levels of sulfates such that they are characterized as having a **negligible** corrosion potential with respect to concrete based on ACI 318. Chloride levels also suggest that the site soils are **non-corrosive** to steel (iron/ferrous materials) according to Caltrans specifications. For preliminary design purposes, it is our opinion that the use of Type II cement is suitable for concrete in contact with on-site soils. Final concrete mix design should be evaluated after sulfate and chloride tests have been performed on the actual in-place subgrade material used for finished pad grades.

Based on the minimum resistivity laboratory test results, the soils are characterized as being **highly corrosive** to cast iron or ductile iron piping (National Association of Corrosion Engineers, 1984). PSI does not practice in the field of corrosion engineering. We suggest that a qualified corrosion engineer be consulted to determine if special corrosion protection is warranted. Testing for corrosivity of fill soils should be conducted after site grading.

3.6 SHALLOW FOUNDATIONS

Once proposed structural loadings and foundation plans are available, the geotechnical engineer should evaluate those plans for allowable foundation capacities which depend on the locations of the structures. On a preliminary basis, we would anticipate an allowable soil bearing pressure in the range of 3,000 to 5,000 psf, dependent upon the remedial grading performed. It is our opinion that the proposed buildings having relatively light loadings (150 to 250 kips) can be supported on conventional shallow spread footings bearing on Engineered Fill and/or stiff, or better, native soils, compacted to a firm and unyielding state. More heavily loaded foundations (>250 kips) may require deeper foundations or a ground improvement program to be more effective and to limit settlements to a tolerable level. Structures placed near boring location B3

should consider potential settlement issues. The size of the foundations, the bearing pressure and the embedment depth have a direct impact on the anticipated settlement. Once specific plans are developed and once detailed structural loading information is known, additional test borings and engineering analysis will be necessary.

3.7 SLABS ON GRADE

We anticipate that the proposed buildings may use slab-on-grade construction supported on Engineered Fill and/or suitable existing soil provided the subgrade has been prepared as described in Section 3.2 of this report. Soft or otherwise unsuitable areas observed should be addressed on a case-by-case basis by our Geotechnical Engineer.

Due to the presence of low expansive soils, we recommend that the subgrade soils beneath the building floor slab be moisture conditioned to 0 to 2 percent above the soil's optimum moisture content to a depth of at least 12 inches. This moisture conditioning is recommended to be verified by the geotechnical engineer within 48 hours of floor slab concrete placement. Floor slabs should have a nominal thickness of 5 inches and be reinforced with at least No. 3 bars placed at 18-inches centers each way. Additional steel reinforcement may be required for structural considerations.

To reduce moisture vapor transmission into interior spaces, we recommend a 10-mil vapor retarding membrane be included beneath slabs. Membrane specifications should be provided by the flooring manufacturer. Vapor retarders should be installed in accordance with ACI 302.1R and should extend to footings with no breaks (sealed between footings and around penetrations). A minimum 2 inch thick capillary break material (clean sand) should be provided above and below the vapor retarder to help protect the vapor barrier from punctures and to allow more uniform curing of the concrete slab.

This vapor retarder system is anticipated to be suitable for most flooring finishes that can accommodate some vapor emissions. However, this system may emit more than 3 pounds of water per 1000 square feet and therefore, may not be suitable for all flooring finishes. Additional steps should be taken if such vapor emission levels are too high for anticipated flooring finishes.

Exterior slabs should be isolated from the building. These slabs should be reinforced to function as independent units. Movement of these slabs should not be transmitted to the building

foundation or superstructure. We also recommend that expansive subgrade soils beneath concrete flatwork be moisture treated similar to that recommended for on-grade floor slabs.

The precautions listed below should be followed closely for construction of all slabs-on-grade. These details will not reduce the amount of movement, but are intended to reduce potential damage should some settlement of the supporting subgrade take place.

- Cracking of slabs-on-grade is normal and should be expected. Cracking can occur not only because of heaving or compression of the supporting soil, but also because of concrete curing stresses. The occurrence of concrete shrinkage cracks, and problems associated with concrete curing may be reduced and/or controlled by limiting the water/cement ratio of the concrete, proper concrete placement, finishing, and curing, and by the placement of crack control joints at frequent intervals, particularly, where re-entrant slab corners occur. The American Concrete Institute (ACI) recommends a maximum panel size (in feet) equal to approximately three times the thickness of the slab (in inches) in both directions. For example, joints are recommended at a maximum spacing of 12 feet, assuming a four-inch thick slab. We recommend also that control joints be scored three feet in from, and parallel to, the foundation walls. Using fiber reinforcement in the concrete can also help control shrinkage cracking.
- Some increase in moisture content is inevitable because of development and associated landscaping. However, extreme moisture content increases can be largely controlled by proper and responsible site drainage, building maintenance and irrigation practices. Landscaping and irrigation should be minimized immediately adjacent to buildings.

3.8 SETTLEMENT

Proposed loadings and structural foundation plans should be reviewed by the geotechnical engineer to accurately estimate settlements. Foundations (column loads <250 kips) designed and constructed in accordance with typical geotechnical recommendations are estimated to experience post-construction total settlements generally less than about 1-inch with differential settlement along a 40-foot long portion of a continuous footing, or similarly spaced column footings generally less than ½-inch. Total and differential settlements of these magnitudes are usually considered tolerable for the anticipated construction. However, the tolerance of proposed structures to predicted total and differential settlements should be confirmed by the structural engineer.

As previously noted, a seismic-induced settlement of about 0.7 inch with a corresponding differential seismic settlement of less than ½ inch over a 40 foot span is possible. Although these seismic settlements are well within levels considered tolerable (per SP 117A), we recommend that the structural engineer consider the seismic settlements in their design.

3.9 RETAINING WALLS

Standard retaining walls may be designed simply for walls up to a maximum height of six feet. Retaining walls above a height of six feet will require seismic loadings incorporated. Such walls may rely on shallow foundation recommendations to be provided.

Onsite clay soils are not considered suitable for retaining wall backfill. Clean granular soil backfill should be used from the site or imported. The backfill material should be compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557 with optimum moistures within 0 to 2 percent above optimum. Compaction may be checked by probing if needed. Flooding or jetting of the backfill should not be permitted. Granular backfill should be capped with 12-inches of relatively impervious fill (clayey soils, concrete, CDF) or pavements to seal the backfill and reduce the potential for infiltration and saturation. It should be noted that the use of heavy compaction equipment in close proximity to retaining structures could result in wall pressures exceeding design values and causing wall movement. In this regard, the contractor should take appropriate precautions during the backfill placement and use relatively light compaction equipment.

For drained conditions, a back-drainage system should be installed to drain any water that may collect behind retaining walls. The drainage system should consist of a 1 cubic foot per foot burrito drain containing free-draining crushed rock (5%<#200) placed adjacent to the wall. The gravel should be completely enclosed in an approved filter fabric (Mirafi 140N, or equivalent) to separate the gravel and backfill soil. A 4-inch diameter perforated SCH-40 PVC pipe should be placed with perforations down, behind the bottom of the retaining wall at a gradient of at least one percent. Drainage outlets should be 4-inch diameter solid SCH-40 PVC pipe, installed to drain to an appropriate outlet. Drainage should be conducted away from structural foundations. Weep holes may be used if desired. The project geotechnical engineer should approve any alternative drain system.

Waterproofing the back of the retaining walls should be considered to mitigate water staining, infiltration, and moisture migration through the wall. If a waterproofing system is used, it should be designed by a qualified waterproofing consultant.

3.10 PAVEMENT DESIGN

In designing the proposed pavement areas, the following conditions were considered:

1. Subgrade support characteristics are typically represented by an R-Value for the design of flexible pavements in this region.
2. Vehicular traffic volumes, in terms of the number and frequency of vehicles and their range of axle loads should be considered.
3. Likely changes in vehicular use over the life of the pavement should also be considered. We have assumed that the pavement areas will not experience additional traffic.
4. Pavement life cycle was considered to be 20 years.

All site preparations and grading should be performed as discussed above in Section 3.2.

Since an evaluation of the characteristics of the actual soils present at pavement subgrade can only be provided at the completion of grading, the following pavement sections should be used for planning purposes only. Final pavement designs should be evaluated after R-value tests have been performed on the actual in-place subgrade materials exposed for use during construction.

It should be noted that additional earthwork and/or ground improvement efforts may be required during grading on the actual subgrade material encountered, in order to achieve the aforementioned design parameters and assumptions. These design thicknesses assume that a properly prepared subgrade has been achieved.

Based on the results of our field exploration and laboratory testing of sandy clay (worse case scenario), we recommend the pavement designs presented in the table below. The pavement design criteria are based on the soil conditions present at the site, an R-value of 6 and the Traffic Index indicated below based on the estimated traffic for the site. In more granular areas of the site, a thinner pavement section may be used if desired and designed.

Table 4 - Pavement Section Recommendations

Location	Traffic Index (TI)	Asphalt Thickness (inches)	+	Aggregate Base Thickness (inches)	Portland Cement Concrete Thickness (inches)	+	Aggregate Base Thickness (inches)
Standard Drive Aisles	5	3½	+	8½	5½	+	4
		4	+	7½			
Truck Drive Aisles	7	6	+	12	6	+	6
		7	+	10			

We recommend rigid pavements (Portland Cement Concrete, PCC) be constructed at all areas requiring heavy braking and turning such as intersections, entrances, docking bays, trash truck loading areas, etc. PCC pavement sections should incorporate appropriate steel reinforcement and crack control joints as designed by the project structural engineer. We recommend that sections be as nearly squared as possible and no more than 15-feet on a side. Score joints may be constructed by saw cutting to a depth of ¼ of the slab thickness. Expansion/cold joints may be used in lieu of score joints. Such joints should be properly sealed. A minimum 4,000 psi mix is recommended.

Prior to placement of aggregate base, subgrade soils should be proof-rolled and scarified to a depth of 12 inches, brought to moisture contents between 0 to 2 percent above optimum, then compacted to at least 95 percent of the laboratory standard. The laboratory standard should be ASTM D1557.

Aggregate base below pavement sections should be compacted to at least 95 percent of ASTM D1557 with moisture contents within +/-2 percent of optimum. Aggregate base materials should be Caltrans Class II Base.

All materials should conform to and be placed in accordance with the latest revision of the Standard Specifications for Public Works Construction (Greenbook), the American Concrete Institute (ACI), and the Portland Cement Association (PCA).

3.11 LANDSCAPING AND IRRIGATION

Landscaping and irrigation should be positioned away from the building by at least 5 feet. Trees and shrubs should be positioned a distance away from the building equal to half of their mature height. Hardscape should closely surround the building as much as possible. Moisture conditions within the soil should be maintained at a constant level to avoid wetting or drying and associated movements. If landscaping is desired closer to the building, moisture barriers may be added to limit moisture infiltration beneath the building.

3.12 CONSTRUCTION CONSIDERATIONS

The site soils are sensitive to disturbances caused by construction traffic and to changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause significant reduction in the soil strength and support capabilities. Furthermore, perched groundwater conditions can develop during periods of heavy rainfall as a result of less permeable layers impeding infiltration. In these instances, overlying subgrade soils may become unstable and require remedial measures. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather.

Groundwater was not encountered near the ground surface during our explorations onsite. It should be noted, however, that variations in the groundwater table may result from fluctuation in the ground surface topography, subsurface stratification, precipitation, irrigation, and other factors that may not have evident at the time of our exploration. This sometimes occurs where relatively impermeable and/or cemented materials are overlain by fill soils. We recommend that a representative of PSI be present during grading operations to evaluate areas of seepage. Drainage devices for reduction of water accumulation can be recommended if these conditions occur.

Water should not be allowed to collect in the foundation excavation, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs during construction.

Final grading should be designed to provide positive drainage away from proposed structures. Soil areas within 10-feet of proposed structures should sloped at a minimum of 5 percent away from the structure, if possible. Roof leaders and downspouts should discharge onto paved surfaces sloping away from the structure or into a closed pipe system which outfalls to the street gutter or directly to the storm drain system.

4 REPORT LIMITATIONS

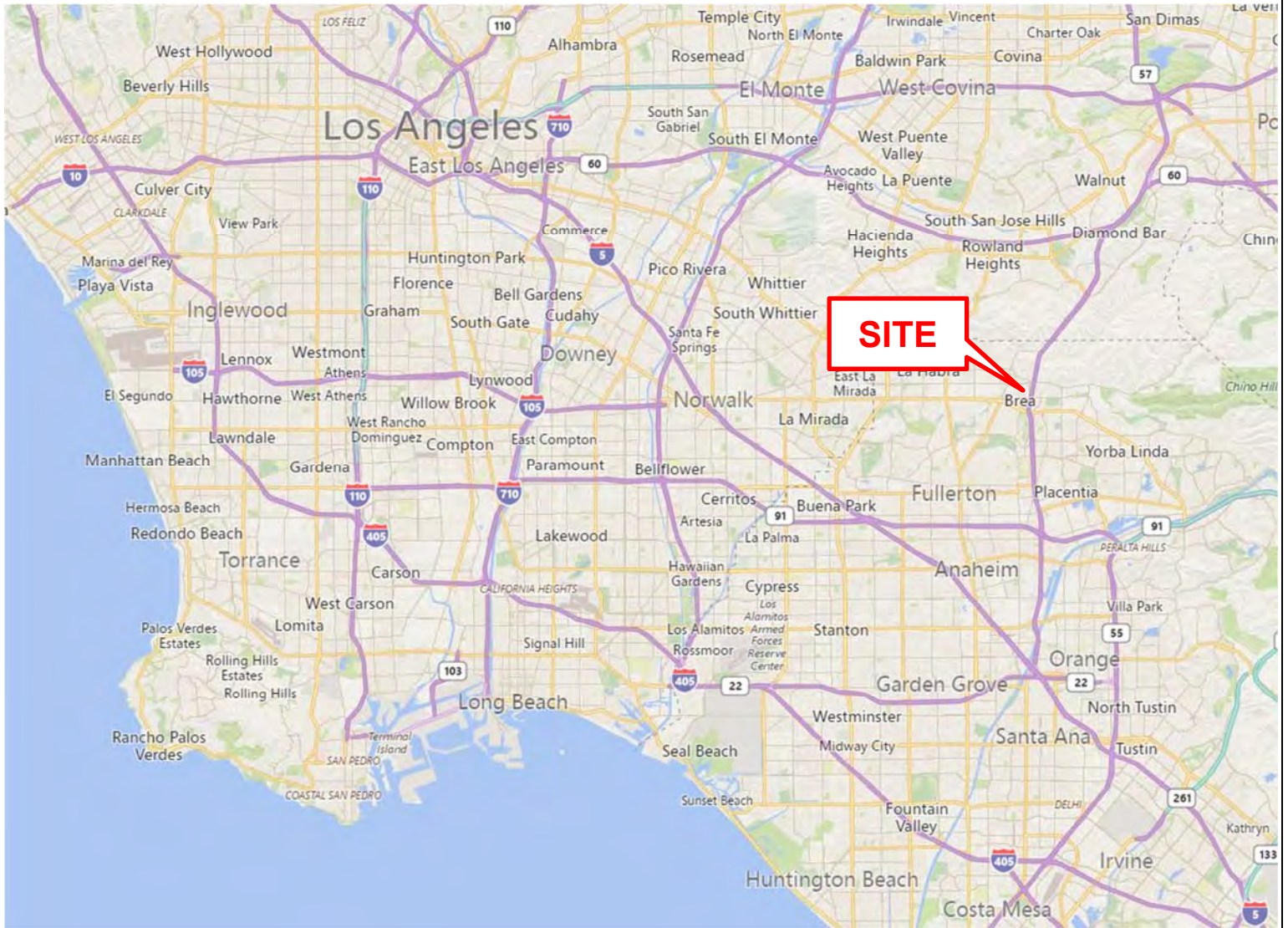
The proposed professional services have been performed, findings obtained, and preliminary recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices at the time of this report. PSI is not responsible for the conclusions, opinions, or recommendations made by others based on this data. No other warranties are implied or expressed. **Simon**, its subsidiaries and affiliates can rely upon the report under the same terms as if it was originally prepared for them.

The scope of exploration was intended to evaluate soil conditions within the influence of the proposed development. The analyses and recommendations submitted in this report are based upon the data obtained from the soil borings performed at the locations indicated. If any subsoil variations become evident during the course of this project, a re-evaluation of the recommendations contained in this report will be necessary after we have had an opportunity to observe the characteristics of the conditions encountered. The applicability of the report should also be reviewed in the event significant changes occur in the design, nature, or location of the proposed structural.

This report is considered preliminary based on limited knowledge of the proposed development. The preliminary recommendations provided herein are only intended for feasibility evaluations and conceptual designs and should not be relied upon for final design recommendations. Future design concepts and plans will require further focused geotechnical investigations to determine final design and construction recommendations for specific development structures.

