Appendix J Transportation Impact Analysis & VMT Memo

Appendices

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FINAL

Long Beach Southeast Area Specific Plan

Transportation Impact Analysis

Prepared for:

Updated April 2016

OC13-0279

FEHR & PEERS

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1. EXECUTIVE SUMMARY

Fehr & Peers has completed a transportation impact analysis for the proposed Long Beach Southeast Area Specific Plan (SEASP). The proposed project is located at the southeast edge of Long Beach, California. The project consists of revitalizing the community through redevelopment and transportation improvements along Pacific Coast Highway, 7th Street, and 2nd Street.

As part of the transportation impact study, and consistent with Los Angeles County Congestion Management Program (CMP) requirements, the following scenarios were analyzed:

- Existing (2015) Conditions – Consists of existing (July 2015) counts collected at the study intersections.
- Existing (2015) Plus Project Conditions – Project trips were assigned to the study intersections in addition to the existing counts.
- Cumulative Year (2035) No Project Conditions – A 0.505 percent per year growth rate was applied to the Existing Conditions counts along with expected traffic generated from local pending and approved development projects.
- Cumulative Year (2035) Plus Project Conditions – Project trips were assigned to the study intersections on top of the Cumulative Year (2035) No Project Conditions.

FINDINGS

The proposed project results in impacts to study intersections and mitigation measures have been recommended for these identified impacts. However, 16 intersections experience an impact that is significant and unavoidable due to right-of-way acquisition, wetlands encroachment, or the intersection is not controlled by the City of Long Beach. Significant and unavoidable means the City of Long Beach cannot guarantee the implementation of recommended mitigation measures. Table 1-1 below shows that intersections are forecast to operate deficiently under Existing and Cumulative Conditions, with and without the project. Of the impacted locations, two additional intersections under Existing Plus Project Conditions and four additional intersections under Cumulative Plus Project Conditions operate deficiently.

Although 16 intersections experience an impact, most impacts follow the same trend of required mitigation:

- 7th Street will need 8 lanes, with or without the project
- Pacific Coast Highway & Loynes Drive needs additional turn lanes
- Pacific Coast Highway & 2nd Street is fully built out with little flexibility in mitigation

The impacts to the existing bicycle network are less-than-significant because the SEASP does not conflict with the adopted City of Long Beach Bicycle Master Plan and the project increases the performance and safety of bicycle facilities. The SEASP will also increase the performance of pedestrian facilities by increasing the amount of sidewalks throughout the project site and providing sidewalks on both sides of the street.

Therefore, the impats to pedestrian facilities are less-than-significant. Finally, the calculated impact to transit is less-than-significant since the project will add an estimated 4 riders per transit vehicle.

TABLE 1-1 INTERSECTION OPERATIONS SUMMARY

Intersection	Jurisdiction	Intersection Operates Deficiently			
		Existing	Existing Plus Project	Cumulative	Cumulative Plus Project
3. Westbound Ramps: SR-22 & Studebaker Rd	Caltrans	PM	AM PM	AM PM	AM PM
4. Ximeno Ave & 7th St	City of Long Beach	PM	AM PM	AM PM	AM PM
5. Pacific Coast Hwy & 7th St	Caltrans	AM PM	AM PM	AM PM	AM PM
6. Bellflower Blvd & 7th St	Caltrans		AM PM	AM PM	AM PM
7. Channel Dr & 7th St	Caltrans	PM	PM	PM	PM
8. Campus Dr & 7th St	Caltrans			AM	AM
9. Bellflower Blvd & Pacific Coast Hwy	Caltrans				PM
11. Studebaker Rd & SR-22 Eastbound Ramps	Caltrans				PM
12. Pacific Coast Hwy & Loynes Dr	Caltrans	PM	PM	PM	PM
13. Studebaker Rd & Loynes Dr	City of Long Beach				PM
15. Marina Dr & 2nd St	City of Long Beach				PM
16. Pacific Coast Hwy & 2nd St	Caltrans	AM PM	AM PM	AM PM	AM PM
17. Shopkeeper Rd & 2nd St	City of Long Beach		PM		PM
18. Studebaker Rd & 2nd St	City of Long Beach				PM
19. Seal Beach Blvd & 2nd St/Westminster Blvd	City of Seal Beach			PM	PM
20. Pacific Coast Hwy & Studebaker Rd	Caltrans		PM	PM	PM
21. Pacific Coast Hwy & 1st St	Caltrans				PM

2. INTRODUCTION

PROJECT DESCRIPTION

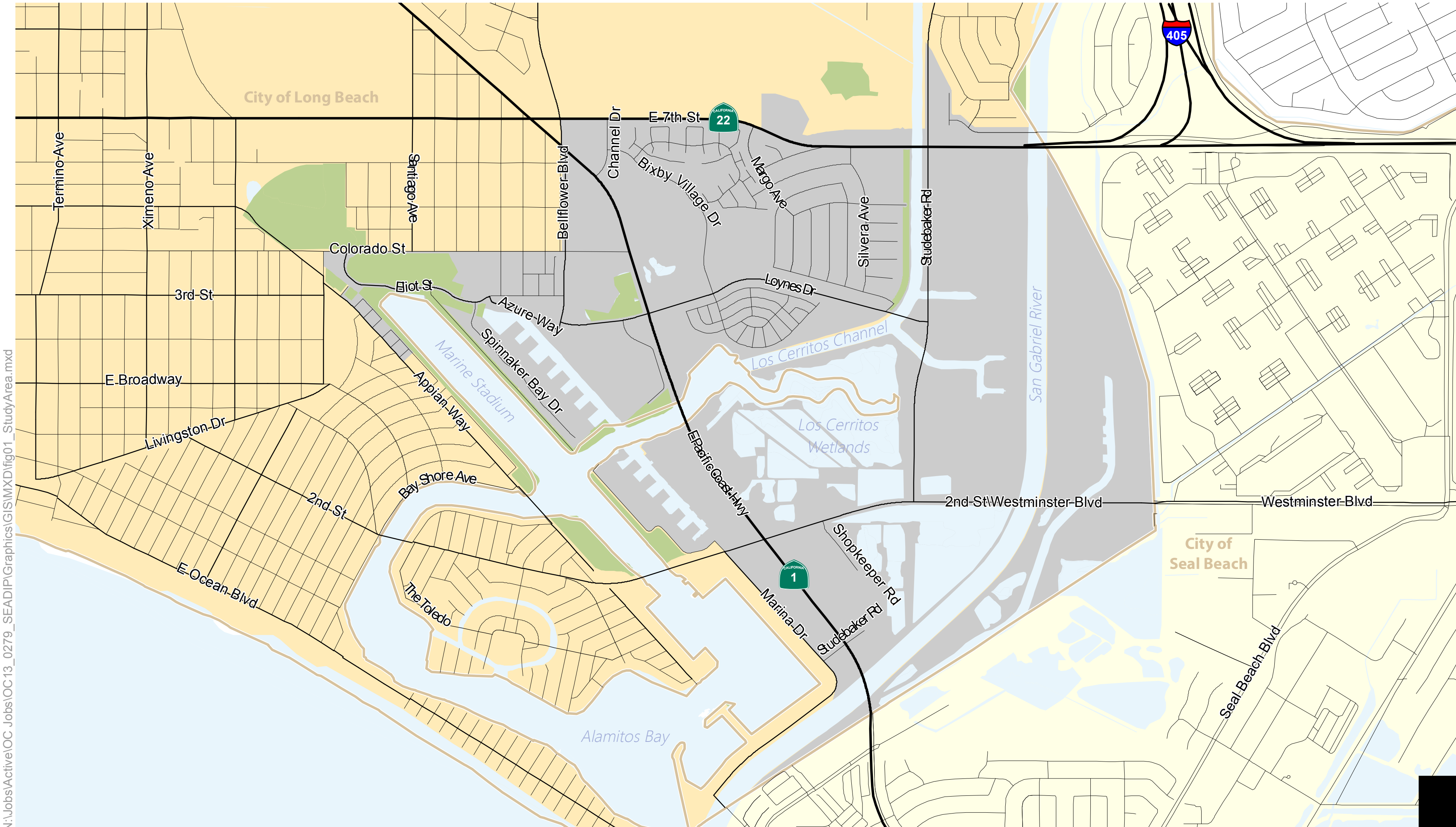
The SEASP project intends to revitalize the community by planning for new, mixed-use developments within the study area. The plan focuses on redeveloping parcels along Pacific Coast Highway south of Loynes Drive and north of the San Gabriel River, and parcels at the western portion of the study area near Colorado Street. The plan is to initiate redevelopment paired with transportation infrastructure improvements for pedestrians, bicyclists, and drivers to create a more active and thriving economy and community with the study area. A map of the study location is displayed in Figure 2-1.