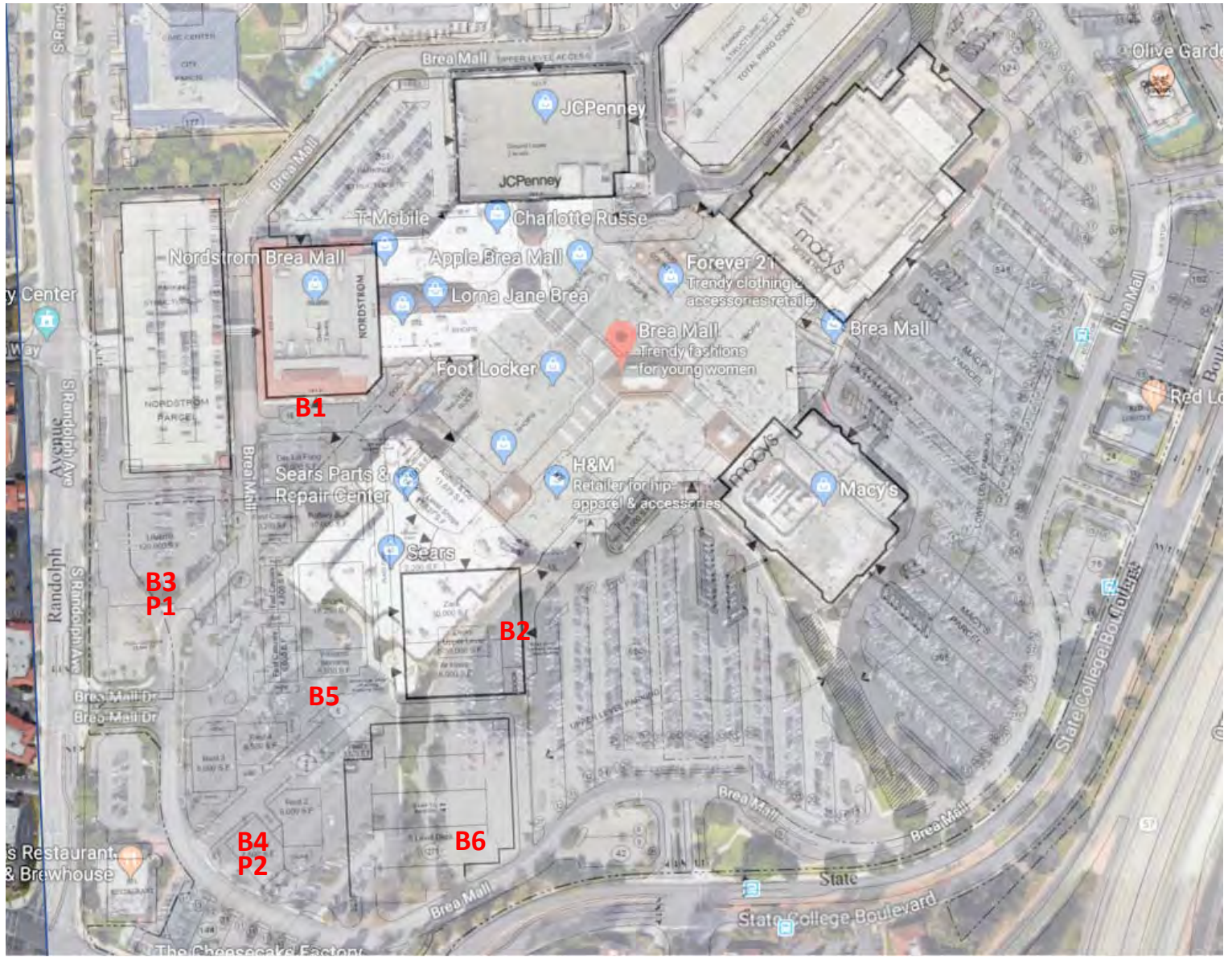


FIGURES



Reference – Bing Maps

	DATE: 2/27/2018	Proposed Brea Mall Development 1066 Brea Mall Brea, California 92821	PSI PROJECT NUMBER: 00661261	
PSI, INC. 11980 TELEGRAPH ROAD, UNIT 104 SANTA FE SPRINGS, CALIFORNIA	PREPARED BY: DTA	SITE VICINITY MAP	FIGURE 1	



Legend

- B6** Approximate Boring Location
- P2** Approximate Percolation Location

Reference – Google Maps

	DATE: 2/27/2018	Proposed Brea Mall Development 1066 Brea Mall Brea, California 92821	PSI PROJECT NUMBER: 00661261	
PSI, INC. 11980 TELEGRAPH ROAD, UNIT 104 SANTA FE SPRINGS, CALIFORNIA	PREPARED BY: DTA	BORING LOCATION MAP	FIGURE 2	



APPENDIX A

BORING LOGS



GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.	☒ SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
HSA: Hollow Stem Auger - typically 3 1/4" or 4 1/4" I.D. openings, except where noted.	■ ST: Shelby Tube - 3" O.D., except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry	▮ RC: Rock Core
R.C.: Diamond Bit Core Sampler	↓ TC: Texas Cone
H.A.: Hand Auger	☞ BS: Bulk Sample
P.A.: Power Auger - Handheld motorized auger	☒ PM: Pressuremeter
	CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N ₆₀ : A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q _u : Unconfined compressive strength, TSF
Q _p : Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL), %
DD: Dry unit weight, pcf
▼, ▽, ▾ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS ANGULARITY OF COARSE-GRAINED PARTICLES

Relative Density	N - Blows/foot	Description	Criteria
Very Loose	0 - 4	Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Loose	4 - 10	Subangular:	Particles are similar to angular description, but have rounded edges
Medium Dense	10 - 30	Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Dense	30 - 50	Rounded:	Particles have smoothly curved sides and no edges
Very Dense	50 - 80		
Extremely Dense	80+		

GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (3/4 in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to 3/4 in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%



GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

<u>Q_u - TSF</u>	<u>N - Blows/foot</u>	<u>Consistency</u>
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

<u>Description</u>	<u>Criteria</u>
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

<u>Description</u>	<u>Criteria</u>	<u>Description</u>	<u>Criteria</u>
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick	Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick	Lensed:	Inclusion of small pockets of different soils
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing	Layer:	Inclusion greater than 3 inches thick (75 mm)
Slickensided:	Fracture planes appear polished or glossy, sometimes striated	Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
		Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

<u>Q_u - TSF</u>	<u>Consistency</u>
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

<u>Description</u>	<u>Criteria</u>
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

<u>Voids</u>	<u>Void Diameter</u>
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

(Typically Sedimentary Rock)	
<u>Component</u>	<u>Size Range</u>
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION

<u>Rock Mass Description</u>	<u>RQD Value</u>
Excellent	90 - 100
Good	75 - 90
Fair	50 - 75
Poor	25 - 50
Very Poor	Less than 25

DEGREE OF WEATHERING

Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	



DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 11.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9153° LONGITUDE: -117.8883° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B1 Water BORING LOCATION:	
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Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
	0					5-inches Asphalt 13-inches Mix of Base with Silty Sand				X Moisture PL LL	
						FILL - Silty SAND , orange-brown, with pieces of brick, moist.	SM				
						Silty SAND , orange-brown, with gravel, little cohesion, loose, moist. [Possible Fill]	SM	3-3-3 N=4	10		DD = 112 pcf
	5					Silty CLAY , brown, soft, moist.	CL	2-1-2 N=3			
						Silty SAND , light brown, with trace gravel and cohesion, loose, moist.	SM	2-3-3 N=4	12		DD = 110 pcf
	10					SAND , light brown, dense, moist.	SP	6-12-18 N=30			
Boring Terminated at 11-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. No groundwater encountered. Soil cuttings used as backfill, with asphalt cold patch.											

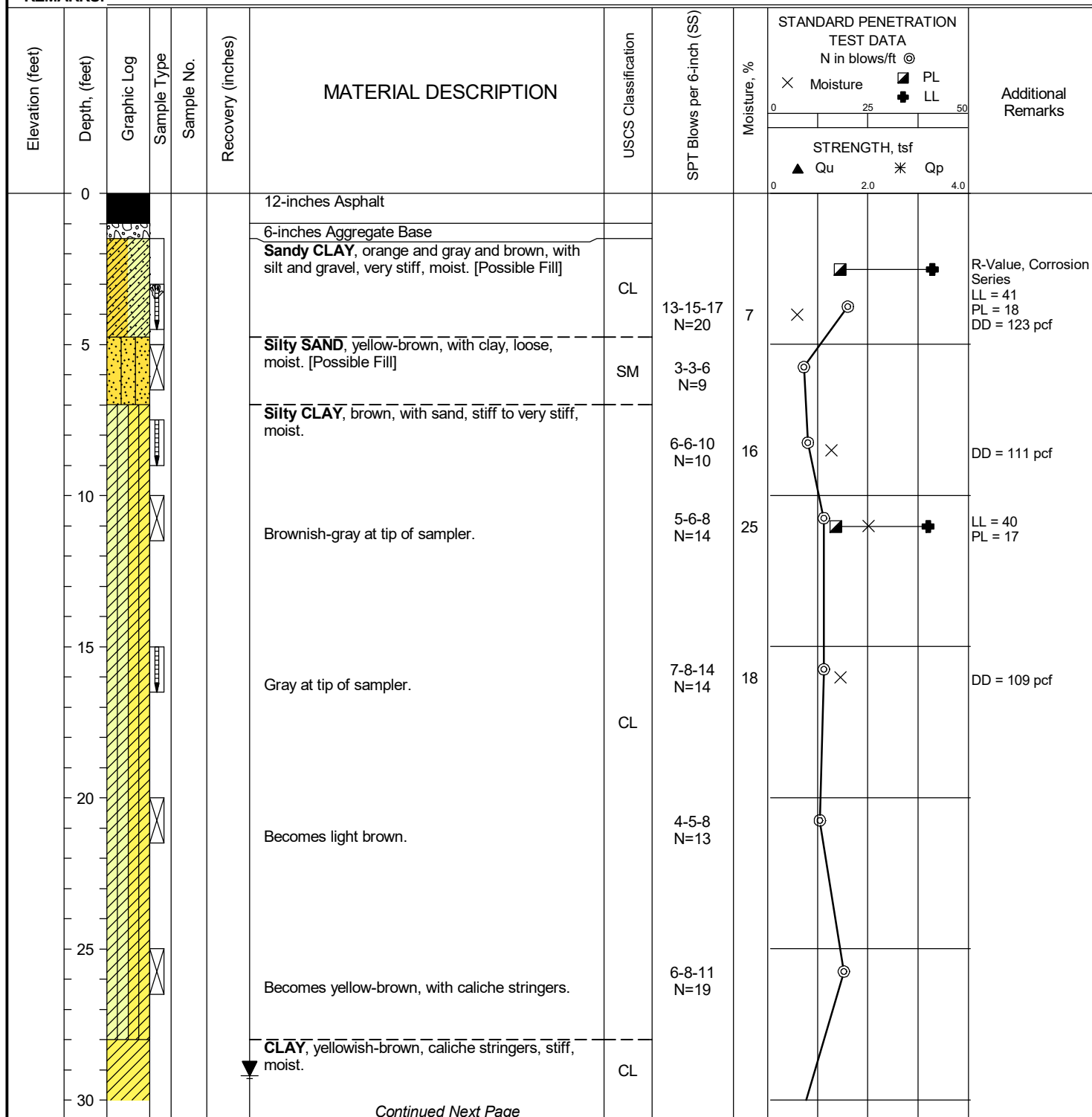
	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
--	--	--

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 11.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9143° LONGITUDE: -117.8871° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B2 Water	
BORING LOCATION:					

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @		Additional Remarks
										X Moisture PL LL		
										STRENGTH, tsf ▲ Qu * Qp		
										0 25 50 0 2.0 4.0		
	0	[Graphic Log: Asphalt, Aggregate Base, Sandy SILT, Clayey SILT, Silty CLAY, Sandy CLAY]				6-inches Asphalt 6-inches Aggregate Base FILL - Sandy SILT , light brown, with trace clay, moist. Clayey SILT , brown, with roots, moist. Silty CLAY , orange-brown, very stiff, moist. Sandy CLAY , light orange-brown, hard, moist. Clayey SAND , light orange-brown, very dense to dense, moist.	ML ML CL CL SC	10-14-23 N=23 8-15-27 N=42 19-42-50/4" N=58 14-14-23 N=37	14 9		(X) (O) (O) (O) >> (O)	DD = 115 pcf DD = 121 pcf
Boring Terminated at 11-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. No groundwater encountered. Soil cuttings used as backfill, with asphalt cold patch.												

	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
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DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 51.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9144° LONGITUDE: -117.8892° STATION: N/A OFFSET: N/A REMARKS:	DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR	BORING B3						
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%; text-align: center;">Water</td> <td style="width: 10%;"> ▽ While Drilling </td> <td style="width: 80%; text-align: right;">41.2 feet</td> </tr> <tr> <td></td> <td> ▼ Upon Completion </td> <td style="text-align: right;">29.2 feet</td> </tr> </table>	Water	▽ While Drilling	41.2 feet		▼ Upon Completion	29.2 feet
Water	▽ While Drilling	41.2 feet						
	▼ Upon Completion	29.2 feet						
		BORING LOCATION: 						



Continued Next Page



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PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 51.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9144° LONGITUDE: -117.8892° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B3 Water ▽ While Drilling ▽ Upon Completion 41.2 feet 29.2 feet BORING LOCATION:	
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Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
30						CLAY, yellowish-brown, caliche stringers, stiff, moist.	CL	3-3-5 N=8	31	X Moisture ▲ Qu * Qp □ PL + LL	LL = 41 PL = 23
						SAND, yellowish-brown, fine grained, medium dense, saturated at 40 feet bgs.					
35						Lost Sample - Possibly wet sand. No recovery.	SP	7-10-14 N=24			
						▽ SILT, yellowish-brown, with trace clay, very stiff, moist.	ML	10-11-18 N=29			
40						SAND, yellowish-brown, with little silt, medium dense, saturated.	SP				
45						Silty CLAY, yellowish-brown, very stiff, moist.		13-11-16 N=27			
50					...with caliche stringers.	CL	6-8-12 N=20				
						Boring Terminated at 51-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. Groundwater encountered. Soil cuttings used as backfill, with asphalt cold patch.					

	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
--	--	--

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 51.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9132° LONGITUDE: -117.8888° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B4 Water ▽ While Drilling 24.8 feet ▼ Upon Completion 30.3 feet BORING LOCATION:	
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Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @		Additional Remarks
										X Moisture PL LL		
										STRENGTH, tsf ▲ Qu * Qp		
										0 25 50 0 2.0 4.0		
0		3-1/2-inches Asphalt										
		6-inches Aggregate Base										
		Poorly Graded SAND, tan, fine grained, loose, slightly moist. [Possible Fill]					SP					
5		Poorly Graded SAND, tan, fine grained, with occasional gravel, dense to very dense, moist.					SP	19-26-50 N=48	4	X		Sieve
							SP	12-15-20 N=35				DD = 107 pcf
10								24-42-50/4" N=58	4	X		>> DD = 110 pcf Sieve
15		Sandy SILT, reddish-brown, with clay lens, hard, moist.					ML	18-28-30 N=58				>>
20		Silty CLAY, orange-brown, very stiff, moist.					CL	9-11-16 N=27				
25		Silty SAND, orange-brown, medium dense, saturated.					SM	8-10-13 N=23				
30		Continued Next Page										

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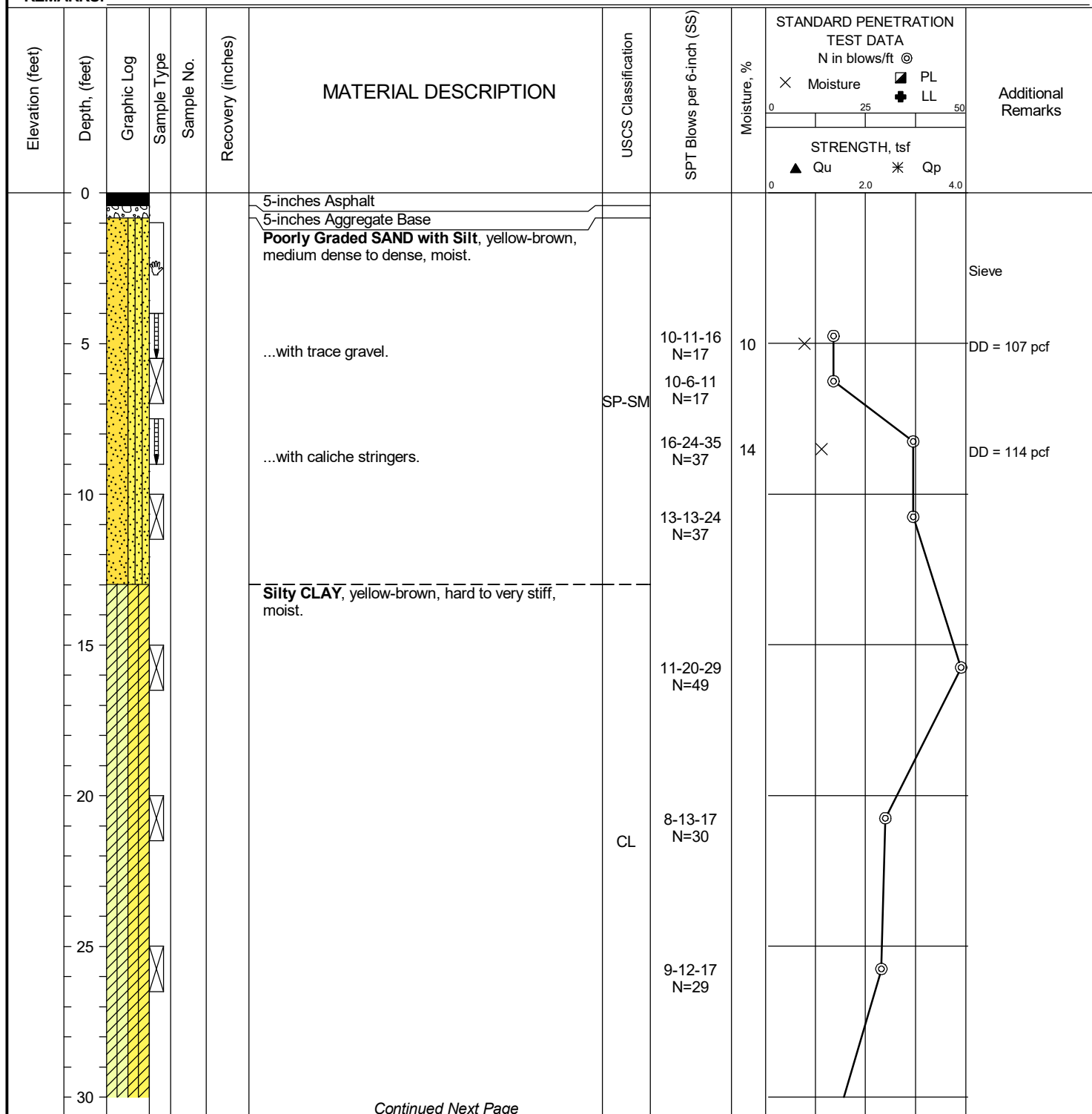
PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 51.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9132° LONGITUDE: -117.8888° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B4 Water ▽ While Drilling ▽ Upon Completion 24.8 feet 30.3 feet BORING LOCATION:	
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Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	Additional Remarks
30		[Hatched Box]			▼	Silty CLAY , yellow-brown, very stiff, moist.	CL	6-9-13 N=22	19	X Moisture ▲ Qu □ PL + LL	LL = 36 PL = 17
35		[Dotted Box]				Poorly Graded SAND with Silt , yellow-brown, medium dense to very dense, with occasional saturated sand layers, wet.	SP-SM	3-5-9 N=14			Sieve
40		[Hatched Box]				Silty CLAY , yellow-brown, hard to very stiff, moist.	CL	14-30-39 N=69		>>○	
45		[Hatched Box]						7-15-17 N=32		○	
50		[Hatched Box]						5-7-12 N=19		○	
						Boring Terminated at 51-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. Groundwater encountered. Soil cuttings used as backfill, with asphalt cold patch.					