PROJECT STUDY AREA

The study area for the project stretches from Ximeno Avenue to Seal Beach Boulevard to the east, and as far south as 1st Street and as far north as Atherton Street. Fehr & Peers worked with city staff and identified 21 study intersections for analysis. The study area consists of major intersections along Pacific Coast Highway (State Route (SR)-1), Studebaker Road, 7th Street, and 2nd Street. A vicinity map displaying the project location, study area, and analyzed intersections is provided in Figure 2-2

The following study intersections were identified for analysis in this study:

1. Studebaker Road & Interstate (I)-405 Westbound On-Ramp, Caltrans
2. Studebaker Road & I-405 Eastbound Off-Ramp, Caltrans
3. Studebaker Road & SR-22 Westbound Ramps, Caltrans
4. 7th Street & Ximeno Avenue, City of Long Beach
5. Pacific Coast Highway & 7th Street, Caltrans
6. Bellflower Boulevard & 7th Street, Caltrans
7. Channel Drive & 7th Street, Caltrans
8. Campus Drive & 7th Street, Caltrans
9. Bellflower Boulevard & Pacific Coast Highway, Caltrans
10. Channel Drive & Pacific Coast Highway, Caltrans
11. Studebaker Road & SR-22 Eastbound Ramps, Caltrans
12. Pacific Coast Highway & Loynes Drive, Caltrans
13. Studebaker Road & Loynes Drive, City of Long Beach
14. 2nd Street & Naples Plaza, City of Long Beach



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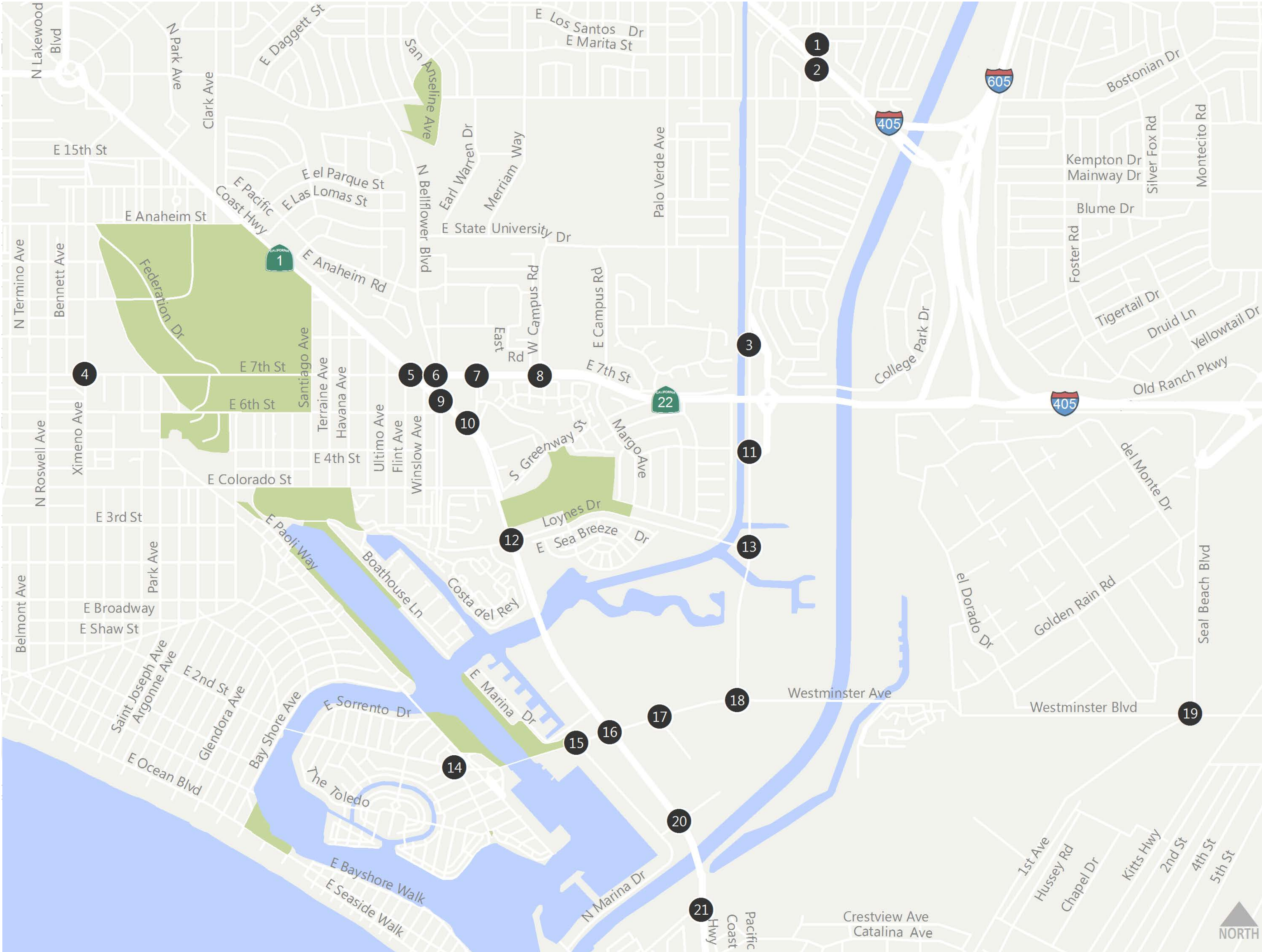
Source: Census 2010;2012

SEASP Study Area
Parks
City of Long Beach
Waterways
City of Seal Beach

Figure 2-1

Study Location



\# Study Intersections

Figure 2-2

Study Intersections

15. Marina Drive & 2nd Street, City of Long Beach
16. Pacific Coast Highway & 2nd Street, Caltrans
17. Shopkeeper Road & 2nd Street, City of Long Beach
18. Studebaker Road & 2nd Street, City of Long Beach
19. 2nd Street/Westminster Boulevard & Seal Beach Boulevard, City of Seal Beach
20. Pacific Coast Highway & Studebaker Road, Caltrans
21. Pacific Coast Highway & 1st Street, Caltrans

ANALYSIS SCENARIOS

The following analysis scenarios were analyzed consistent with the Los Angeles County Congestion Management Program (CMP) Guidelines and CEQA requirements:

- Existing (2015) Conditions – Consists of existing (July 2015) counts collected at the study intersections.
- Existing (2015) Plus Project Conditions – Project trips were assigned to the study intersections in addition to the existing counts.
- Cumulative Year (2035) No Project Conditions – A 0.505 percent per year growth rate was applied to the Existing Conditions counts along with expected traffic generated from local pending and approved development projects.
- Cumulative Year (2035) Plus Project Conditions – Project trips were assigned to the study intersections on top of the Cumulative Year (2035) No Project Conditions.