	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
--	--	--

DATE STARTED: 2/1/18	DRILL COMPANY: 2R Drilling	BORING B5
DATE COMPLETED: 2/1/18	DRILLER: George LOGGED BY: DTA	
COMPLETION DEPTH: 31.5 ft	DRILL RIG: CME-75	Water
BENCHMARK: N/A	DRILLING METHOD: Hollow Stem Auger	
ELEVATION: N/A	SAMPLING METHOD: SS-SS+CalMod	BORING LOCATION:
LATITUDE: 33.9139°	HAMMER TYPE: Automatic	
LONGITUDE: -117.8882°	EFFICIENCY: N/A	
STATION: N/A OFFSET: N/A	REVIEWED BY: RR	
REMARKS:		



Continued Next Page



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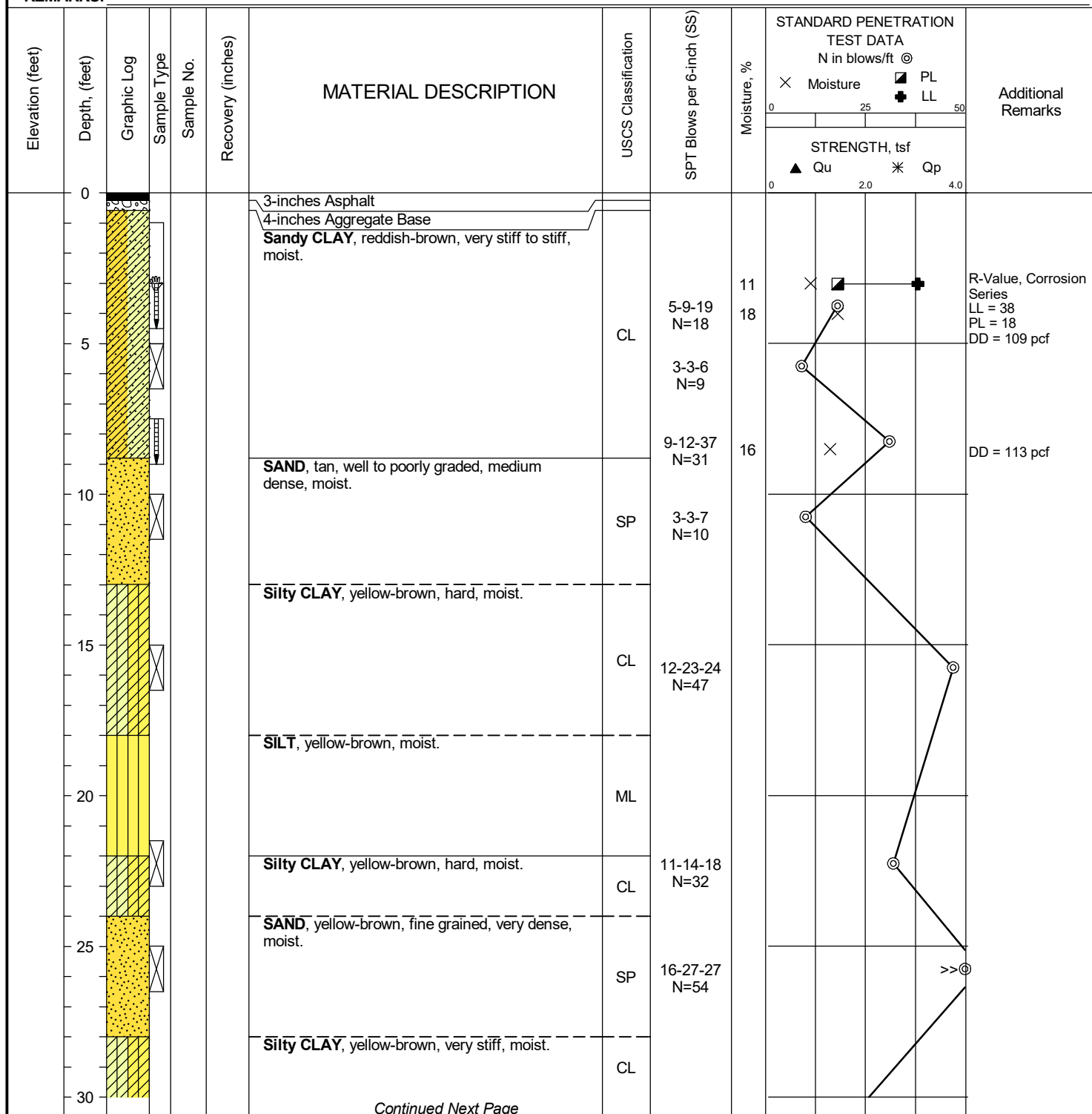
PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
Brea, CA

DATE STARTED: 2/1/18	DRILL COMPANY: 2R Drilling	BORING B5
DATE COMPLETED: 2/1/18	DRILLER: George LOGGED BY: DTA	
COMPLETION DEPTH: 31.5 ft	DRILL RIG: CME-75	Water ▽ ▼ ▽
BENCHMARK: N/A	DRILLING METHOD: Hollow Stem Auger	
ELEVATION: N/A	SAMPLING METHOD: SS-SS+CalMod	BORING LOCATION:
LATITUDE: 33.9139°	HAMMER TYPE: Automatic	
LONGITUDE: -117.8882°	EFFICIENCY: N/A	
STATION: N/A OFFSET: N/A	REVIEWED BY: RR	
REMARKS:		

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @	STRENGTH, tsf	Additional Remarks
										X Moisture ☐ PL ☐ LL	▲ Qu * Qp	
										0 25 50	0 2.0 4.0	
	30					Silty CLAY , yellow-brown, hard to very stiff, moist. Boring Terminated at 31-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. Groundwater not encountered. Soil cuttings used as backfill, with asphalt cold patch.	CL	6-8-10 N=18		⊙		

	Professional Service Industries, Inc. 11980 Telegraph Rd, Unit 104 Santa Fe Springs, CA 90670 Telephone: (714) 484-8600	PROJECT NO.: 00661261 PROJECT: Simon ~ Proposed Brea Mall Development LOCATION: 100 Brea Mall Brea, CA
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DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 31.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9133° LONGITUDE: -117.8873° STATION: N/A OFFSET: N/A REMARKS:	DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR	BORING B6
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Continued Next Page



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PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA

DATE STARTED: 2/1/18 DATE COMPLETED: 2/1/18 COMPLETION DEPTH: 31.5 ft BENCHMARK: N/A ELEVATION: N/A LATITUDE: 33.9133° LONGITUDE: -117.8873° STATION: N/A OFFSET: N/A REMARKS:		DRILL COMPANY: 2R Drilling DRILLER: George LOGGED BY: DTA DRILL RIG: CME-75 DRILLING METHOD: Hollow Stem Auger SAMPLING METHOD: SS-SS+CalMod HAMMER TYPE: Automatic EFFICIENCY: N/A REVIEWED BY: RR		BORING B6 Water								
				BORING LOCATION:								
Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft @		Additional Remarks
										× Moisture ☐ PL ☐ LL ▲ Qu * Qp		
	30					Silty CLAY , yellow-brown, very stiff, moist. Boring Terminated at 31-1/2 feet below ground surface. All CalMod blowcounts multiplied by a factor of 0.63 to represent SPT N-Value. Groundwater not encountered. Soil cuttings used as backfill, with asphalt cold patch.	CL	7-9-12 N=21		0 25 50 0 2.0 4.0		



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PROJECT NO.: 00661261
PROJECT: Simon ~ Proposed Brea Mall Development
LOCATION: 100 Brea Mall
 Brea, CA



APPENDIX B

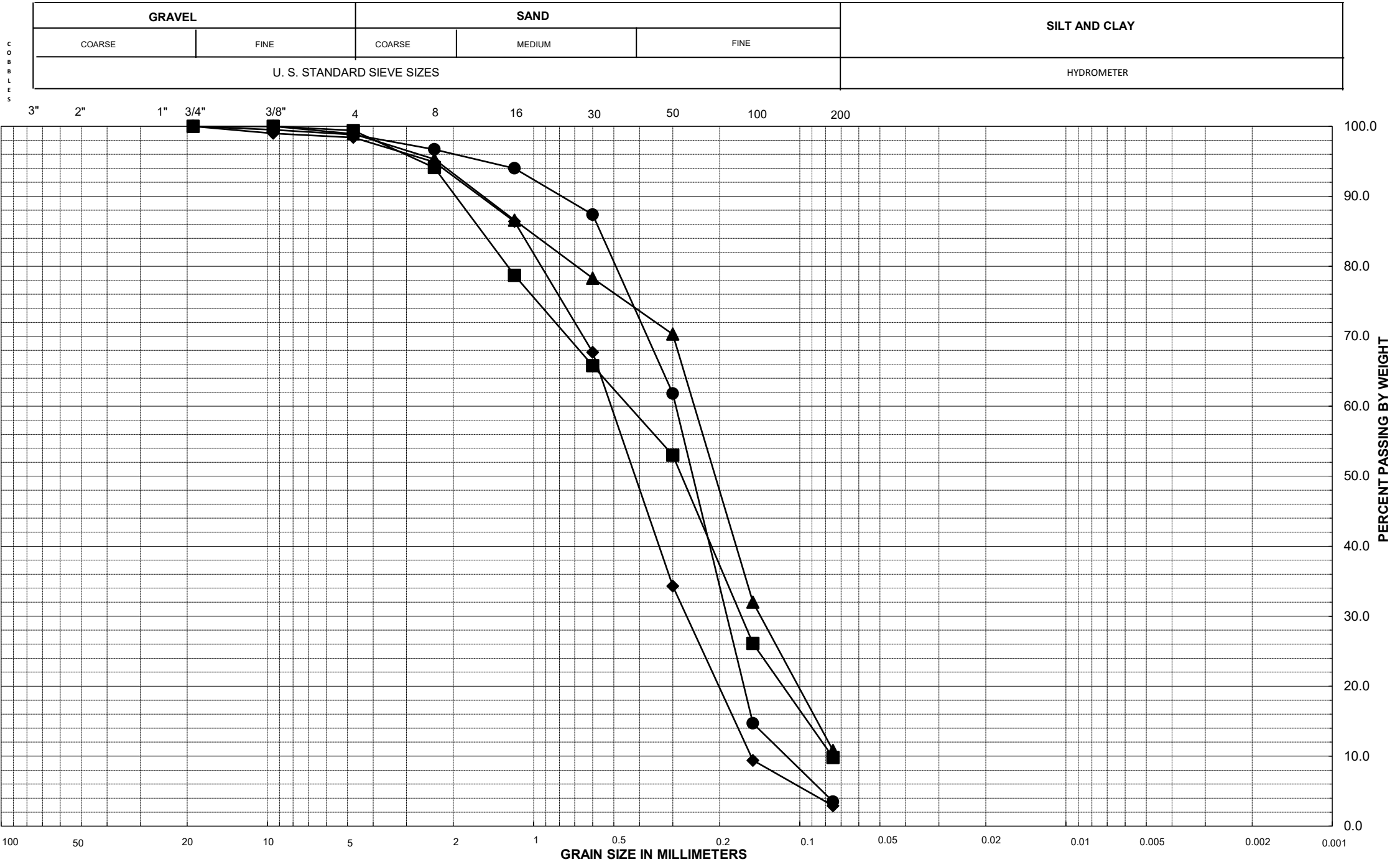
LABORATORY TEST RESULTS



LABORATORY TEST RESULTS

Boring	Depth (ft.)	Test	Result
B3	1½ - 5	Soluble Sulfate (ppm) Soluble Chloride (ppm) Minimum Resistivity (Ω-cm) pH R-Value Liquid Limit (%) Plastic Limit (%) Plastic Index (%) Expansion Index	246 145 1100 7.5 11 41 18 23 35
B3	8½	Consolidation	See Plot
B3	11	Liquid Limit (%) Plastic Limit (%) Plastic Index (%)	40 17 24
B3	31	Liquid Limit (%) Plastic Limit (%) Plastic Index (%)	41 23 17
B4	2½ - 5½	Sieve Analysis	See Plot
B4	11	Sieve Analysis	See Plot
B4	31	Liquid Limit (%) Plastic Limit (%) Plastic Index (%)	36 17 19
B4	36	Sieve Analysis	See Plot
B5	1 - 4	Sieve Analysis	See Plot
B6	1 - 5	Soluble Sulfate (ppm) Soluble Chloride (ppm) Minimum Resistivity (Ω-cm) pH R-Value Liquid Limit (%) Plastic Limit (%) Plastic Index (%) Direct Shear Expansion Index	576 230 1050 7.4 6 38 18 21 See Plot 34

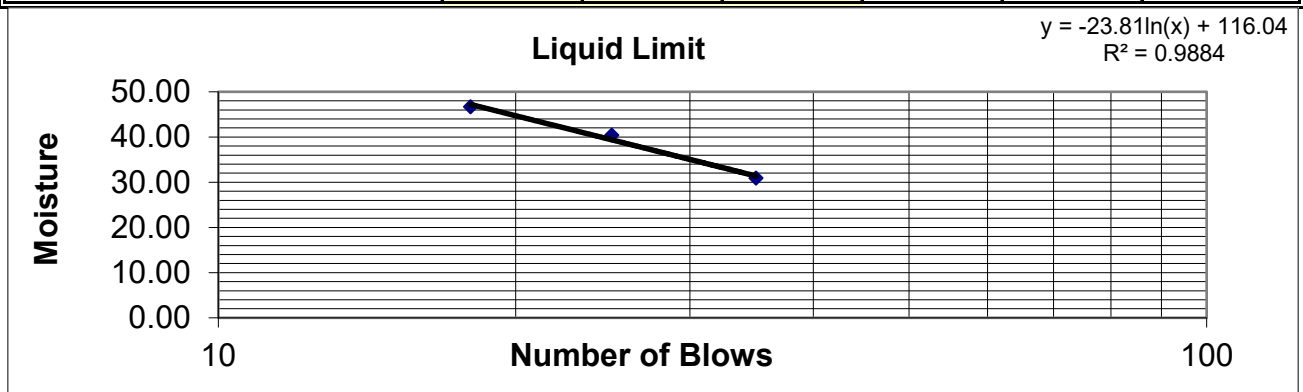
UNIFIED SOIL CLASSIFICATION



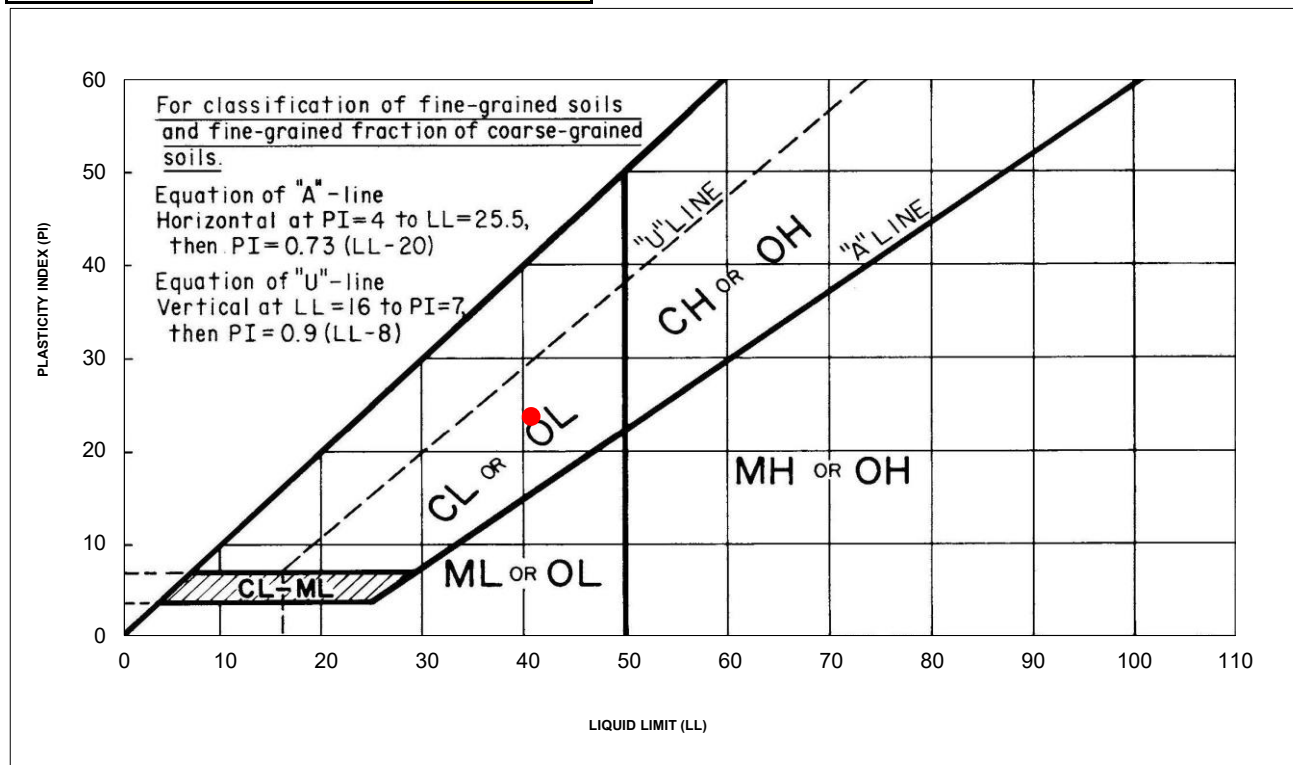
Exploration No.	Sample No.	Depth (ft)	SYMBOL	W _n (%)	LL	PI	% Clay	Description and Classification	D ₆₀	D ₃₀	D ₁₀	C _u	C _c
B4		2.5'-5.5'	●					Poorly Graded Sand (SP)	0.29	0.19	0.11	2.6	1.1
B4		11'	◆					Poorly Graded Sand (SP)	0.51	0.26	0.15	3.4	0.9
B4		36'	■					Poorly Graded Sand with Silt (SP-SM)	0.43	0.15	0.073	5.9	0.7
B5		1'-4'	▲					Poorly Graded Sand with Silt (SP-SM)	0.24	0.14	0.073	3.3	1.1
			□										
PROJECT NAME: Brea Mall PROJECT NUMBER: 00661261								PARTICLE-SIZE DISTRIBUTION CURVES ASTM D422	intertek psi				

Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/7/2018
Boring & Sample No.	B3 @ 11 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	46.70	42.10	44.00	19.5	19.7
WEIGHT OF CAN + DRY SOIL	40.40	35.60	36.20	17.9	18.2
WEIGHT OF CAN	20.00	19.50	19.50	8.60	8.8
WEIGHT OF WATER	6.30	6.50	7.80	1.6	1.5
WEIGHT OF DRY SOIL	20.40	16.10	16.70	9.3	9.4
MOISTURE CONTENT	30.88	40.37	46.71	17.2	16.0
NUMBER OF BLOWS	35	25	18		

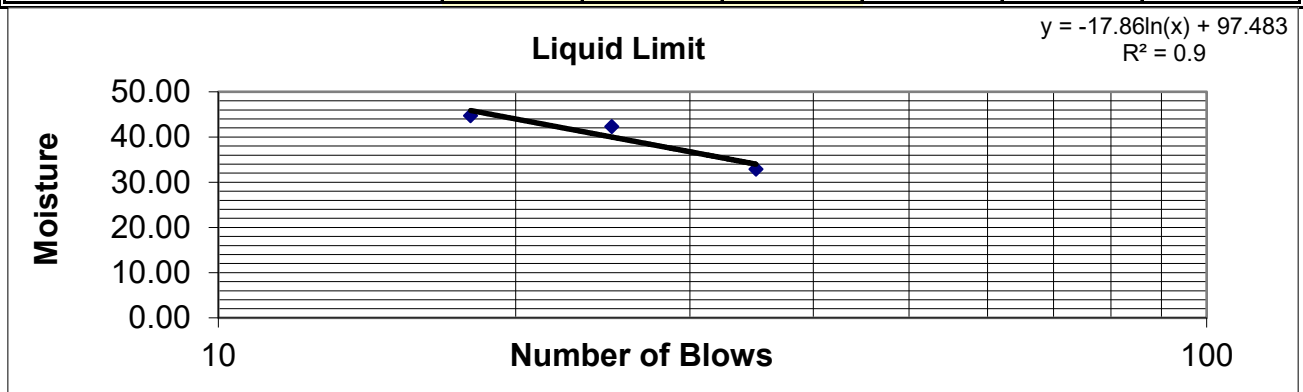


TEST RESULTS	
LIQUID LIMIT	40
PLASTIC LIMIT	17
PLASTICITY INDEX	24
Classification	CL

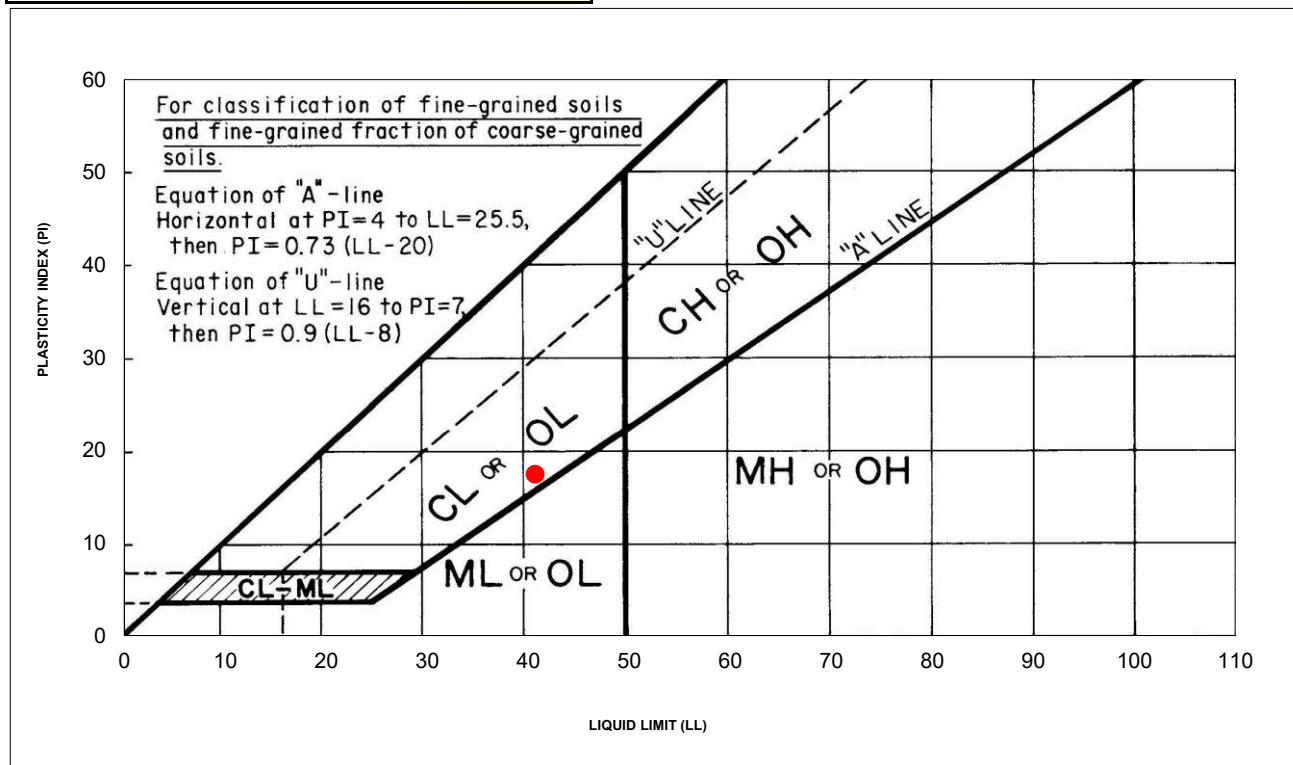


Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/7/2018
Boring & Sample No.	B3 @ 31 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	38.20	40.50	44.10	18.5	18
WEIGHT OF CAN + DRY SOIL	33.60	34.20	36.50	16.7	16.2
WEIGHT OF CAN	19.60	19.30	19.50	8.80	8.6
WEIGHT OF WATER	4.60	6.30	7.60	1.8	1.8
WEIGHT OF DRY SOIL	14.00	14.90	17.00	7.9	7.6
MOISTURE CONTENT	32.86	42.28	44.71	22.8	23.7
NUMBER OF BLOWS	35	25	18		

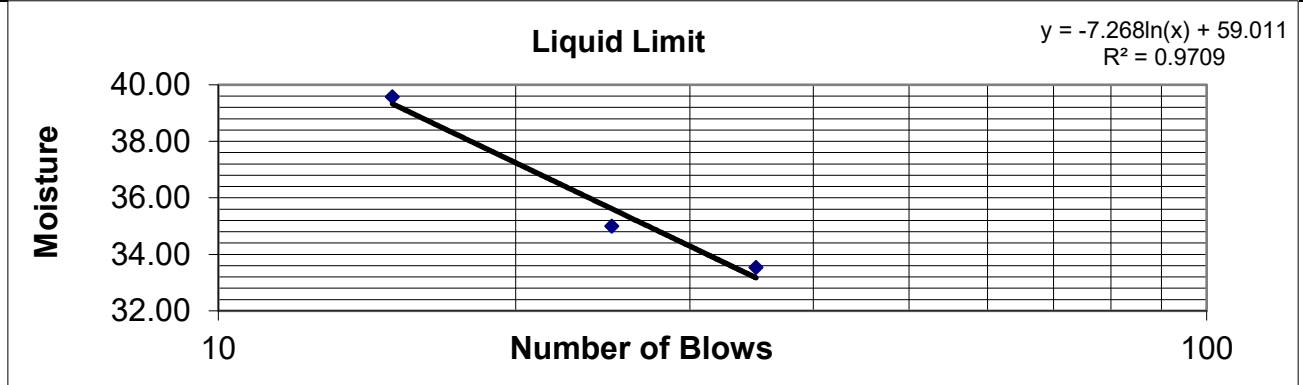


TEST RESULTS	
LIQUID LIMIT	41
PLASTIC LIMIT	23
PLASTICITY INDEX	17
Classification	CL

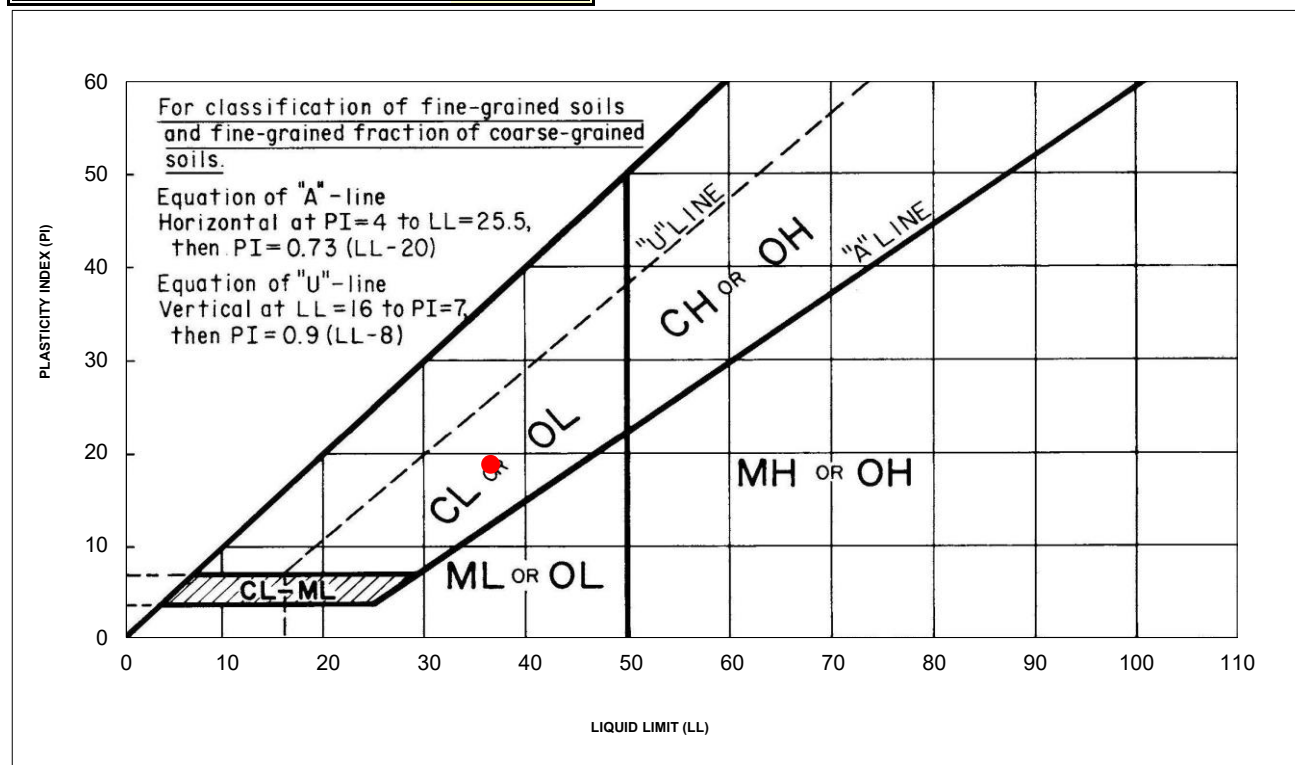


Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/7/2018
Boring & Sample No.	B4 @ 31 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	41.10	43.70	45.90	19.5	18.7
WEIGHT OF CAN + DRY SOIL	35.70	37.40	38.50	17.9	17.2
WEIGHT OF CAN	19.60	19.40	19.80	8.60	8.6
WEIGHT OF WATER	5.40	6.30	7.40	1.6	1.5
WEIGHT OF DRY SOIL	16.10	18.00	18.70	9.3	8.6
MOISTURE CONTENT	33.54	35.00	39.57	17.2	17.4
NUMBER OF BLOWS	35	25	15		

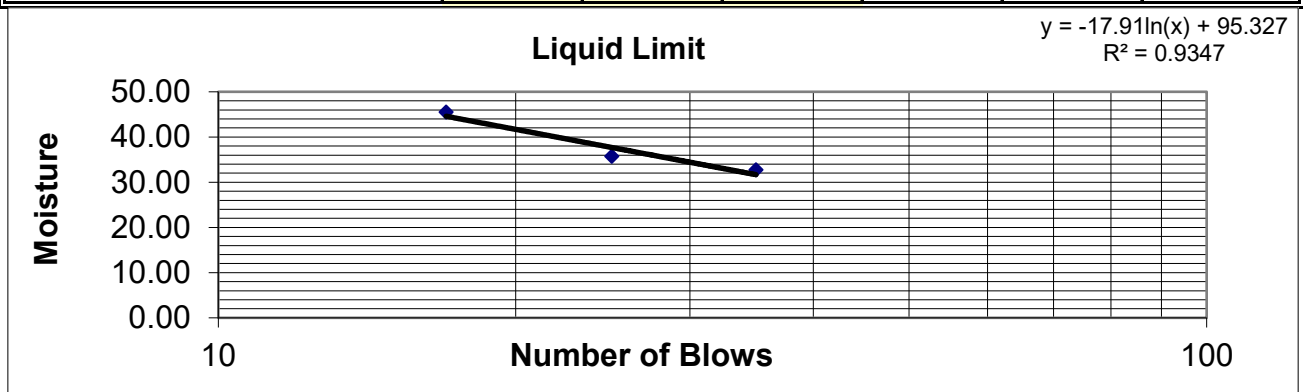


TEST RESULTS	
LIQUID LIMIT	36
PLASTIC LIMIT	17
PLASTICITY INDEX	19
Classification	CL

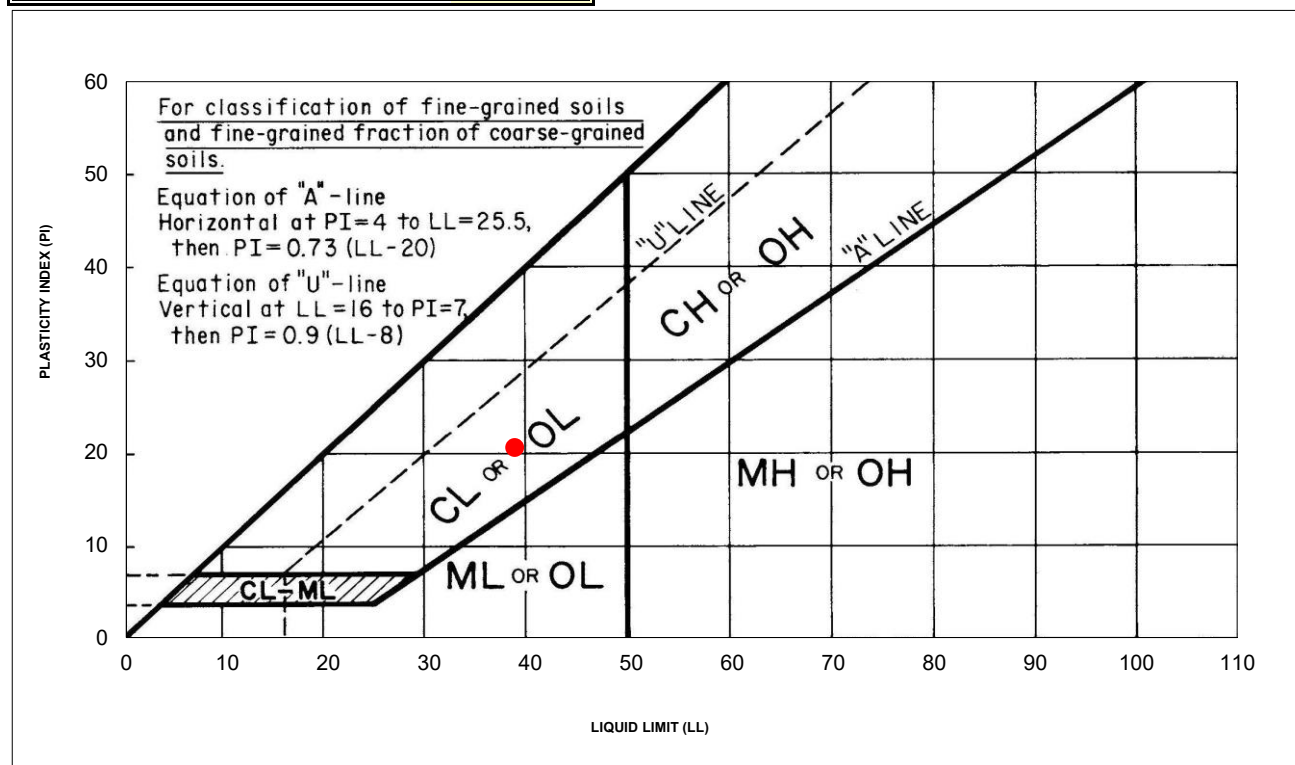


Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/7/2018
Boring & Sample No.	B6 @ 1-5 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	40.90	42.40	42.20	20.2	20.7
WEIGHT OF CAN + DRY SOIL	35.60	36.40	35.10	18.5	18.8
WEIGHT OF CAN	19.40	19.60	19.50	8.60	8.6
WEIGHT OF WATER	5.30	6.00	7.10	1.7	1.9
WEIGHT OF DRY SOIL	16.20	16.80	15.60	9.9	10.2
MOISTURE CONTENT	32.72	35.71	45.51	17.2	18.6
NUMBER OF BLOWS	35	25	17		