3. EXISTING (2015) CONDITIONS

The City of Long Beach is located in Los Angeles County along the Pacific Coast. The Pacific Ocean lies to the south while the Cities of Carson and Compton border to the west. Lakewood and Hawaiian Gardens border to the north while Los Alamitos and Seal Beach border to the east. The City of Long Beach surrounds the City of Signal Hill.

Regional access to Long Beach is provided by I-405, Interstate 710 (I-710), Pacific Coast Highway, State Route 103 (SR-103), State Route 19 (Lakewood Boulevard), Interstate 605 (I-605) and SR-22.

This chapter discusses the existing transportation conditions in the project study area. This discussion addresses the roadway, transit, and pedestrian networks.

EXISTING ROADWAY FACILITIES

Regional access to Long Beach within the study area is provided by the I-405, I-710 and Pacific Coast Highway. Roadways in the study area are classified per the City of Long Beach Mobility Element and the Los Angeles County CMP, and is described in detail below.

REGIONAL ROADS

- Pacific Coast Highway (SR-1) – Pacific Coast Highway is classified as a State Highway (Arterial) in the Los Angeles County CMP and as a Regional Corridor in the City of Long Beach Mobility Element. The roadway extends from State Route 101 in Leggett, California south along the Pacific Coast over 650 miles before terminating at Interstate 5 in Dana Point, California. Within the study area, Pacific Coast Highway has an east-west orientation and is a six lane facility divided by a two-way left turn lane. On-street parking is generally permitted with time restraints and other restrictions. The posted speed limit along Pacific Coast Highway within the study area is 35 miles per hour (mph).
- San Diego Freeway (I-405) – I-405 is classified as a State Freeway in the Los Angeles CMP and as a Freeway in the City of Long Beach Mobility Element. The San Diego Freeway runs from Irvine to San Fernando, cutting through the City of Long Beach. Within the study area, the I-405 has ten lanes with a posted speed of 65 mph.
- Garden Grove Freeway (SR-22) – SR-22 is classified as a State Freeway in the Los Angeles CMP and as a Freeway in the City of Long Beach Mobility Element. The roadway spans from SR-55 to Pacific Coast Highway in Long Beach. Within the study area, the Garden Grove Freeway has six lanes into the heart of Long Beach and has a posted speed limit of 45 mph.

LOCAL ACCESS ROADS

- Studebaker Road – Studebaker Road is classified as a Major Avenue in the City of Long Beach Mobility Element. The roadway runs in the north-south direction and provides direct access to the I-405 and SR-22. Studebaker Road begins at 2nd Street in Long Beach and extends to Los Coyotes Diagnol south of Lakewood. Within the study area, Studebaker Road is a divided four lane facility with a median and has a posted speed limit of 40 mph.
- 7th Street – 7th Street is classified as a Boulevard in the City of Long Beach Mobility Element. The roadway runs in the east-west direction and acts as major roadway throughout the Long Beach area. 7th Street begins at Pacific Coast Highway in eastern Long Beach and extends to Downtown Long Beach. Within the study area, 7th Street is a six lane undivided facility with a posted speed limit of 35-40 mph.
- Loynes Drive – Loynes Drive is classified as a Neighborhood Connector in the City of Long Beach Mobility Element. The roadway runs in the east-west direction and spans a short distance from Studebaker Road to Bellflower Boulevard within Long Beach. Within the study area, Loynes Drive is a four lane facility with a median and has a posted speed limit of 35 mph.
- 2nd Street – 2nd Street is classified as a Boulevard in the City of Long Beach Mobility Element. The roadway is an east-west facility and extends between Livingston Drive and Island Village Drive. At Village Island Drive, 2nd Street becomes Westminster Boulevard. Within the study area, 2nd Street is a four to six lane roadway divided by a median and it has a posted speed limit of 40-50 mph.
- Ximeno Avenue – Ximeno Avenue is classified as a Neighborhood Connector in the City of Long Beach Mobility Element. The roadways is a north-south facility covering Long Beach from Los Coyotes Diagonal to 2nd Street. Within the study area, Ximeno Avenue is a two lane undivided facility with a posted speed limit of 25 mph.
- Bellflower Boulevard – Bellflower Boulevard is classified as a Boulevard in the City of Long Beach Mobility Element. The roadway spans Long Beach, Lakewood, and Downey and provides direct access to I-105, I-405, SR-1, and SR-91. The roadway is a north-south facility, beginning at Loynes Drive in Long Beach and terminating at Lakewood Boulevard in Downey. Within the study area, Bellflower Boulevard is a four to six lane divided roadway with a raised median in the center. Bellflower Boulevard has a posted speed limit of 35-40 mph.

EXISTING TRANSIT FACILITIES

The study area is serviced by multiple Long Beach Transit bus routes. The City of Long Beach has high bus ridership rates that totaled 1,259,928 average weekday boardings as of June 2015 according to Metro ridership statistics. Additionally, Orange County Transportation Authority (OCTA) services this area providing access between Orange County and this part of the City of Long Beach. The routes are shown on Figure 3-1 and described below. Proposed transit routes information is provided by OCTA.

LONG BEACH TRANSIT

- Route 45 (Anaheim Street to Santa Fe Avenue) – Route 45 begins at the Santa Fe Avenue and Cowles Street intersection west of downtown Long Beach. The route travels east on Anaheim Street before ending at Pacific Coast Highway. Route 45 operates on 20-30 minute headways on weekdays and 30 minutes on weekends.

- Route 46 (Anaheim Street to Downtown) – Route 46 begins at the Transit Gallery on First Street in downtown Long Beach. The route travels north on Long Beach Boulevard, then east down Anaheim Street, ending at Pacific Coast Highway. Route 46 operates on 20-30 minute headways on weekdays and 20 minute headways on weekends.

- Route 81 (10th Street to CSULB) – Route 81 begins at the Transit Gallery on First Street in downtown Long Beach. The route travels north to 10th Street, then turns east, ending at Studebaker Road. Route 81 operates on 50 minute headways on weekdays and does not operate on weekends.

- Routes 91 (7th Street/Bellflower Boulevard) – Route 91 begins at Transit Gallery on First Street in downtown Long Beach. The route travels east on 7th Street, then heads north on Bellflower Boulevard, ending at Alondra Boulevard. Route 91 operates on 60 minute headways on weekdays and 40-60 minute headways on weekends.

- Routes 92 (7th Street/Woodruff Avenue)– Route 92 begins at Transit Gallery on First Street in downtown Long Beach. The route travels east on 7th Street, then heads north on Woodruff Avenue, ending at Alondra Boulevard. Route 92 operates on 60 minute headways on weekdays and does not operate on weekends.

- Routes 93 (7th Street/Clark Avenue) – Route 93 begins at Transit Gallery on First Street in downtown Long Beach. The route travels east on 7th Street, then heads north on Bellflower Boulevard, ending at Alondra Boulevard, making a side stop on Lakewood Boulevard. Route 93 operates on 30 minute headways on weekdays does not operate on weekends.

- Routes 94 (7th Street to Los Altos Only) – Route 94 begins at Transit Gallery on First Street in downtown Long Beach. The route travels east on 7th Street, then heads north on Bellflower Boulevard, ending at Candlewood Street. Route 94 operates on 20-40 minute headways on weekdays and 40 minute headways on weekends.

- Route 121 (Ocean/Belmont Shore/CSULB/PCH at Ximeno Avenue) – Route 121 begins at Transit Gallery on First Street in downtown Long Beach. The route travels east on Ocean Boulevard, then heads north on Pacific Coast Highway, ending at Ximeno Avenue and Atherton Avenue. Route 121 operates on 20 minute headways on weekdays and 30 minute headways on weekends.

- Route 131 (Redondo Avenue to Seal Beach) – Route 131 begins at Electric Avenue at Main Street in Alamitos Bay. The route travels west on 2nd Street, then north on Redondo Avenue, ending at the Wardlow Metro Blue Line Station. Route 131 operates on 30-60 minute headways on weekdays and 60 minute headways on weekends.

ORANGE COUNTY TRANSIT AUTHORITY

- Route 1 (Long Beach to San Clemente) – Route 1 begins at 7th Street and Channel Drive in Long Beach and ends at El Camino Real and Avd Santa Margarita in San Clemente. The route travels south along Pacific Coast Highway, with 30 minute headways on weekdays and 60 minute headways on weekends.

- Route 42 (Seal Beach to Orange) – Route 42 begins at Electric Avenue and Main Street and runs north along Seal Beach Boulevard and then east on Lincoln Avenue before ending at The Village at Orange. The route operates on 30-70 minute headways on weekdays and 50 minute headways on weekends.

- Route 50 (Long Beach to Orange) – Route 50 begins at 7th Street and Channel Drive in Long Beach, then travels east on Katella Avenue before ending at The Village at Orange. The route operates with 30-40 minute headways on weekdays and 50-60 minute headways on weekends.

- Route 60 (Long Beach to Tustin) – Route 60 begins at 7th Street and Channel Drive in Long Beach, travelling east on Westminster Boulevard, until ending at Larwin Square in Tustin. The route operates on 20 minute headways on weekdays and 20 minute headways on weekends.

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Figure 3-1

Existing Transit Facilities

EXISTING BICYCLE FACILITIES

The City of Long Beach is serviced by Class I, II, and III bicycle facilities, bicycle boulevards and separated bicycle lanes (Cycle Track or Class IV). The following is a description of these facilities:

- Class I bike paths are separated from roadway traffic and allows bicyclist and pedestrian access.
- Class II bicycle facilities are designated lanes alongside vehicular traffic lanes.
- Class III bike routes are roadways that are signed for bicyclists, and sometimes striped with a sharrow marking, but have no designated lane.
- Bicycle boulevards are low speed streets that have been ‘optimized’ for bicycle traffic through traffic calming and right-of-way assignment. These are typically neighborhood streets that allow local vehicle traffic access but discourage cut-through vehicle traffic.
- Separated bicycle lanes, also known as a“Cycle Track” or Class IV bike facility, are exclusive bicycle facilities with elements of a separated path and on-road bike lane. Cycle Tracks are within the roadway right-of-way but are physically separated from motor traffic. In 2002, the City of Long Beach installed over two miles of Cycle Track in the downtown area.

Within the study area, there are existing Class I and II bikeways along portions of 7th Street, 2nd Street, and Loynes Drive. These bikeways are discontinuous in certain areas. Existing and future bicycle facilities are shown on Figure 3-2.

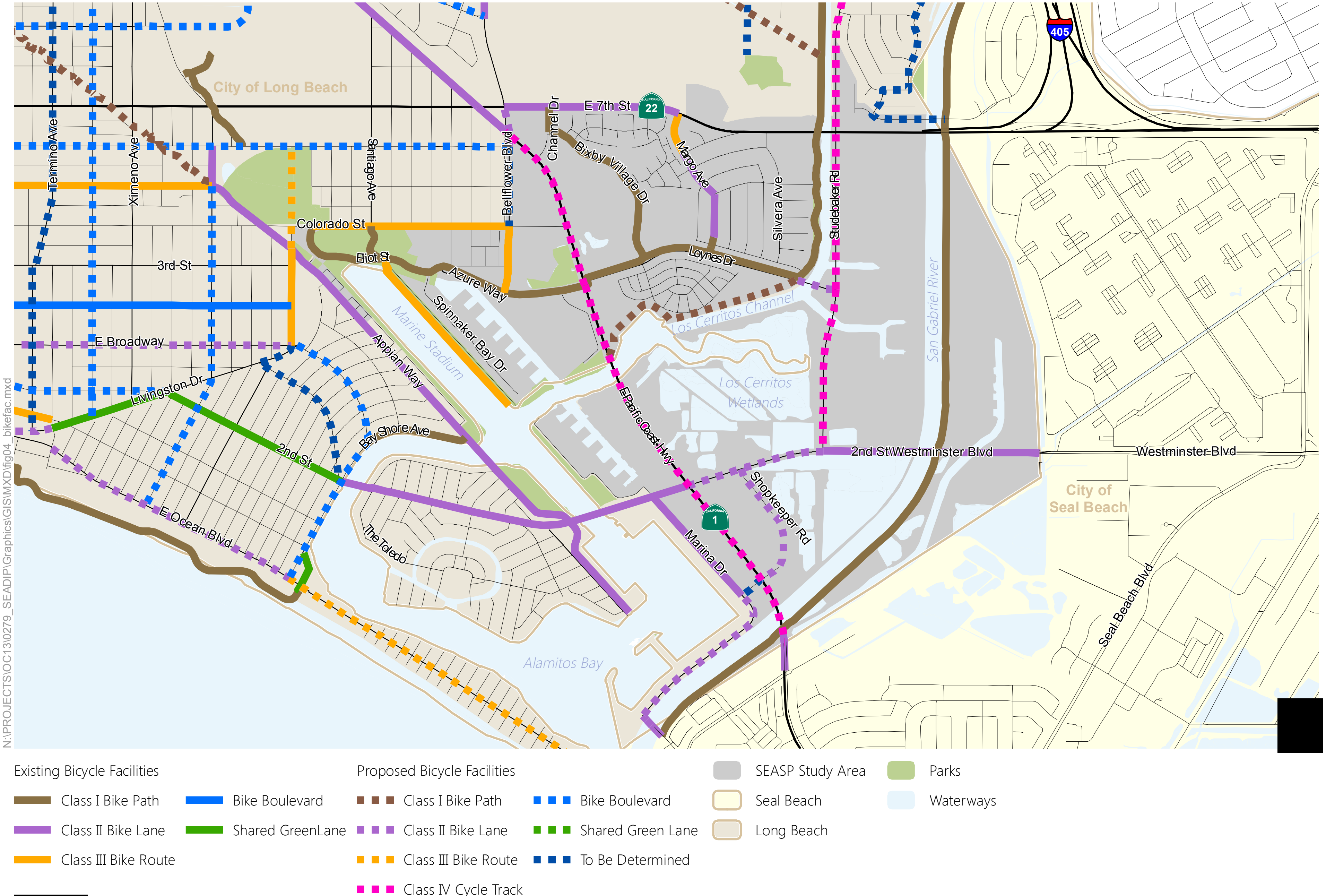


Figure 3-2

Existing and Proposed Bicycle Facilities

EXISTING PEDESTRIAN FACILITIES

Existing pedestrian facilities in the SEASP area are limited. Most major roadways lack sidewalks on one or more sides of the street. 7th Street (between Ximeno Avenue and Studebaker Road) and 2nd Street (between Naples Plaza and Marina Drive) have well developed sidewalks on both sides of the street. Most intersections have crosswalks and appropriate pedestrian crossing controls allowing for connectivity to local activity centers.