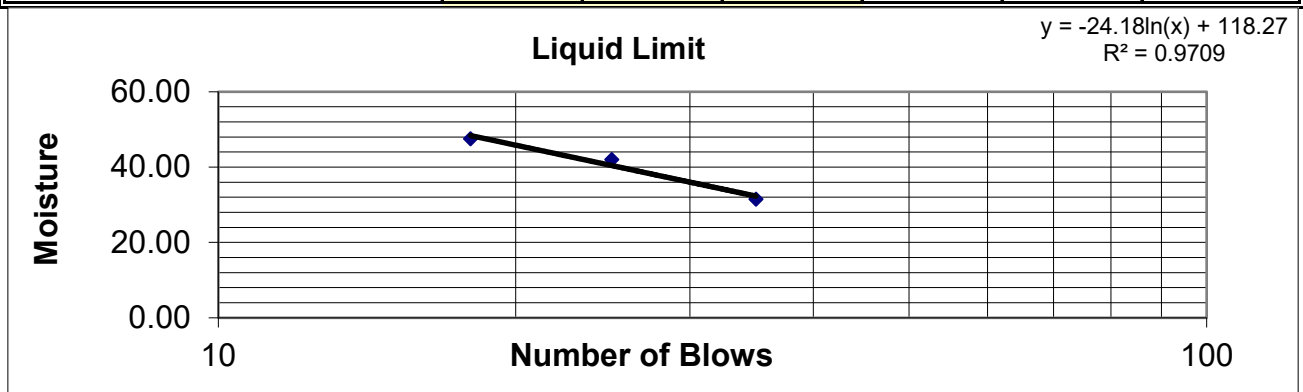


TEST RESULTS	
LIQUID LIMIT	38
PLASTIC LIMIT	18
PLASTICITY INDEX	21
Classification	CL

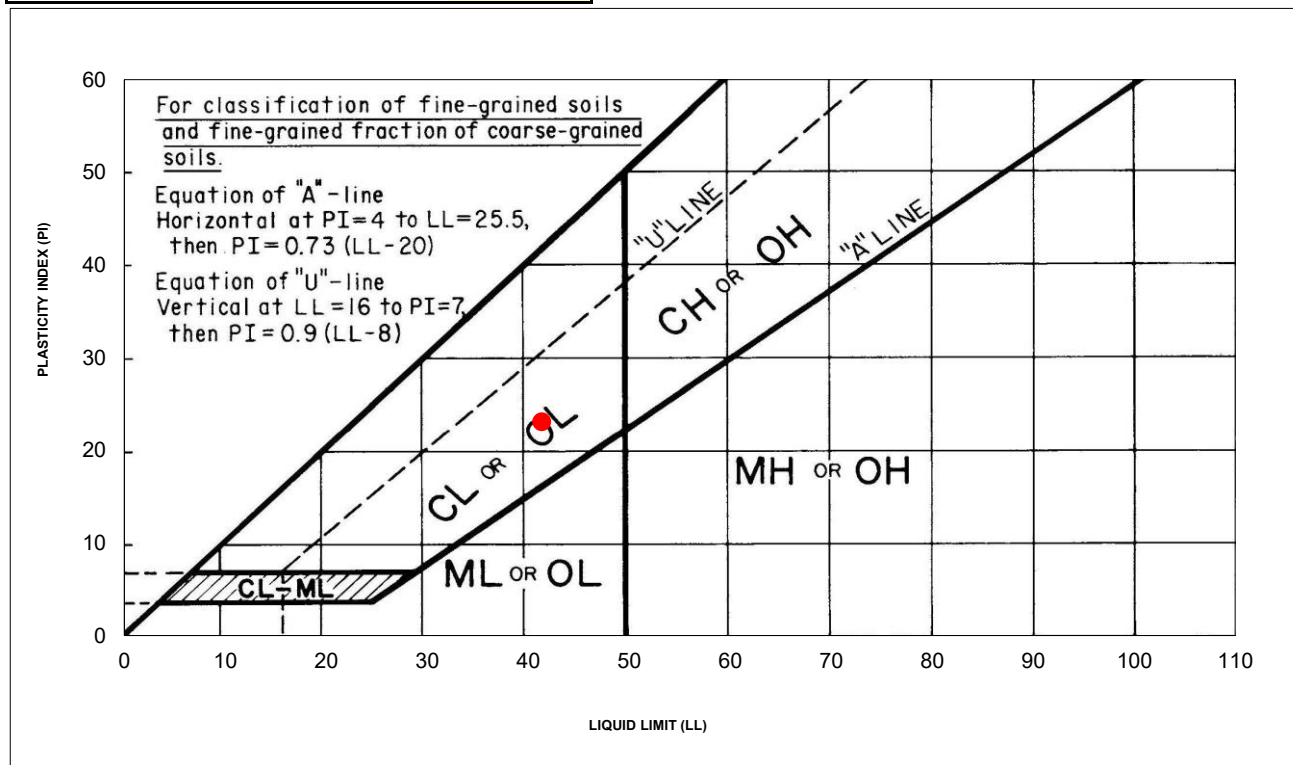


Project Name	Simon ~ Brea Mall	Project Number	00661261
Laboratory Number	5296	Date Tested	2/9/2018
Boring & Sample No.	B3 @ 1.5-5 ft.		
Sample Description	Silty Clay		

	LIQUID LIMIT			PLASTIC LIMIT	
WEIGHT OF CAN + WET SOIL	46.30	41.80	43.70	19.7	19.8
WEIGHT OF CAN + DRY SOIL	40.00	35.20	35.90	17.8	18.3
WEIGHT OF CAN	20.00	19.50	19.50	8.60	8.8
WEIGHT OF WATER	6.30	6.60	7.80	1.9	1.5
WEIGHT OF DRY SOIL	20.00	15.70	16.40	9.2	9.5
MOISTURE CONTENT	31.50	42.04	47.56	20.7	15.8
NUMBER OF BLOWS	35	25	18		

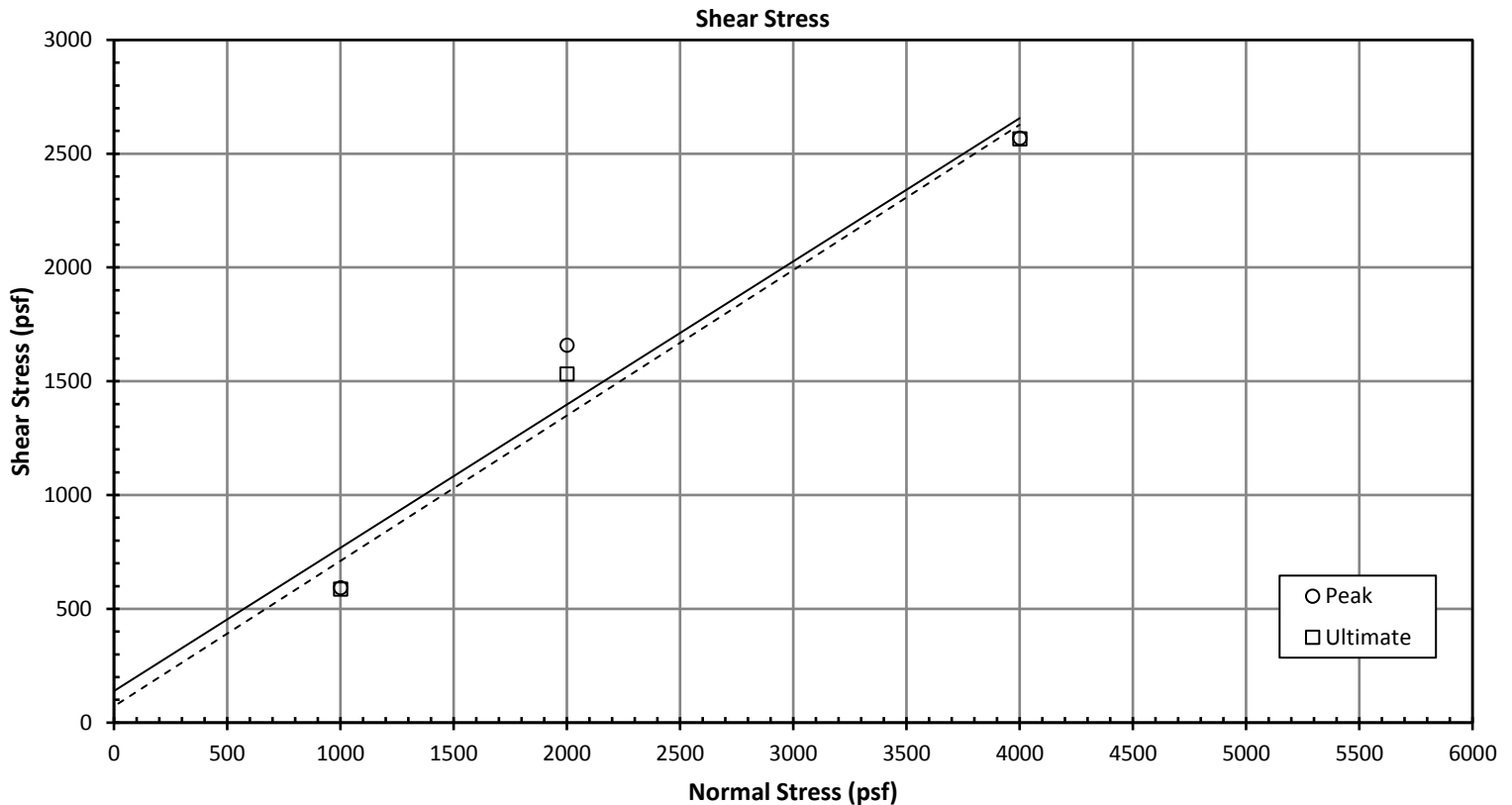
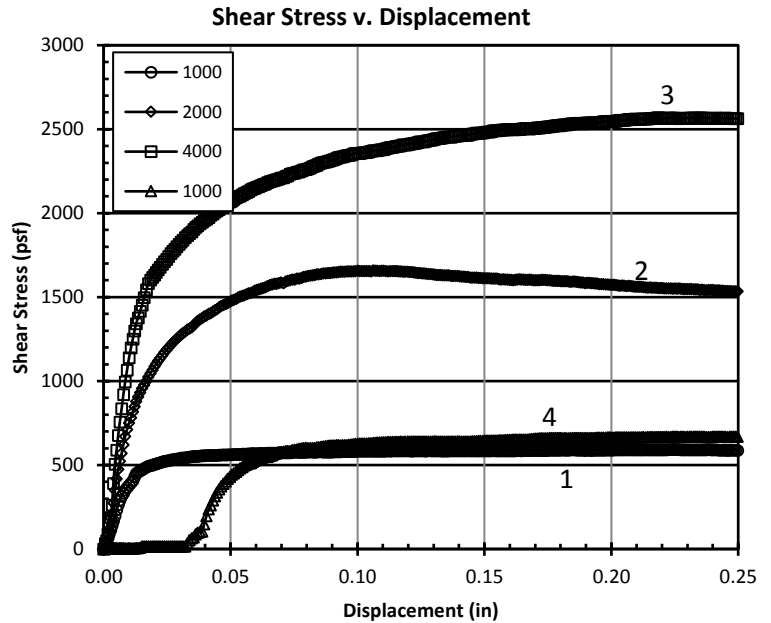
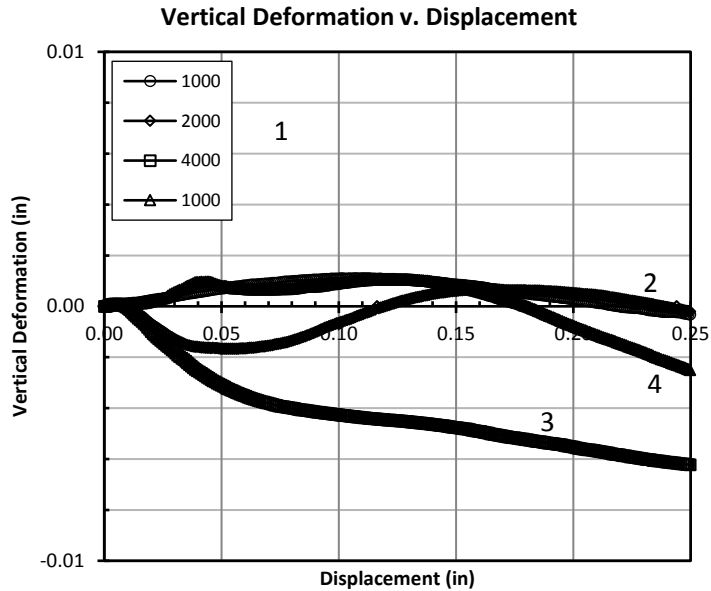


TEST RESULTS	
LIQUID LIMIT	41
PLASTIC LIMIT	18
PLASTICITY INDEX	23
Classification	CL



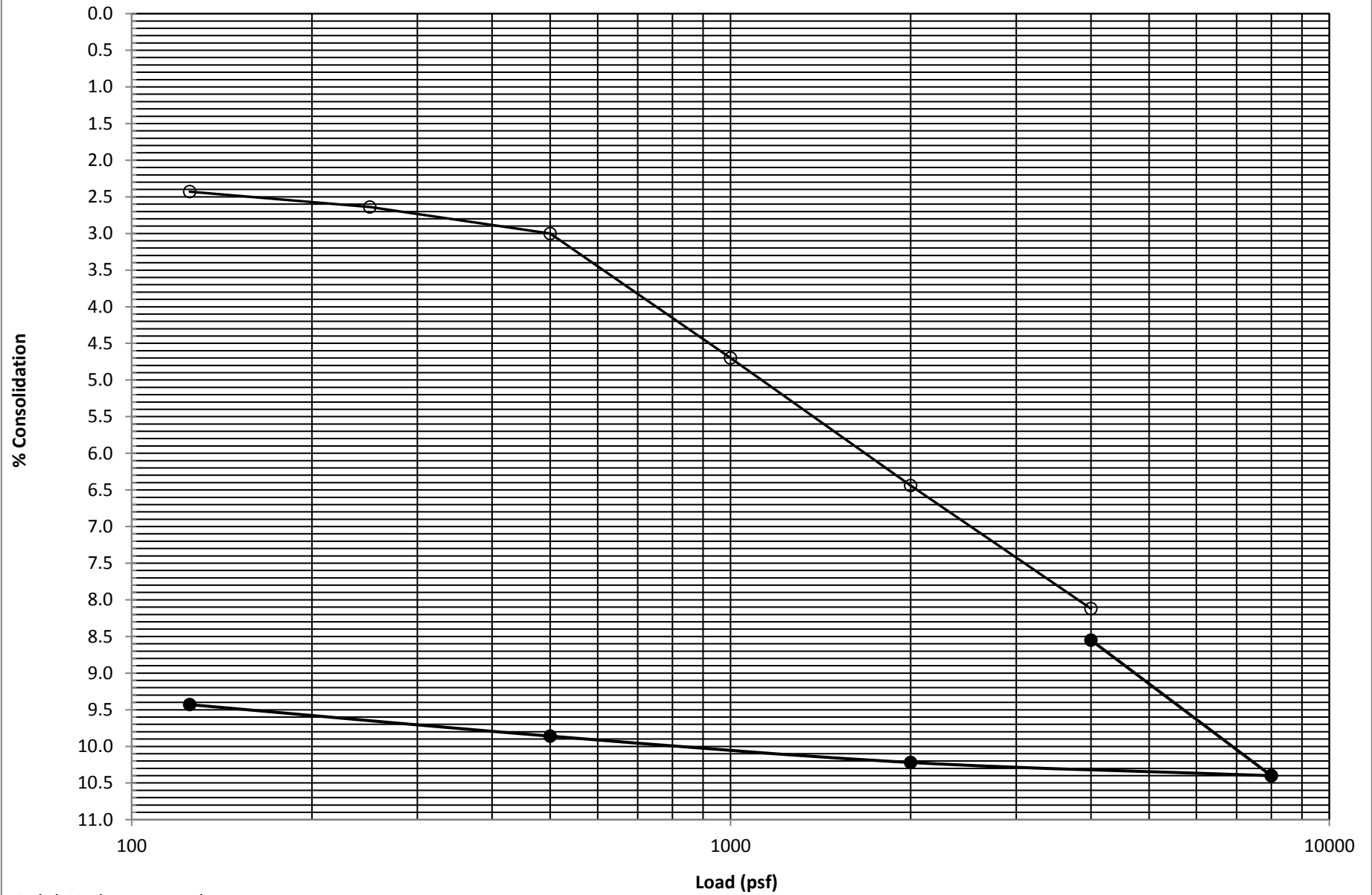
Samples Tested	1	2	3	4
Boring ID	B6	B6	B6	B6
Depth (ft.)	1-5	1-5	1-5	1-5
Initial Moisture Content (%)	9.98	9.98	9.98	9.98
Final Moisture Content (%)	21.75	20.91	19.67	17.62
Normal Stress (psf)	1000	1000	2000	4000
Maximum Shear Stress (psf)	594	670	1659	2569
Ultimate Shear Stress (psf)	588	670	1533	2566
ASTM D3080	Soil Type	Silty Clay	Silty Clay	Silty Clay

	Peak	Ultim.
Friction, ϕ (Deg)	33	33
Cohesion (psf)	81	48
Sample Type:	Remolded	
Method:	Drained	
Consolidation:	Yes	
Saturation:	Yes	
Strain Rate (in/min):	0.0032	



B3
8.5 ft

Consolidation



Solid Circle = Wetted

'R' VALUE CA 301

Client: PSI

Date: 2/14/18

By: LD

Client's Job No.: # 00661261-5296

Sample No.: B-6 @ 1' - 5'

GLA Reference: 2008-026

Soil Type: Brown, Sandy Clay

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	70	55	50	
Initial Moisture Content	%	9.1	9.1	9.1	
Water Added	ml	80	110	130	
Moisture at Compaction	%	16.4	19.1	20.9	
Sample & Mold Weight	gms	3180	3165	3109	
Mold Weight	gms	2101	2110	2104	
Net Sample Weight	gms	1079	1055	1005	
Sample Height	in.	2.49	2.56	2.48	
Dry Density	pcf	112.8	104.8	101.5	
Pressure	lbs	6395	4070	2480	
Exudation Pressure	psi	509	324	197	
Expansion Dial	x 0.0001	75	38	21	
Expansion Pressure	psf	325	165	91	
Ph at 1000lbs	psi	40	60	68	
Ph at 2000lbs	psi	110	140	154	
Displacement	turns	3.34	3.82	4.21	
R' Value		25	9	2	
Corrected 'R' Value		25	9	2	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	8
By Expansion Pressure :	6
TI =	5