EXISTING TRAFFIC VOLUMES AND LANE CONFIGURATIONS

Existing morning (7:00 to 9:00 AM) and afternoon (4:00 to 6:00 PM) peak period vehicle counts at the 21 study intersections were conducted on July 14, 2015. July was chosen based on comments received that summer travel patterns in this area are higher than non-summer travel patterns. This was confirmed in coordination with City staff. Field observations and lane configuration data were collected on July 23, 2015. Signal timing information for the signalized study intersections were provided by Caltrans or the local agencies. Signal timing parameters were provided for the AM and PM peak hours used in the analysis. Figure 3-5 summarizes the existing AM and PM peak traffic volumes and lane configurations.

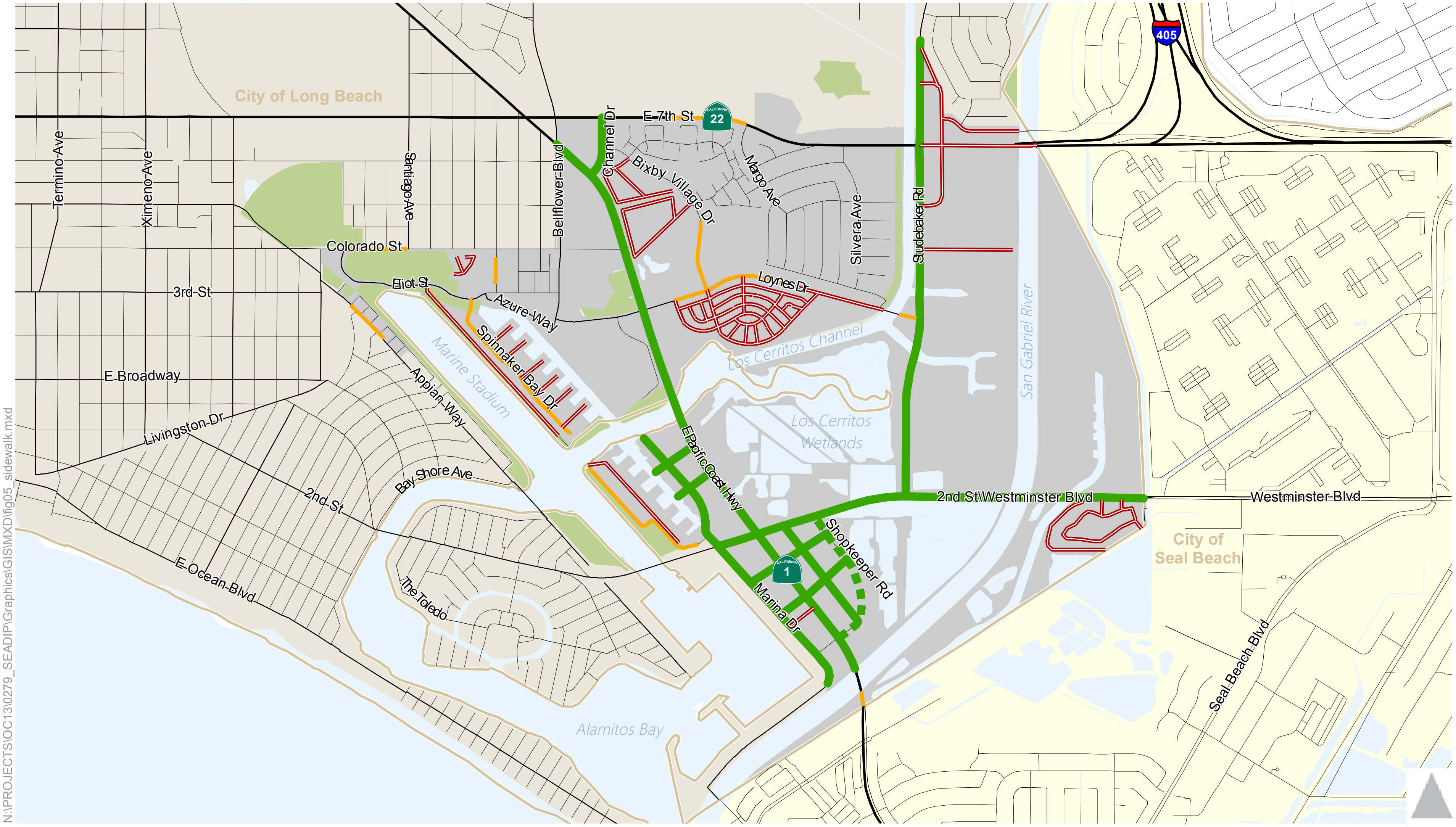
EXISTING INTERSECTION OPERATIONS

METHODOLOGY

For signalized intersections, the traffic analysis of this project was evaluated in accordance with the CMP guidelines using the Intersection Capacity Utilization (ICU) methodology for study intersections within the City of Long Beach and City of Seal Beach. For unsignalized intersections and Caltrans owned intersections, methodologies consistent with the *Highway Capacity Manual 2010 (HCM 2010)* were applied.

The ICU methodology is the CMP-consistent approach for evaluating signalized intersection operations in Los Angeles County, Orange County, the City of Seal Beach, and in the City of Long Beach. It reports the volume-to-capacity (V/C) ratio at the intersection for signalized intersections, which evaluates the critical movements for each signal and compares that to the critical movement capacity of the intersection.

Based on the V/C and delay findings, the methodologies assign a qualitative letter grade that represents the operations of the intersection. These grades range from level of service (LOS) A (minimal delay) to LOS



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Future Facilities

Sidewalk Missing on Both Sides — Both Sides — Parks — Seal Beach

Sidewalk Missing on One Side — One Side Only — Waterways — Long Beach

SEASP Study Area

Figure 3-3

Existing and Proposed Pedestrian Facilities

F (excessive congestion). LOS D represents at-capacity operations. Descriptions of the LOS letter grades for intersections are provided in Table 3-1.

The following parameters, based on the Los Angeles CMP guidelines and City analysis requirements, were used in the traffic analysis for intersections in the City of Long Beach:

- Through and turn lane capacities of 1,600 vehicles per hour per lane (2,880 vehicles per hour for dual left-turn lanes).

- A clearance interval was applied consistant with City requirements, as noted below:
    - 2 critical phases – 10%
    - 3 critical phases (Protected-Permitted) – 12%
    - 3 critical phases (Protected) – 15%
    - 4 critical phases (Protected-Permitted) – 14%
    - 4 critical phases (Protected) – 18%

- A peak hour factor[1] (PHF) of 1.00 is used for the ICU analysis.

- A peak hour truck percentage of 2% was applied to represent heavy truck and general traffic characteristics in our study area based on our field visit and knowledge of the study area.

The following parameters, based on the Orange County CMP guidelines, were used in the traffic analysis for Seal Beach Boulevard & 2nd Street/Westminster Boulevard and Pacific Coast Highway & 1st Street:

- Through and turn lane capacities of 1,700 vehicles per hour per lane (3,400 vehicles per hour for dual left-turn lanes), and a ten percent clearance reduction was used.

- A PHF of 1.00 was used for the ICU analysis.

- A loss time of ten percent was be applied when calculating V/C.

- A peak hour truck percentage of 2% was applied to represent heavy truck and general traffic characteristics in our study area based on our field visit and knowledge of the study area.

For the one unsignalized side-street stop-controlled intersection, the HCM 2010 methodology estimates the longest-delayed turning movement. In cases where there are shared lanes, the average delay in that lane is reported. Table 3-1 also summarizes the LOS grades for unsignalized intersections.

The following parameters, based on the Caltrans guidelines, were used in the traffic analysis for intersections under the jurisdiction of Caltrans:

- Field collected PHF were used in the Existing (2015) and Existing (2015) Plus Project scenarios. A PHF of 0.95 was used for intersections in the Cumulative (2035) No Project and Cumulative (2035) Plus Project scenarios.

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[1] Peak Hour Factor is the ratio of hourly volume to the peak 15 minute flow rate within the same hour. If all flow rates are the same for each 15 minute period, the peak hour factor is 1.00.

- A peak hour truck percentage of 2% was applied to represent heavy truck and general traffic characteristics in our study area based on our field visit and knowledge of the study area.
- Signal timing was obtained and utilized from Caltrans District 7 and District 12.

Intersection Significance Criteria

City of Long Beach

For intersections under City of Long Beach's jurisdiction, the significance criteria is consistent with the City of Long Beach Guidelines for Signalized Intersections and the Los Angeles County CMP Guidelines. A significant impact would occur at a signalized study intersection when the project-related traffic causes:

- A signalized intersection to degrade from an acceptable LOS D or better to LOS E or LOS F, or
- The V/C ratio to increase by 0.02 or more at a signalized intersection that operates at LOS E or LOS F, or
- Causes an unsignalized intersection operating at LOS D or better to degrade to LOS E or LOS F and the intersection satisfies the Manual for Uniform Traffic Control Devices (MUTCD) Peak Hour Volume Warrant for Traffic Signal Installation, or
- Adds traffic to an unsignalized intersection operating at an unacceptable LOS E or LOS F such that it satisfies the MUTCD Peak Hour Volume Warrant for traffic signal installation.

If a City of Long Beach intersection is operating at LOS E or worse, mitigation is needed to improve the "plus project" delay to the existing "no project" delay. If an impact degrades an acceptable LOS to a below than acceptable LOS, mitigation is required to bring the LOS back to the acceptable threshold level. No mitigation is required for intersections operating at or above the acceptable threshold (LOS D).

City of Seal Beach

For intersections under City of Seal Beach's jurisdiction, the significance criteria is consistent with the City of Seal Beach Circulation Element level of service policy and the Orange County CMP Guidelines. A significant impact would occur at a signalized study intersection when the project-related traffic causes:

- A signalized intersection to degrade from an acceptable LOS D or better to LOS E or LOS F, or
- The V/C ratio to increase by 0.01 or more at a signalized intersection that operates at LOS E or LOS F, or

If a City of Seal Beach intersection is operating at LOS E or worse, mitigation is needed to improve the "plus project" delay to the existing "no project" delay. If an impact drops an acceptable LOS to a below than acceptable LOS, mitigation is required to bring the LOS back to the acceptable threshold level. No mitigation is required for intersections operating at or above the acceptable threshold (LOS D).

Caltrans

For intersections under Caltrans' jurisdiction, the significance criteria is consistent with the Caltran's *Guide for the Preparation of Traffic Impact Studies* and/or the *Transportation Concept Report* prepared for the facility. A significant impact would occur at a signalized study intersection when the project-related traffic causes:

- An intersection to degrade from an acceptable LOS to an unacceptable LOS[2]; or
- Any increase in delay for intersections already operating at an unacceptable LOS.

If a Caltrans intersection is operating at an unacceptable LOS, mitigation is needed to improve the "plus project" delay to existing "no project" delay. If an impact drops an acceptable LOS to an unacceptable LOS, mitigation is required to bring the LOS back to the acceptable threshold level. No mitigation is required for intersections operating at or above the acceptable threshold.

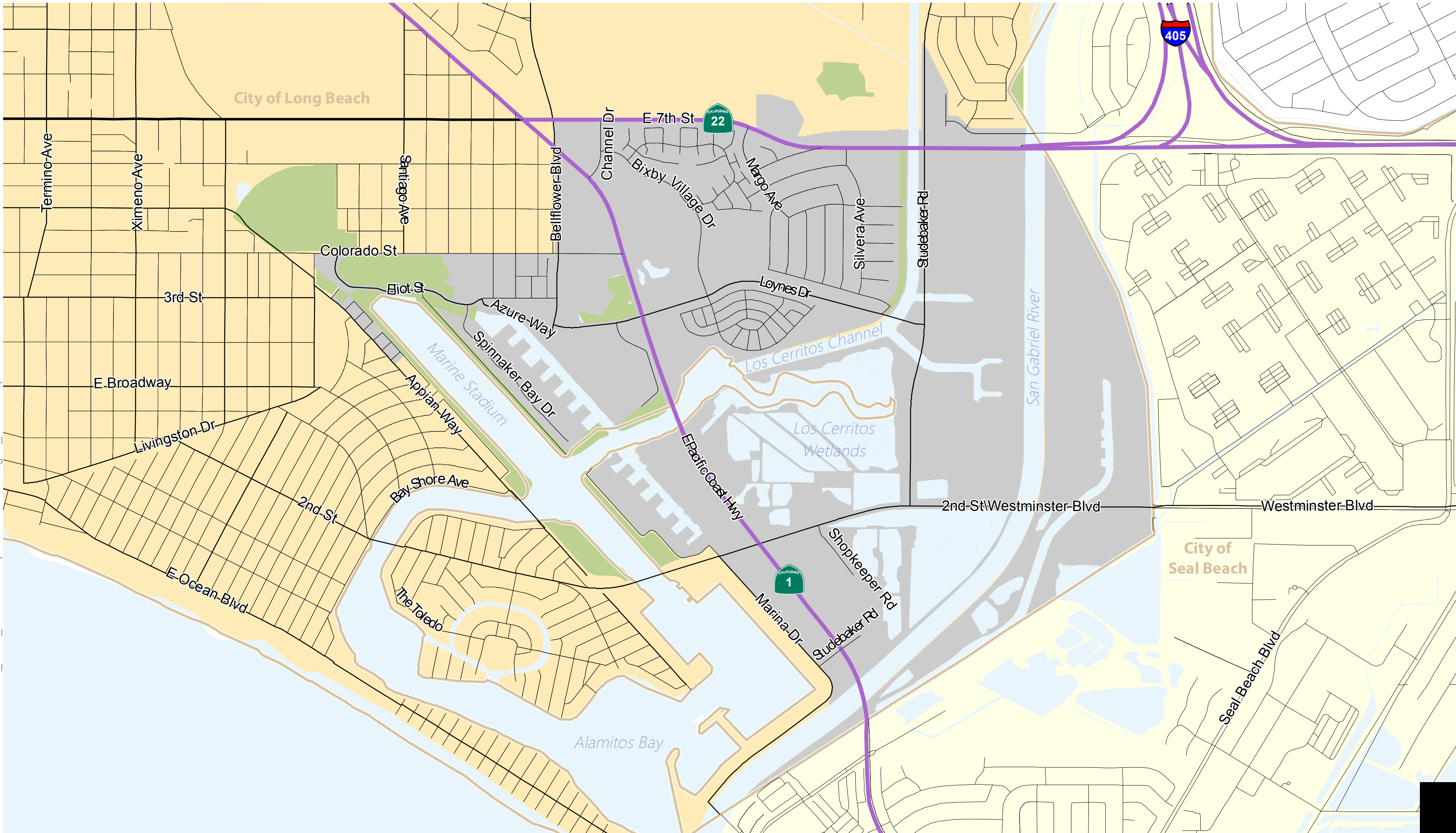
Figure 3-4 shows the jurisdiction of the roadways in the study area.