SAMPLE NO.:		B-6 @ 1' - 5'			B-3 @ 1.5' - 5'											
Depth:		Sandy Clay			Sandy Clay											
DIRECT SHEAR TEST (type)																
Initial Moisture Content %																
Dry Density (pcf)																
Normal Stress (psf)																
Peak Shear Stress (psf)																
Ultimate Shear Stress (psf)																
Cohesion (psf)																
Internal Friction Angle (degrees)																
EXPANSION TEST UBC STD 18-2																
Initial Dry Density (pcf)																
Initial Moisture Content %																
Final Moisture Content %																
Pressure (psf)																
Expansion Index	Swell %															
CORROSIVITY TEST																
Resistivity (CTM643) (ohm-cm)		1050			1100											
pH (CTM643)		7.4			7.5											
CHEMICAL TESTS																
Soluble Sulfate (CTM 417) (ppm)		576			246											
Chloride Content (CTM 422) (ppm)		230			145											
Wash #200 Sieve (ASTM-1140) %																
Sand Equivalent (ASTM D2419)																

'R' VALUE CA 301

Client: PSI

Date: 2/14/18

By: LD

Client's Job No.: # 00661261-1

Sample No.: B-3 @ 1.5' - 5'

GLA Reference: 2008-026

Soil Type: Brown, Sandy Clay

TEST SPECIMEN		A	B	C	D
Compactor Air Pressure	psi	120	60	50	
Initial Moisture Content	%	7.1	7.1	7.1	
Water Added	ml	80	120	140	
Moisture at Compaction	%	14.2	17.8	19.6	
Sample & Mold Weight	gms	3144	3173	3148	
Mold Weight	gms	2103	2098	2096	
Net Sample Weight	gms	1041	1075	1052	
Sample Height	in.	2.35	2.49	2.501	
Dry Density	pcf	117.5	111.0	106.6	
Pressure	lbs	9250	4100	2680	
Exudation Pressure	psi	736	326	213	
Expansion Dial	x 0.0001	93	20	4	
Expansion Pressure	psf	403	87	17	
Ph at 1000lbs	psi	26	56	66	
Ph at 2000lbs	psi	75	131	151	
Displacement	turns	2.89	3.82	4.09	
R' Value		50	13	4	
Corrected 'R' Value		50	13	4	

FINAL 'R' VALUE	
By Exudation Pressure (@ 300 psi):	11
By Expansion Pressure :	N/A
TI =	5



APPENDIX C
PERCOLATION TEST RESULTS

Boring Percolation Test Datasheet

Client: Simon

Test Date: 2/2/2018

Project: Brea Mall

Work Order No.: 00661261

Address: 100 Brea Mall

Technician: Lloyd Guss + Manny R.

Brea, CA

Weather: Sunny, Clear

Test Hole Number/Location: B3

Depth of Total Test Hole bottom below land surface (inches): 9.5 ft.

Test hole cross-section (check a box and indicate size):

☒ Diameter: 8 inches

☐ Square: _____ inches

The land surface at the top of the test hole is (check one):

☐ Undisturbed Native Soil

☐ Cut Surface

☐ Fill Surface

☒ Other (describe): Paved Parking Lot

Soil Data from Test Hole:

Depth (ft)	Soil Texture
0 - 4.75	Sandy Clay
4.75 - 7	Silty Sand
7 - 28	Silty Clay

Perforated PVC Pipe Diameter = 4"

Solid end cap on pipe.

Pipe Length = 10.25' (10'3")

Stick up above asphalt = 18"

Depth of water during testing =

35.16 inches

Average Head during testing =

35.1 inches

Test Hole Presoaking

Presoak >12in. = If drains away in 30 min. (x2), Test @10min. If not, Test @30min.

Run #	Start Time (H:M)	Start Depth to WL (ft) bgs	Start Time	End Depth to WL (ft)	End Time	Measured Water Drop (ft)	Measured Water Drop (in)	Elapsed Time (min)
1	9:05	8.38		8.38	9:30	0.0	0.00	0:25
2	9:30	8.38		8.38	10:00	0.0	0.00	0:30

Test Hole Percolation:

Fill to Presoak Level or below

Porchet Method

Run #	Start Time (H:M)	Start Depth to WL (ft) bgs	End Time (H:M)	End Depth to WL (ft)	Measured Water Drop (ft)	Measured Water Drop (in.)	WL % Change (<10 % ?)	Time Interval (min)	Infiltration Rate (in/hr)
1	10:00	8.38	10:35	8.38	0.00	0.0		35	0.0
2	10:35	8.38	11:05	8.38	0.00	0.0	0.0	30	0.0
3	11:05	8.38	11:35	8.38	0.00	0.0	0.0	30	0.0
4	11:35	8.38	12:11	8.39	0.01	0.1	0.3	36	0.0
5	12:17	8.39	12:51	8.42	0.03	0.4	0.7	34	0.0
6	12:56	8.00	13:26	8.00	0.00	0.0	1.0	30	0.0
7	13:26	8.00	13:56	8.00	0.00	0.0	0.0	30	0.0
8	13:56	8.00	14:26	8.02	0.02	0.2	0.7	30	0.0
9	14:26	8.02	14:56	8.04	0.02	0.2	0.0	30	0.0
10	14:56	8.04	15:26	8.07	0.03	0.4	0.3	30	0.0
11	15:26	8.07	15:56	8.08	0.01	0.1	0.7	30	0.0

Final Stabilized Infiltration Rate: 0.0 in/hour

Boring Percolation Test Datasheet

Client: Simon

Test Date: 2/2/2018

Project: Brea Mall

Work Order No.: 00661261

Address: 100 Brea Mall

Technician: Lloyd Guss + Manny R.

Brea, CA

Weather: Sunny, Clear

Test Hole Number/Location: B4

Depth of Total Test Hole bottom below land surface (inches): 9.7 ft.

Test hole cross-section (check a box and indicate size):

☒ Diameter: 8 inches

☐ Square: _____ inches

The land surface at the top of the test hole is (check one):

☐ Undisturbed Native Soil

☐ Cut Surface

☐ Fill Surface

☒ Other (describe): Paved Parking Lot

Soil Data from Test Hole:

Depth (ft)	Soil Texture
0 - 5	Sand
5 - 12	Sand
12 -18	Sandy Silt

Perforated PVC Pipe Diameter = 4"

Solid end cap on pipe.

Pipe Length = 9.9' (9'11")

Stick up above asphalt = 0"

Depth of water during testing =

22.44 inches

Average Head during testing =

19.92 inches

Test Hole Presoaking

Presoak >12in. = If drains away in 30 min. (x2), Test @10min. If not, Test @30min.

Run #	Start Time (H:M)	Start Depth to WL (ft) bgs	Start Time	End Depth to WL (ft)	End Time	Measured Water Drop (ft)	Measured Water Drop (in)	Elapsed Time (min)
1	10:10	9.6		9.7	10:35	0.1	1.20	0:25
2	10:31	8.03		9.7	10:56	1.7	20.04	0:25

Test Hole Percolation:

Fill to Presoak Level or below

Porchet Method

Run #	Start Time (H:M)	Start Depth to WL (ft) bgs	End Time (H:M)	End Depth to WL (ft)	Measured Water Drop (ft)	Measured Water Drop (in.)	WL % Change (<10 % ?)	Time Interval (min)	Infiltration Rate (in/hr)
1	10:58	8.04	11:23	8.90	0.86	10.3		25	2.3
2	11:27	8.03	11:37	8.52	0.49	5.9	19.8	10	3.2
3	11:40	8.05	11:50	8.50	0.45	5.4	2.1	10	3.0
4	11:55	8.05	12:05	8.50	0.45	5.4	0.0	10	3.0
5	12:07	8.03	12:17	8.55	0.52	6.2	3.7	10	3.4
6	12:20	8.03	12:30	8.51	0.48	5.8	2.1	10	3.2
7	12:37	8.03	12:47	8.45	0.42	5.0	3.2	10	2.8

Final Stabilized Infiltration Rate: 2.8 in/hour



APPENDIX D

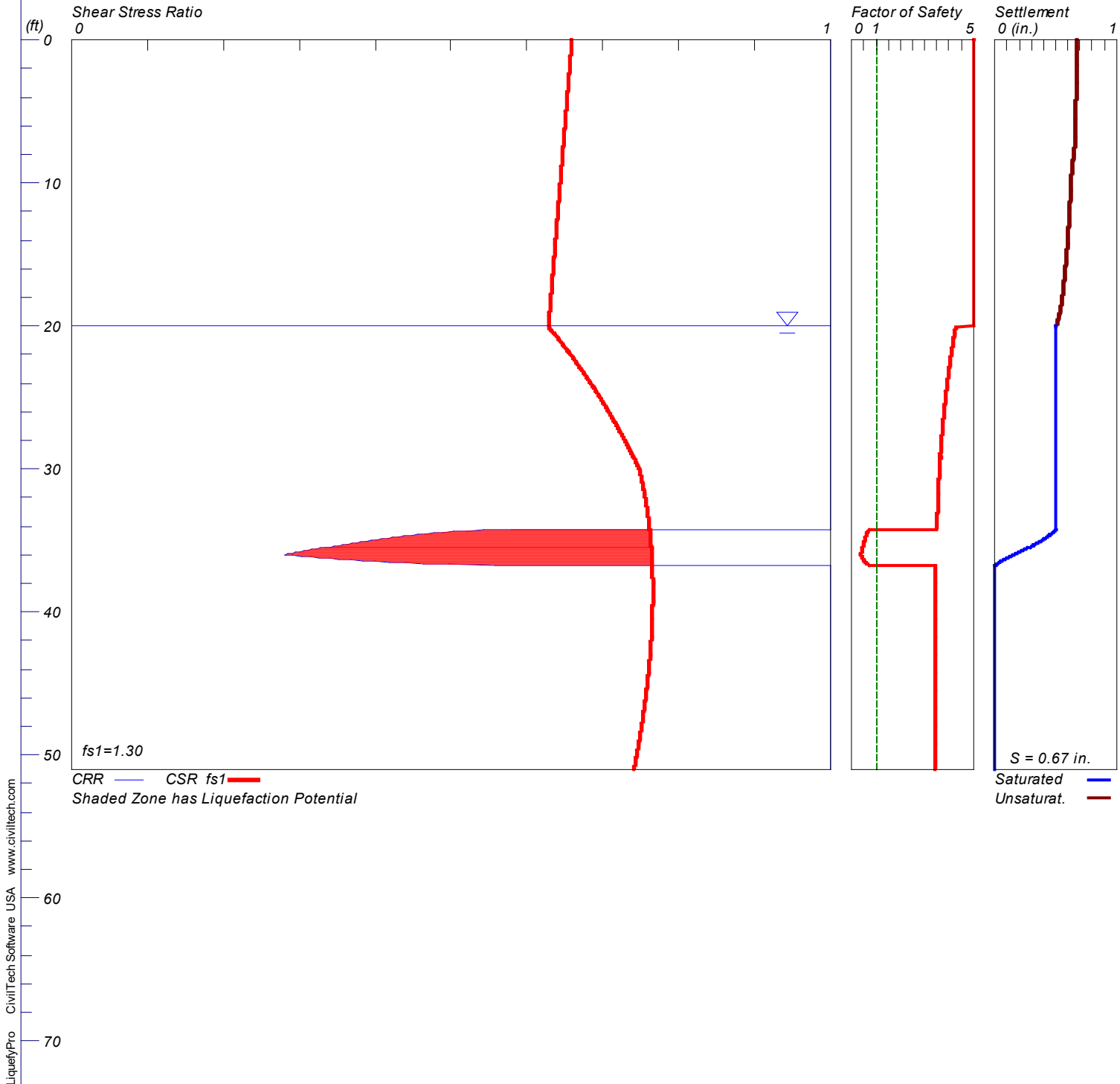
LIQUEFACTION ANALYSIS

LIQUEFACTION ANALYSIS

Simon ~ Brea Mall

Hole No.=B4 Water Depth=20 ft

Magnitude=6.69
Acceleration=0.78g



LIQUEFACTION ANALYSIS SUMMARY

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Font: Courier New, Regular, Size 8 is recommended for this report.

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Input File Name: P:\0066\GEO\2018\1261 Simon BreaMall GEO\Analysis\00661261 Liquef B4.liq

Title: Simon ~ Brea Mall

Subtitle: SW Development

Surface Elev.=

Hole No.=B4

Depth of Hole= 51.00 ft

Water Table during Earthquake= 20.00 ft

Water Table during In-Situ Testing= 25.00 ft

Max. Acceleration= 0.78 g

Earthquake Magnitude= 6.69

Input Data:

Surface Elev.=

Hole No.=B4

Depth of Hole=51.00 ft

Water Table during Earthquake= 20.00 ft

Water Table during In-Situ Testing= 25.00 ft

Max. Acceleration=0.78 g

Earthquake Magnitude=6.69

1. SPT or BPT Calculation.

2. Settlement Analysis Method: Ishihara / Yoshimine*

3. Fines Correction for Liquefaction: Idriss/Seed

4. Fine Correction for Settlement: During Liquefaction*

5. Settlement Calculation in: All zones*

6. Hammer Energy Ratio, $C_e = 1.25$

7. Borehole Diameter, $C_b = 1.15$

8. Sampling Method, $C_s = 1.2$

9. User request factor of safety (apply to CSR) , User= 1.3

Plot one CSR curve (fs1=User)

10. Use Curve Smoothing: Yes*

* Recommended Options

In-Situ Test Data:

Depth ft	SPT pcf	gamma %	Fines
-------------	------------	------------	-------

0.00	48.00	111.00	5.00
------	-------	--------	------

6.00	48.00	111.00	5.00
------	-------	--------	------

8.00	35.00	114.00	5.00
------	-------	--------	------

11.00	58.00	114.00	5.00
16.00	58.00	115.00	30.00
21.00	27.00	115.00	60.00
26.00	23.00	120.00	30.00
31.00	22.00	115.00	60.00
36.00	14.00	120.00	10.00
41.00	69.00	120.00	10.00
46.00	32.00	120.00	60.00
51.00	19.00	120.00	60.00

Output Results:

Settlement of Saturated Sands=0.50 in.
Settlement of Unsaturated Sands=0.17 in.
Total Settlement of Saturated and Unsaturated Sands=0.67 in.
Differential Settlement=0.336 to 0.444 in.

Depth ft	CRRm	CSRsf in.	F.S. in.	S_sat. in.	S_dry	S_all
-------------	------	--------------	-------------	---------------	-------	-------

0.00	2.68	0.66	5.00	0.50	0.17	0.67
1.00	2.68	0.66	5.00	0.50	0.17	0.67
2.00	2.68	0.66	5.00	0.50	0.17	0.67
3.00	2.68	0.65	5.00	0.50	0.17	0.67
4.00	2.68	0.65	5.00	0.50	0.16	0.67
5.00	2.68	0.65	5.00	0.50	0.16	0.66
6.00	2.68	0.65	5.00	0.50	0.16	0.66
7.00	2.68	0.65	5.00	0.50	0.15	0.66
8.00	2.68	0.65	5.00	0.50	0.15	0.65
9.00	2.68	0.65	5.00	0.50	0.13	0.63
10.00	2.68	0.64	5.00	0.50	0.12	0.62
11.00	2.68	0.64	5.00	0.50	0.12	0.62
12.00	2.68	0.64	5.00	0.50	0.11	0.61
13.00	2.68	0.64	5.00	0.50	0.10	0.61
14.00	2.68	0.64	5.00	0.50	0.10	0.60
15.00	2.68	0.64	5.00	0.50	0.09	0.59
16.00	2.68	0.63	5.00	0.50	0.08	0.58
17.00	2.68	0.63	5.00	0.50	0.06	0.57
18.00	2.68	0.63	5.00	0.50	0.05	0.55
19.00	2.68	0.63	5.00	0.50	0.03	0.53
20.00	2.68	0.63	5.00	0.50	0.00	0.50
21.00	2.68	0.64	4.17	0.50	0.00	0.50
22.00	2.68	0.66	4.08	0.50	0.00	0.50
23.00	2.68	0.67	3.99	0.50	0.00	0.50
24.00	2.68	0.68	3.92	0.50	0.00	0.50
25.00	2.68	0.70	3.85	0.50	0.00	0.50
26.00	2.68	0.71	3.79	0.50	0.00	0.50
27.00	2.68	0.72	3.73	0.50	0.00	0.50
28.00	2.68	0.73	3.68	0.50	0.00	0.50
29.00	2.68	0.74	3.63	0.50	0.00	0.50
30.00	2.69	0.75	3.59	0.50	0.00	0.50
31.00	2.68	0.75	3.56	0.50	0.00	0.50
32.00	2.67	0.76	3.54	0.50	0.00	0.50
33.00	2.67	0.76	3.51	0.50	0.00	0.50

34.00	2.66	0.76	3.49	0.50	0.00	0.50
35.00	0.39	0.76	0.52*	0.38	0.00	0.38
36.00	0.28	0.76	0.37*	0.15	0.00	0.15
37.00	2.64	0.77	3.44	0.00	0.00	0.00
38.00	2.63	0.77	3.43	0.00	0.00	0.00
39.00	2.62	0.77	3.42	0.00	0.00	0.00
40.00	2.61	0.77	3.41	0.00	0.00	0.00
41.00	2.61	0.76	3.41	0.00	0.00	0.00
42.00	2.60	0.76	3.40	0.00	0.00	0.00
43.00	2.59	0.76	3.40	0.00	0.00	0.00
44.00	2.58	0.76	3.40	0.00	0.00	0.00
45.00	2.58	0.76	3.40	0.00	0.00	0.00
46.00	2.57	0.76	3.40	0.00	0.00	0.00
47.00	2.56	0.75	3.40	0.00	0.00	0.00
48.00	2.55	0.75	3.40	0.00	0.00	0.00
49.00	2.55	0.75	3.41	0.00	0.00	0.00
50.00	2.54	0.74	3.41	0.00	0.00	0.00
51.00	2.53	0.74	3.42	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone

(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units Depth = ft, Stress or Pressure = atm (tsf), Unit Weight = pcf, Settlement = in.