Freeway Significance Criteria

The Caltran's *Guide for the Preparation of Traffic Impact Studies* provides significance criteria for freeway mainline and ramp facilities. Based on the Caltrans guide, LOS C was utilized as an acceptable threshold for all Caltrans study facilities. This threshold was applied to determine when a facility degrades from acceptable to unacceptable levels. A significant impact would occur at a study freeway segment when the project-related traffic causes:

- A freeway segment to degrade from an acceptable LOS C or better to LOS D, LOS E or LOS F; or
- An increase in density for freeway segments already operating at LOS D, LOS E, or LOS F.

[2] Acceptable level of service is identified from the Caltrans *Transportation Concept Report* and is the Caltrans' target facility LOS. If a Transportation Concept Report is not available, LOS C is considered the minimum acceptable operating LOS. As such, for Pacific Coast Highway, LOS D is considered acceptable. For SR-22, LOS C is considered acceptable.



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Source: Census 2010;2012, Caltrans

Ownership

- City
- Caltrans
- SEASP Study Area
- Seal Beach
- Long Beach
- Parks
- Waterways

[redacted]

Figure 3-4

Roadway Ownership

TABLE 3-1 INTERSECTION LEVEL OF SERVICE CRITERIA

Level of Service	Description	Signalized Intersections Volume-to-Capacity (V/C) Ratio	Signalized Intersection Delay (sec)	Unsignalized Intersections Delay (seconds)
A	Signalized: Operations with very low delay occurring with favorable progression and/or short cycle length. Unsignalized: Little or no delay.	0.000-0.600	≤ 10.0	≤ 10.0
B	Signalized: Operations with low delay occurring with good progression and/or short cycle lengths. Unsignalized: Short traffic delays.	0.601-0.700	> 10.0 to 20.0	> 10.0 to 15.0
C	Signalized: Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear. Unsignalized: Average traffic delays.	0.701-0.800	> 20.0 to 35.0	> 15.0 to 25.0
D	Signalized: Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high V/C ratios. Many vehicles stop and individual cycle failures are noticeable. Unsignalized: Long traffic delays.	0.801-0.900	> 35.0 to 55.0	> 25.0 to 35.0
E	Signalized: Operations with high delay values indicating poor progression, long cycle lengths, and high V/C ratios. Individual cycle failures are frequent occurrences. Unsignalized: Very long traffic delays.	0.901-1.000	> 55.0 to 80.0	> 35.0 to 50.0
F	Signalized: Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths. Unsignalized: Extreme traffic delays with intersection capacity exceeded	Greater than 1.000	Greater than 80.0	Greater than 50.0

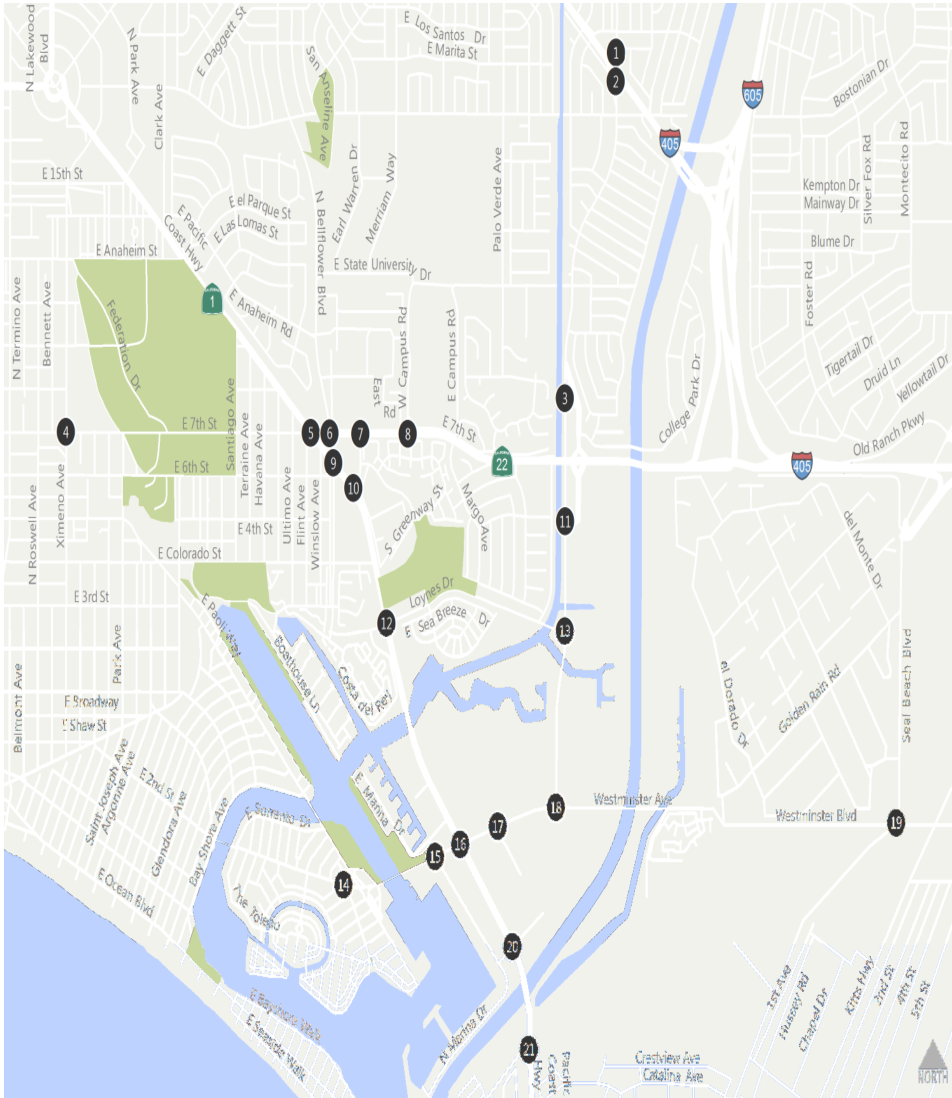
Source: City of Long Beach General Plan, City of Seal Beach General Plan, Highway Capacity Manual 2010

EXISTING LEVEL OF SERVICE

Existing traffic volumes, lane configurations collected in the field, and signal timing information provided by Caltrans were used to analyze operations at the study intersections for existing AM and PM peak hour conditions using the ICU or HCM 2010 methodologies. The results are summarized in Table 3-2. LOS results are provided in Appendix B. Existing traffic volumes and lane configurations are shown in Figure 3-5.