1 atm (atmosphere) = 1 tsf (ton/ft²)

CRRm Cyclic resistance ratio from soils

CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)

F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf

S_sat Settlement from saturated sands

S_dry Settlement from Unsaturated Sands

S_all Total Settlement from Saturated and Unsaturated Sands

NoLiq No-Liquefy Soils

Appendices

Appendix O: Mitigation Monitoring Program

Appendices

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January 2020 | Mitigation Monitoring and Reporting Program
State Clearinghouse No. 2019080299

BREA MALL MIXED USE PROJECT

for City of Brea

Prepared for:

City of Brea

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1. Introduction

1.1 PURPOSE OF MITIGATION MONITORING AND REPORTING PROGRAM

This Mitigation Monitoring and Reporting Program (MMRP) has been developed to provide a vehicle by which to monitor mitigation measures and conditions of approval outlined in the Draft Environmental Impact Report (DEIR), State Clearinghouse No. 2019080299. The Mitigation Monitoring and Reporting Program has been prepared in conformance with Section 21081.6 of the Public Resources Code and City of Brea Monitoring Requirements. Section 21081.6 states:

- (a) When making findings required by paragraph (1) of subdivision (a) of Section 21081 or when adopting a mitigated negative declaration pursuant to paragraph (2) of subdivision (c) of Section 21080, the following requirements shall apply:
 - (1) The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead or responsible agency, prepare and submit a proposed reporting or monitoring program.
 - (2) The lead agency shall specify the location and custodian of the documents or other material which constitute the record of proceedings upon which its decision is based.

1.2 PROJECT LOCATION

The project site is developed as the existing Brea Mall, at 1065 Brea Mall, City of Brea, and encompasses approximately 74 acres in northeast Orange County. The project site consists of the following Accessor's Parcel Numbers (APNs): 319-101-26, -37, -62, -63, -64, -71, -73, -75, -76, -79, -80, and 319-103-22. The project site is surrounded by commercial and residential uses and is bounded by East Birch Street to the north, State College Boulevard to the east, Imperial Highway to the south, and South Randolph Avenue to the west. The City of Brea is bordered by the cities of La Habra to the northwest, Fullerton to the southwest and south; Placentia to the south; Yorba Linda to the southeast and east; unincorporated Orange County to the east, northeast, and north; Chino Hills (San Bernardino County) to the northeast; and unincorporated Los Angeles to the northeast.

1. Introduction

1.3 PROJECT DESCRIPTION

As a result of the recent acquisition of the Sears parcel, the Simon Property Group (Simon Properties, or Applicant) is proposing redevelopment of the Sears parcel and adjoining transition areas adjacent to Nordstrom and Macy's on the southwest portion of the Brea Mall. The project area would be up to 17.5 acres. The proposed project involves demolishing the Sears department store and associated auto center (161,990 square feet) and 12 acres of surface parking in order to allow a mix of uses—including retail, for-rent residential apartments, a resort-type fitness center, and a gathering space (large “central green” and plaza). Table 1, *Brea Mall Mixed Use Project Land Use Summary*, provides a summary of the existing and proposed square footages of the site.

Table 1 Brea Mall Mixed Use Project Land Use Summary

Tenant	Existing Commercial Square Feet (sq. ft.)	Demolition (sq. ft.)	New Construction Commercial Square Feet (sq. ft.)	Total Brea Mall Commercial Square Feet (sq. ft.)
Major Department Stores				
Sears	161,990	-161,990	—	0
Macy's ¹	182,360	—	—	182,360
Nordstrom	176,540	—	—	176,540
JC Penny	135,800	—	—	135,800
Macy's Men & Home	192,060	—	—	192,060
Major Department Stores	848,750	-161,990	0	686,760
Other Commercial				
Sporting Goods	—	—	50,019	50,019
Fitness Center	—	—	128,000	128,000
Level 1 Mall	224,522	—	123,053	347,575
Level 2 Mall	207,992	—	10,543	218,535
Total Other Commercial	432,514	0	311,615	744,129
Outlots¹				
Cheesecake Factory Outlot	10,169	—	—	10,169
Total Mall	1,291,433	-161,990	311,615	1,441,058
Mixed-Use Residential				
Medium Density Residential (7-story) ²	—	—	312 units	312 units
Residential Square Feet	—	—	382,994	
Net Change from Existing	—	—	312 units	149,625

¹ Macy's owns the buildings occupied by Red Lobster and Olive Garden; therefore, the commercial square footage for Macy's includes these restaurants. BJ's is not owned by Simon Properties or the retail anchors; therefore, the square footage for this outlot facility is not included in this table.

² Approximately 60.5 feet above grade at roof height and up to 82 feet and 3 inches above grade at parapet.

1. Introduction

1.4 ENVIRONMENTAL IMPACTS

1.4.1 Impacts Considered No Impact or Less Than Significant

The EIR identified various thresholds from the CEQA Guidelines among a number of environmental categories that would not be significantly impacts by the proposed project in Chapter 5, *Environmental Analysis*, and Chapter 8, *Impacts Found Not to Be Significant*, and therefore, did not require mitigation. Impacts to the following environmental resources were found to be less than significant or no impact:

- Aesthetics
- Agriculture and Forestry Resources
- Biological Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Utilities and Service Systems
- Wildlife

1.4.2 Potentially Significant Adverse Impacts That Can Be Mitigated, Avoided, or Substantially Lessened

The EIR concluded that the proposed project could result in one or more potentially significant impacts in the following topic areas:

- Air Quality
- Cultural and Paleontological Resources
- Hazards and Hazardous Materials
- Tribal Cultural Resources

However, the EIR also found that these impacts would be reduced, avoided, or substantially lessened through the implementation of mitigation measures, which are listed in Table 2.

1.4.3 Unavoidable Significant Adverse Impacts

The following impact would remain significant and unavoidable after implementation of required mitigation, as identified in the EIR:

- Transportation (impacts to Caltrans-owned facilities)

1. Introduction

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2. Mitigation Monitoring Requirements

2.1 CATEGORIZED MITIGATION MEASURES/MATRIX

Project-specific mitigation measures (MM) and plans, programs, and policies (PPPs) have been categorized in matrix format, as shown in Table 2. The matrix identifies the environmental factor, specific mitigation measures, schedule, and responsible monitor. The mitigation matrix will serve as the basis for scheduling the implementation of, and compliance with, all mitigation measures.

2. Mitigation Monitoring Requirements

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2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
AESTHETICS					
PPP AES-1	The proposed project is required to provide a minimum landscaped coverage of 15 percent of the net site area in accordance with Municipal Code Section 20.258.020, General Development Standards for the Mixed-Use Zoning Districts.	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	
PPP AES-2	For parking areas, the proposed project is required to maintain an equivalent of one foot candle of illumination on the average throughout the parking area. The lighting is required to be on a time-clock or photo-sensor system. The lighting shall be designed to confine direct rays to the premises. No spillover beyond the property line shall be permitted in accordance with Municipal Code Section 20.08.040(C)(5), Lighting.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	
PPP AES-3	All lighting, interior and exterior, shall be designed and located so as to confine all direct rays to the premises in accordance with Municipal Code Section 20.220.040(L), Lighting. Lighting for nonresidential uses shall be appropriately designed, located, and shielded to ensure that they do not negatively impact the residential uses in compliance with Section 20.08.040 (C)(5).	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	
PPP AES-4	Signs shall be located in a manner to assure that sight distance is not impaired at all locations for vehicular traffic to and from the premises, in accordance with Municipal Code Section 20.28, Signs. Amendments to the existing signage program for erections of a new sign at the Mall entrance requires review of the Planning Commission to ensure that its size, location, movement, content, coloring, or manner of illumination, does not constitute a traffic hazard or a detriment to traffic safety by obstructing the vision of drivers, or detracting from the visibility of any official traffic control device, or by diverting or tending to divert the attention of drivers of moving vehicles from the traffic movement on the public streets and highway.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP AES-5	Loading areas. Loading areas for nonresidential uses shall be located as far as possible from residential units and shall be completely screened from view from the residential portion of the project and streets in compliance with subsections 20.236.040. E, Walls and Fences, and 20.220.040. F, Fences, Walls, and Hedges, and subparagraph K. Screening and buffering standards Loading areas shall be compatible in architectural design and details with the overall project. The location and design of loading areas shall mitigate nuisances from odors when residential uses might be impacted in accordance with Section 20.258.030 (I)(3) Loading Areas.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	
PPP AES-6	Recycling and refuse storage facilities for nonresidential uses shall be located as far as possible from residential units and shall be completely screened from view from the residential portion of the project and streets in compliance with Section 20.236.040.E. Walls and Fences, and 20.220.040.F, Fences, Walls, and Hedges, and subparagraph K, Screening and buffering standards. Recycling and refuse storage facilities for nonresidential uses should be compatible in architectural design and details with the overall project. The location and design of trash enclosures shall mitigate nuisances from odors when residential uses might be impacted in accordance with Section 20.258.030 (J) Recycling and refuse storage facilities standards.	Project Applicant	Prior to issuance of building permits.	City of Brea Planning Division	
AIR QUALITY					
PPP AIR-1	New buildings are required to achieve the current California Building Energy and Efficiency Standards (Title 24, Part 6) and California Green Building Standards Code (CALGreen) (Title 24, Part 11). The 2016 Building and Energy Efficiency Standards were effective starting on January 1, 2017, and the 2019 Building and Energy Efficiency Standards will become effective January 1, 2020. The Building Energy and Efficiency Standards and CALGreen are updated tri-annually with a goal to achieve zero net energy for residential buildings by 2020 and nonresidential buildings by 2030.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP AIR-2	New buildings are required to adhere to the California Green Building Standards Code (CALGreen) requirement to provide bicycle parking for new nonresidential buildings, or meet local bicycle parking ordinances, whichever is stricter (CALGreen Sections 5.106.4.1, 14.106.4.1, and 5.106.4.1.2).	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	
PPP AIR-3	Construction activities will be conducted in compliance with California Code of Regulations Title 13, Section 2499, which requires that nonessential idling of construction equipment is restricted to five minutes or less.	Construction contractor	During construction activities	City of Brea Planning Division	
PPP AIR-4	Construction activities will be conducted in compliance with any applicable South Coast Air Quality Management District rules and regulations, including but not limited to the following: ▪ Rule 403, Fugitive Dust, for controlling fugitive dust and avoiding nuisance. ▪ Rule 402, Nuisance, which states that a project shall not "discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property." ▪ Rule 1113, which limits the volatile organic compound content of architectural coatings	Construction contractor	During construction activities	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
AQ-1	The construction contractor(s) shall, at minimum, use equipment that meets the United States Environmental Protection Agency's (USEPA) Tier 4 (Final) emissions standards for off-road diesel-powered construction equipment with more than 50 horsepower. Any emissions control device used by the contractor shall achieve emissions reductions that are no less than what could be achieved by Tier 4 emissions standards for a similarly sized engine, as defined by the California Air Resources Board's regulations. Prior to construction, the project engineer shall ensure that all plans clearly show the requirement for USEPA Tier 4 emissions standards for construction equipment over 50 horsepower for the specific activities stated above. During construction, the construction contractor shall maintain a list of all operating equipment associated with building demolition in use on the site for verification by the City. The construction equipment list shall state the makes, models, and numbers of construction equipment onsite. Equipment shall be properly serviced and maintained in accordance with the manufacturer's recommendations.	Construction contractor	During construction activities	City of Brea Planning Division	
CULTURAL AND PALEONTOLOGICAL RESOURCES					
PPP CUL-1	Native American historical and cultural resources and sacred sites are protected under PRC Sections 5097.9 to 5097.991, which require that descendants be notified when Native American human remains are discovered and provide for treatment and disposition of human remains and associated grave goods.	Qualified Archaeologist and Project Applicant	Prior to issuance of grading permits and during construction activities	City of Brea Planning Division	
PPP CUL-2	The removal, without permission, of any paleontological site or feature is prohibited from lands under the jurisdiction of the state or any city, county, district, authority, or public corporation, or any agency thereof (PRC Section 5097.5). This applies to agencies' own activities, including construction and maintenance, and permit actions by others.	Qualified Archaeologist and Project Applicant	Prior to issuance of grading permits and during construction activities	City of Brea Planning Division	
PPP CUL-3	Adverse impacts to paleontological resources from developments on public (state, county, city, and district) lands require reasonable mitigation. (PRC Section 5097.5)	Qualified Archaeologist and Project Applicant	Prior to issuance of grading permits and during construction activities	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP CUL-4	If human remains are discovered within a project site, disturbance of the site must stop until the coroner has investigated and made recommendations for the treatment and disposition of the human remains to the person responsible for the excavation, or to his or her authorized representative. If the coroner has reason to believe the human remains are those of a Native American, he or she shall contact, by telephone within 24 hours, the Native American Heritage Commission. (California Health and Safety Code Section 7050.5)	Tribal Monitor, Qualified Archaeologist, and Project Applicant	During site-grading activities	City of Brea Planning Division, Project Applicant	
CUL-1	Prior to issuance of grading permits, a qualified archaeological monitor shall be identified to be on call during ground-disturbing activities. If archaeological resources are discovered during excavation and/or construction activities, construction shall stop within 50 feet of the find, and the qualified archaeologist shall be consulted to determine whether the resource requires further study. The archaeologist shall make recommendations to the City of Brea to protect the discovered resources. Archaeological resources recovered shall be provided to an accredited museum such as the John D. Cooper Center in Fullerton or any other local museum or repository willing and able to accept and house the resource to preserve for future scientific study.	Qualified Archaeologist and Project Applicant	Prior to issuance of grading permits and during construction activities	City of Brea Planning Division	
CUL-2	Prior to construction, a qualified paleontologist shall monitor all excavations below five feet. If unique paleontological resources are discovered during excavation and/or construction activities, construction shall stop within 50 feet of the find, and the qualified paleontologist shall be consulted to determine whether the resource requires further study. The paleontologist shall make recommendations to the City of Brea to protect the discovered resources. Any paleontological resources recovered shall be provided for curation at a local curation facility such as the Los Angeles County Natural History Museum, the John D. Cooper Center in Fullerton, or any other local museum or repository willing and able to accept and house the resource to preserve for future scientific study.	Qualified Paleontologist and Project Applicant	Prior to construction or during construction activities	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
ENERGY AND GREENHOUSE GAS EMISSIONS					
PPP E-1 PPP GHG-1	New buildings are required to achieve the current California Building Energy Efficiency Standards (Title 24, Part 6) and California Green Building Standards Code (CALGreen) (Title 24, Part 11). The 2016 Building Energy Efficiency Standards were effective starting January 1, 2017. The 2019 Building Energy Efficiency Standards will become effective on January 1, 2020. The Building Energy Efficiency Standards and CALGreen are updated tri-annually with a goal to achieve zero net energy for residential buildings by 2020 and non-residential buildings by 2030.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	
PPP E-2 PPP GHG-2	New buildings are required to adhere to the California Green Building Standards Code (CALGreen) requirement to provide bicycle parking for new non-residential buildings, or meet local bicycle parking ordinances, whichever is stricter (CALGreen Sections 5.106.4.1, 14.106.4.1, and 5.106.4.1.2).	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	
PPP E-3 PPP GHG-3	California's Green Building Standards Code (CALGreen) requires the recycling and/or salvaging for reuse at minimum of 65 percent of the nonhazardous construction and demolition waste generated during most "new construction" projects (CALGreen Sections 4.408 and 5.408). Construction contractors are required to submit a construction waste management plan that identifies the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project, or salvaged for future use or sale and the amount (by weight or volume).	Project Applicant	Prior to issuance of building permits and during construction.	City of Brea Engineering Department	
PPP E-4 PPP GHG-4	Construction activities are required to adhere to Title 13 California Code of Regulations Section 2499, which requires that nonessential idling of construction equipment is restricted to five minutes or less.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	
PPP E-5 PPP GHG-5	New buildings are required to adhere to the California Green Building Standards Code and Water Efficient Landscape Ordinance requirements to increase water efficiency and reduce urban per capita water demand.	Project Applicant	Prior to issuance of building permits.	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP E-6 PPP-GHG-6	The California Air Resources Board's Renewable Portfolio Standard (RPS) is a foundational element of the State's emissions reduction plan. These mandates apply directly to investor-owned utilities, which in the case of the proposed project is Southern California Edison. On September 10, 2018, Senate Bill 100 was signed into law and established the following RPS targets: 50 percent renewable resources target by December 31, 2026, and 60 percent target by December 31, 2030. SB 100 also requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024; 52 percent by December 31, 2027; and 60 percent by December 31, 2030.	Not Applicable	Not Applicable	Not Applicable	Not Applicable
PPP GHG-7	On January 18, 2007, Governor Arnold Schwarzenegger issued Executive Order S-1-07 requiring the establishment of a Low Carbon Fuel Standard (LCFS) for transportation fuels. The LCFS was amended in 2011 and readopted in 2015. This statewide goal requires that California's transportation fuels reduce their carbon intensity by at least 10 percent by 2020.	Not Applicable	Not Applicable	Not Applicable	Not Applicable
PPP E-7 PPP GHG-8	The 2007 Energy Bill creates new federal requirements for increases in fleetwide fuel economy for passenger vehicles and light trucks under the Federal Corporate Average Fuel Economy Standards. The federal legislation requires a fleetwide average of 35 miles per gallon (mpg) to be achieved by 2020. The National Highway Traffic Safety Administration is directed to phase in requirements to achieve this goal. Analysis by the California Air Resources Board suggests that this will require an annual improvement of approximately 3.4 percent between 2008 and 2020.	Not Applicable	Not Applicable	Not Applicable	Not Applicable

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP GHG-9	On July 22, 2002, Governor Gray Davis signed Assembly Bill 1493 (Pavley) requiring CARB to develop and adopt regulations designed to reduce greenhouse gases emitted by passenger vehicles and light-duty trucks beginning with the 2009 model year. The standards set within the Pavley regulations are expected to reduce GHG emissions from California passenger vehicles by about 22 percent in 2012 and about 30 percent in 2016. California had petitioned the USEPA in December 2005 to allow these more stringent standards and California executive agencies have repeated their commitment to higher mileage standards. On July 1, 2009, the USEPA granted California a waiver that will enable the state to enforce stricter tailpipe emissions on new motor vehicles.	Not Applicable	Not Applicable	Not Applicable	Not Applicable
PPP E-8 PPP GHG-10	SB 375 requires the reduction of GHG emissions from light trucks and automobiles through land use and transportation efforts that will reduce vehicle miles traveled. In essence, SB 375's goal is to control GHGs by curbing urban sprawl and through better land use planning. SB 375 essentially becomes the land use contribution to the GHG reduction requirements of AB 32, California's global warming bill enacted in 2006, and SB 32.	Not Applicable	Not Applicable	Not Applicable	Not Applicable
HAZARDS AND HAZARDOUS MATERIALS					
PPP HAZ-1	Any project-related hazardous materials and hazardous wastes will be transported to and/or from the project site in compliance with any applicable state and federal requirements, including the US Department of Transportation regulations listed in the Code of Federal Regulations (Title 49, Hazardous Materials Transportation Act); California Department of Transportation standards; and the California Occupational Safety and Health Administration standards.	Project Applicant and Project Construction Contractor	During construction and operations	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP HAZ-2	Any project-related hazardous waste generation, transportation, treatment, storage, and disposal will be conducted in compliance with the Subtitle C of the Resource Conservation and Recovery Act (Code of Federal Regulations, Title 40, Part 263), including the management of nonhazardous solid wastes and underground tanks storing petroleum and other hazardous substances. The proposed project will be designed and constructed in accordance with the regulations of the Orange County Environmental Health Department, which is the designated Certified Unified Program Agency and which implements state and federal regulations for the following programs: (1) Hazardous Waste Generator Program, (2) Hazardous Materials Release Response Plans and Inventory Program, (3) California Accidental Release Prevention, (4) Aboveground Storage Tank Program, and (5) Underground Storage Tank Program.	Project Applicant and Project Construction Contractor	During construction and operations	City of Brea Engineering Department	
PPP HAZ-3	Any project-related demolition activities that have the potential to expose construction workers and/or the public to asbestos-containing materials or lead-based paint will be conducted in accordance with applicable regulations, including, but not limited to: - South Coast Air Quality Management District's Rule 1403 - California Health and Safety Code (Section 39650 et seq.) - California Code of Regulations (Title 8, Section 1529) - California Occupational Safety and Health Administration regulations (California Code of Regulations, Title 8, Section 1529 [Asbestos] and Section 1532.1 [Lead]) - Code of Federal Regulations (Title 40, Part 61 [asbestos], Title 40, Part 763 [asbestos], and Title 29, Part 1926 [asbestos and lead])	Project Applicant and Project Construction Contractor	During construction and operations	City of Brea Engineering Department	
PPP HAZ-4	The removal of other hazardous materials, such as polychlorinated biphenyls (PCBs), mercury-containing light ballast, and mold, will be completed in accordance with applicable regulations pursuant to 40 CFR 761 (PCBs), 40 CFR 273 (mercury-containing light ballast), and 29 CFR 1926 (molds) by workers with the hazardous waste operations and emergency response (HAZWOPER) training, as outlined in 29 CFR 1910.120 and 8 CCR 5192.	Project Applicant and Project Construction Contractor	During construction and operations	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

	Mitigation Measure	Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP HAZ-5	Any project-related new construction, excavations, and/or new utility lines within 10 feet or crossing existing high-pressure pipelines, natural gas/petroleum pipelines, or electrical lines greater than 60,000 volts will be designed and constructed in accordance with the California Code of Regulations (Title 8, Section 1541).	Project Applicant and Project Construction Contractor	During construction	City of Brea Engineering Department	
PPP HAZ-6	As part of the project review process, the City of Brea Police Department may require approval of an Emergency Evacuation and Response Plan in the event of an emergency at Brea Mall to address emergency response and access. Additional design features to address the City of Brea Police Department's service standards will be incorporated as conditions of approval for the project.	Project Applicant and City of Brea Police Department	Prior to issuance of building permits	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
HAZ-1	Prior to issuance of grading permits, the project applicant shall prepare a soil management plan (SMP) to ensure safe and appropriate handling, transportation, offsite disposal, reporting, oversight, and protocols used during construction to protect the health and safety of workers and future residents. The SMP shall be submitted to the City prior to issuance of a grading permit. The plan shall establish methodology and procedures to perform additional testing during grading if unknown hazardous materials are encountered and prior to grading for the soil stockpile. If additional contamination is discovered during grading activities, grading within that area shall be temporarily halted and redirected around the area until the appropriate evaluation and follow-up remedial measures are implemented in accordance with the soil management plan so that the area is suitable for grading activities to resume. If hydrocarbon impacted soil is encountered soil samples shall be collected and analyzed for total petroleum hydrocarbons (TPH) by the Environmental Protection Agency (USEPA) Method 8015M and volatile organic compounds (VOCs) by EPA Method 8260B. TPH results shall be compared to Orange County Health Care Agency (OCHCA) TPH cleanup standards and VOCs shall be compared to screening levels as outlined in Department of Substances Control (DTSC) Human Health Risk Assessment Note No. 3 or EPA Regional Screening Levels (RSLs). Both DTSC and EPA RSLs are updated yearly and the most recent levels shall be used. If levels encountered are above the outlined screening levels, the OCHCA shall be notified. If, soil remediation and/or export of hazardous materials is required, soil remediation must be performed in accordance with the appropriate agency requirements (Regional Water Quality Control Board, DTSC, South Coast Air Quality Management District).	Project Applicant and geologist.	Prior to construction	City of Brea Planning Division	
LAND USE AND PLANNING					
PPP LU-1	As part of the project review process, the City of Brea is requiring that the Brea Mall prepare a parking management plan to address holiday traffic and parking during the peak holiday season. The requirement to prepare a submit a parking management plan for holiday traffic will be incorporated as conditions of approval for the project.	Project Applicant	Prior to issuance of building permits. During construction and operational activities	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
NOISE					
PPP NOI-1	Project-related construction activity will be limited to the hours of 7:00 am to 7:00 pm on weekdays and Saturdays. Construction is prohibited on Sundays.	Project Applicant	During construction activities	City of Brea Engineering Department	
PPP NOI-2	The project will comply with City of Brea's stationary exterior noise standards summarized above in Table 5.8-3.	Project Applicant	During operation	City of Brea Engineering Department	
PPP NOI-3	The project will comply with the City of Brea's vibration standards of 70 VdB at the property line of the sensitive receptor.	Project Applicant	During operation	City of Brea Engineering Department	
PPP NOI-4	The residential development will comply with the California Building Code (CBC), Title 24, Part 2, Volume 1, Chapter 12, Interior Environment, Section 1207.11.2, Allowable Interior Noise Levels. Non-residential development will comply with the CBC, Title 24, Building Standards Administrative Code, Part 11, CALGreen.	Project Applicant	During operation	City of Brea Engineering Department	
PPP NOI-5	Outdoor nonresidential uses in mixed-use projects shall be prohibited from operating between the hours of 10:00 p.m. and 7:00 a.m. in accordance with Section 20.258.030 (H)(1) Hours of Operation.	Project Applicant	During operation	City of Brea Engineering Department	
PPP NOI-6	The covenants, conditions, and restrictions of a mixed-use project shall indicate the times when the loading and unloading of goods may occur on the street, provided that in no event shall loading or unloading take place after 10:00 p.m. or before 7:00 a.m. on any day of the week in accordance with Section 20.258.030 (H)(3) Loading and Unloading Activities.	Project Applicant	During operation	City of Brea Engineering Department	
PPP NOI-7	Residents of a mixed-use development project shall be notified in writing before taking up residence that they will be living in an urban type of environment and that the noise levels may be higher than a typical residential area. The covenants, conditions, and restrictions of a mixed-use project shall require that the residents acknowledge their receipt of the written noise notification. Their signatures shall confirm receipt and understanding of this information in accordance with Section 20.258.030 (H)(4) Noise Notification.	Project Applicant	Prior to issuance of an occupancy permit. During leasing.	City of Brea Engineering Department and Project Applicant	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP NOI-8	Residential dwelling units shall be designed to be sound attenuated against present and future project noise. New projects or new nonresidential uses in existing projects shall provide an acoustical analysis report, by an acoustical engineer, describing the acoustical design features of the structure required to satisfy the exterior and interior noise standards in accordance with Section 20.258.030 (H)(6) Sound Mitigation.	Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Department	
PPP NOI-9	Noise-generating equipment. Noise-generating equipment (e.g., refrigeration units, air conditioning, exhaust fans, etc.) shall require special consideration in their location and screening in order to avoid creating a nuisance in accordance with Section 20.258.030 (K)(3) Noise Generating Equipment.	Project Applicant	Prior to issuance of a building permit and during operation	City of Brea Engineering Department	
POPULATION AND HOUSING					
No Mitigation Measures or Plans, Programs, and Policies are applicable.					
PUBLIC SERVICES					
PPP PS-1	New buildings are required to meet the fire regulations outlined in California Health and Safety Code (Sections 13000 et seq.).	Project Applicant	Prior to issuance of a building permit.	City of Brea Engineering Department	
PPP PS-2	The project applicant is required to pay development impact fees (dispatch impact fees, fire impact fees, fire service fees).	Project Applicant	Prior to issuance of a building permit.	City of Brea Planning Division	
PPP PS-3	As part of the project review process, the City of Brea Fire Department will require approval of Building Plan Check for Site Plan and Emergency Access as well as approval of Fire Master Plan. Additional design features to address the City of Brea Fire Department's requirements will be incorporated as conditions of approval for the project.	Project Applicant	Prior to issuance of a building permit	City of Brea Fire Department	
PPP PS-4	The project will be designed, built, and operated in accordance with the City of Brea's Municipal Code Chapter 15.08 Building Code and Chapter 16.04 Brea Fire Code.	Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP PS-5	The project applicant is required to pay dispatch impact fees.	Project Applicant	Prior to issuance of a building permit	City of Brea Planning Division	
	As part of the project review process, the City of Brea Police Department may require project design features to improve security. Additional design features to address the City of Brea Police Department's service standards will be incorporated as conditions of approval for the project, such as: - Increased integration with onsite private security and the police department - The ability of police officers to access locked common areas for emergency response - Verified police/fire radio reception in enclosed areas of the mall. - Installation of cameras on traffic signals.	Project Applicant	Prior to issuance of a building permit	City of Brea Police Department	
PPP PS-6	Pursuant to AB 2926, new development is required to pay development impact fees to assist in providing school facilities to serve students generated by new development.	Project Applicant	Prior to issuance of a building permit	City of Brea Planning Division	
PPP PS-7	Pursuant to SB 50, new development is required to offset the costs associated with increasing school capacity, where the funds collected go to acquiring school sites, constructing new school facilities, and modernizing existing school facilities.	Project Applicant	Prior to issuance of a building permit	City of Brea Planning Division	
PPP PS-8	The proposed project is required to comply with Brea Municipal Code Section 18.64.080 that establishes the subdivision regulations for the provision of park and recreational facilities through land dedication, installation of improvements, payment of in-lieu fee thereof, or a combination. Where applicable, new development is required to fund park development and improvements through the payment of park development fees.	Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Department	
RECREATION					
PPP REC-1	New development is required to fund park and recreational development and improvements through the payment of park development fees.	Project Applicant	Prior to issuance of a building permit	City of Brea Planning Division	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP REC-2	The proposed project includes installation of Class II bike lanes and/or sharrow bike lanes on the "ring road" and the signalized entries of the Brea Mall. The requirement to improve bicycle and pedestrian connections will be incorporated as conditions of approval for the project.	Project Applicant	Prior to issuance of an occupancy permit	City of Brea Engineering Department	
TRANSPORTATION					
PPP TRAF-1	The proposed project is required to pay development impact fees to the City of Brea pursuant to the City's AB 1600 Transportation Improvement Nexus Program (Ordinance 966). Based on a transportation improvement nexus program study conducted in 2011, the City Council adopted Resolution 2011-096, which updated the impact fees, effective February 4, 2012. Fair-share fees serve to offset or mitigate the cumulative traffic impacts caused by new development. The program ensures all future development in the City of Brea contributes on a fair-share basis.	Project Applicant	Prior to issuance of a building permit	City of Brea Planning Division	
PPP TRAF-2	Modifications to the roadway network, including driveways, curbs, and sidewalks, are subject to approval by the City of Brea. Construction work within the right-of-way of a public roadway requires the issuance of a permit by the City of Brea.	Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Department	
PPP TRAF-3	As part of the project review process, the City of Brea is requiring that the Brea Mall prepare a parking management plan for construction and operational activities to address holiday traffic and parking during the peak holiday season. The requirement to prepare a submit a parking management plan for holiday traffic will be incorporated as conditions of approval for the project	Project Applicant in coordination with the City of Brea Police Department	Prior to issuance of an occupancy permit	City of Brea Engineering Department and City of Brea Police Department	
PPP TRAF-4	The proposed project includes installation of Class II bike lanes and/or sharrow bike lanes on the "ring road" and the signalized entries of the Brea Mall. The requirement to improve bicycle and pedestrian connections will be incorporated as conditions of approval for the project.	Project Applicant	Prior to issuance of an occupancy permit	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
TRAF-1	Prior to issuance of a building permit, the City and Caltrans shall jointly identify feasible operational and physical improvements and the associated fair-share funding contribution necessary to mitigate project-related direct and indirect impacts to state transportation facilities, including these intersections: #16 Harbor Boulevard at Imperial Highway, #18 Brea Boulevard at Imperial Highway, #19 Randolph Avenue at Imperial Highway, #20 State College Boulevard at Imperial Highway, #22 SR-57 NB Ramps at Imperial Highway, and #23 Associated Road at Imperial Highway.	City of Brea Engineering Department, Caltrans, Project Applicant	Prior to issuance of a building permit	City of Brea Engineering Department, Caltrans	
TRIBAL CULTURAL RESOURCES					
PPP TCR-1	Pursuant to California Health and Safety Code Section 7050.5, if human remains are discovered in the project site, disturbance of the site shall halt and remain halted until the coroner has conducted an investigation. If the coroner determines that the remains are not subject to his or her authority and has reason to believe that they are those of a Native American, he or she shall contact, by telephone within 24 hours, the NAHC.	Tribal Monitor, Qualified Archaeologist, and Project Applicant	During site-grading activities	City of Brea Planning Division, Project Applicant	
TCR-1	If the professional archaeologist implementing Mitigation Measure CUL-1 believes that a cultural resource encountered onsite is of Native American origin, the archaeologist shall notify representatives of Native American tribes with traditional territories in the project region. If requested by the Native American tribe(s), the developer or archaeologist on call shall, in good faith, consult on the discovery and its disposition (e.g., avoidance, preservation, return of artifacts to tribe). If the resources are Native American in origin, a tribal monitor from the consulting tribe shall be present during the remaining site-grading activities.	Tribal Monitor, Qualified Archaeologist, and Project Applicant	During site-grading activities	City of Brea Planning Division, Project Applicant	
TCR-2	During construction activities, the project applicant shall allow archaeological monitors of Native American tribes to access the project site on a volunteer basis to monitor grading and excavation activities.	Archaeological Monitors of Native American Tribes and Project Applicant	During construction activities (grading and excavation activities)	Project Applicant	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
UTILITIES AND SERVICE SYSTEMS					
PPP USS-1	The project will pay the Sanitary Sewer Connection Fees collected by the City of Brea, which contribute to maintenance and installation of sewer improvements in the OCSD in accordance with Section 3.32.040, Sewer Service Fees and Charges, of the Brea Municipal Code.	Project Applicant	Prior to issuance of a building permit	City of Brea Planning Division	
PPP USS-2	As part of the project review process, the City of Brea Engineering Department will require approval of a Final Sewer Study as part of the encroachment permit issuance. The City of Brea Engineering Department will require project design features to address sewer deficiencies within the Brea Mall and within the City's right-of-way on State College Boulevard. Additional design features to address the City of Engineer's requirements will be incorporated as conditions of approval for the project.	Project Applicant	Prior to issuance of an encroachment permit and during construction	City of Brea Engineering Department	
PPP USS-3	The project will pay the water impact fees and water connection fees collected by the City of Brea, which cover costs to purchase water supplies and to operate and maintain the water distribution system in accordance with Ordinance 967.	Project Applicant	Prior to issuance of a building permit	City of Brea Planning Division	
PPP USS-4	Landscaping installed onsite shall conform to the California Green Building Standards Code and Water Efficient Landscape Ordinance requirements to increase landscape water efficiency.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Department	
PPP USS-5	Plumbing fixtures installed onsite shall conform to California Green Building Standards Code requirements to increase water efficiency and reduce urban per capita water demand.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Department	
PPP USS-6	The project would comply with the City's water conservation program during a drought or emergency situation, in accordance with Chapter 13.20, Water Management Program, of the City's Municipal Code.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Department	

2. Mitigation Monitoring Requirements

Table 2 Mitigation Monitoring Requirements

Mitigation Measure		Responsibility for Implementation	Timing	Responsibility for Monitoring	Monitor (Signature Required) (Date of Compliance)
PPP USS-7	The project will be constructed and operated in accordance with the Santa Ana Regional Water Quality Control Board Municipal Stormwater (MS4) Permit for Orange County. The MS4 Permit requires the proposed project to prepare and implement a WQMP to: - Control release of contaminants into storm drain systems. - Educate the public about stormwater impacts. - Detect and eliminate illicit discharges. - Control runoff from construction sites. - Implement BMPs and site-specific runoff controls and treatments.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Department	
PPP USS-8	California's Green Building Standards Code (CALGreen) requires the recycling and/or salvaging for reuse a minimum of 65 percent of the nonhazardous construction and demolition waste generated during most "new construction" projects (CALGreen Sections 4.408 and 5.408). Construction contractors are required to submit a construction waste management plan that identifies the construction and demolition waste materials to be diverted from disposal by recycling, reuse on the project, or salvage for future use or sale and the amount (by weight or volume).	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Department	
PPP USS-9	The project will abide by AB 341 and AB 1826. The project will store and collect recyclable materials in compliance with AB 341. Green waste will be handled in accordance with AB 1826.	Project Applicant	Prior to issuance of a building permit and during construction	City of Brea Engineering Department	

3. Report Preparation

3.1 LIST OF PREPARERS

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3. Report Preparation

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