As shown in Table 3-2, the following five (5) intersections operate at a deficient LOS during one or more peak hours for Existing (2015) conditions:

- Studebaker Road & SR-22 Westbound Ramps – PM Peak Hour (LOS F)
- 7th Street & Ximeno Avenue – PM Peak Hour (LOS E)
- Pacific Coast Highway & 7th Street – AM Peak Hour (LOS D), PM Peak Hour (LOS E)
- Channel Drive & 7th Street – PM Peak Hour (LOS E)
- Pacific Coast Highway & 2nd Street – AM Peak Hour (LOS E), PM Peak Hour (LOS E)



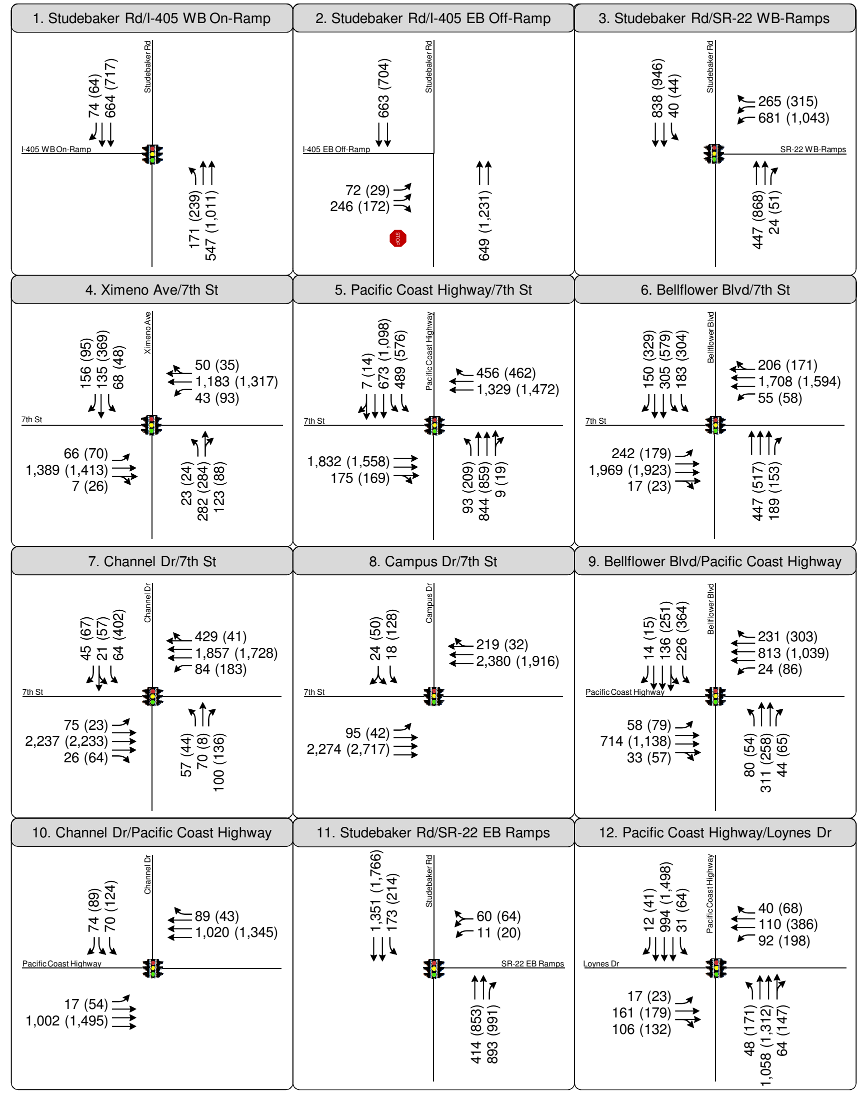
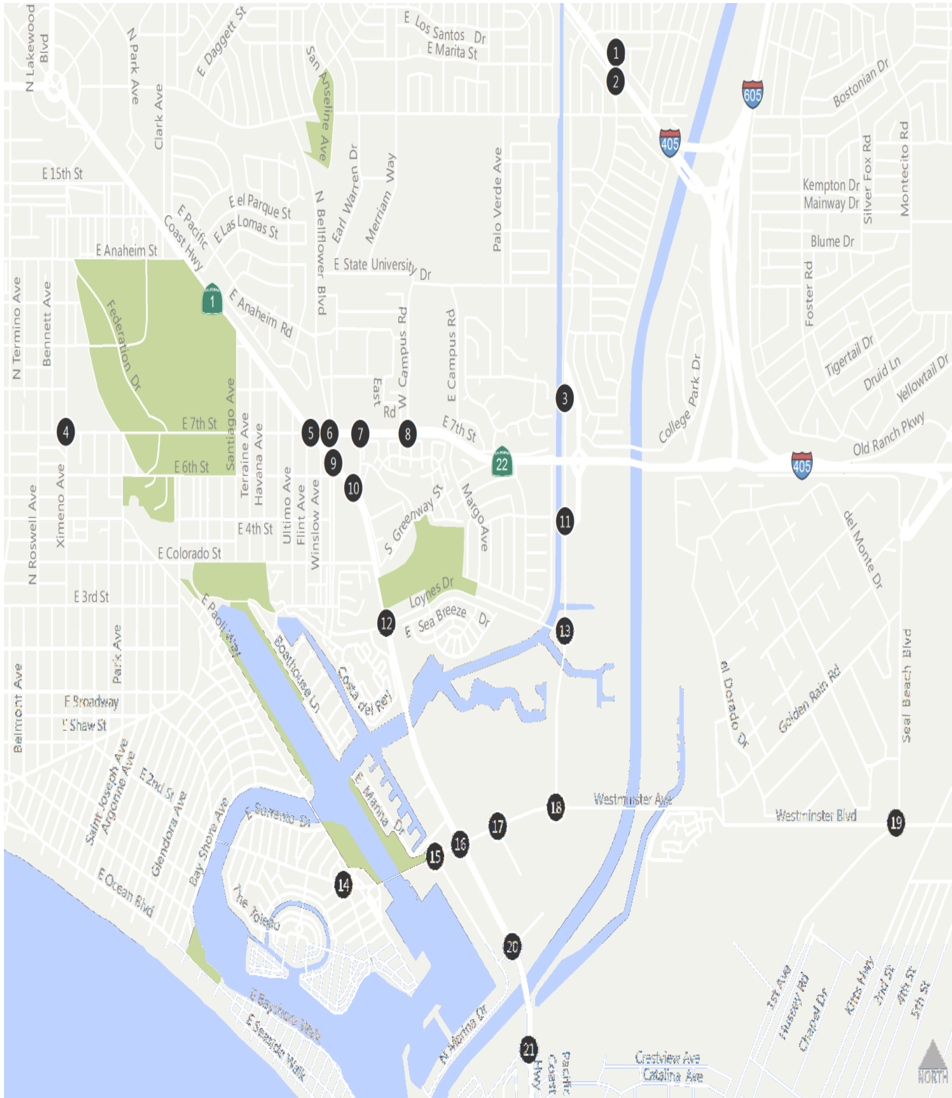


Figure 3-5
Peak Hour Traffic Volumes and Lane Configurations
Existing (2015) Conditions



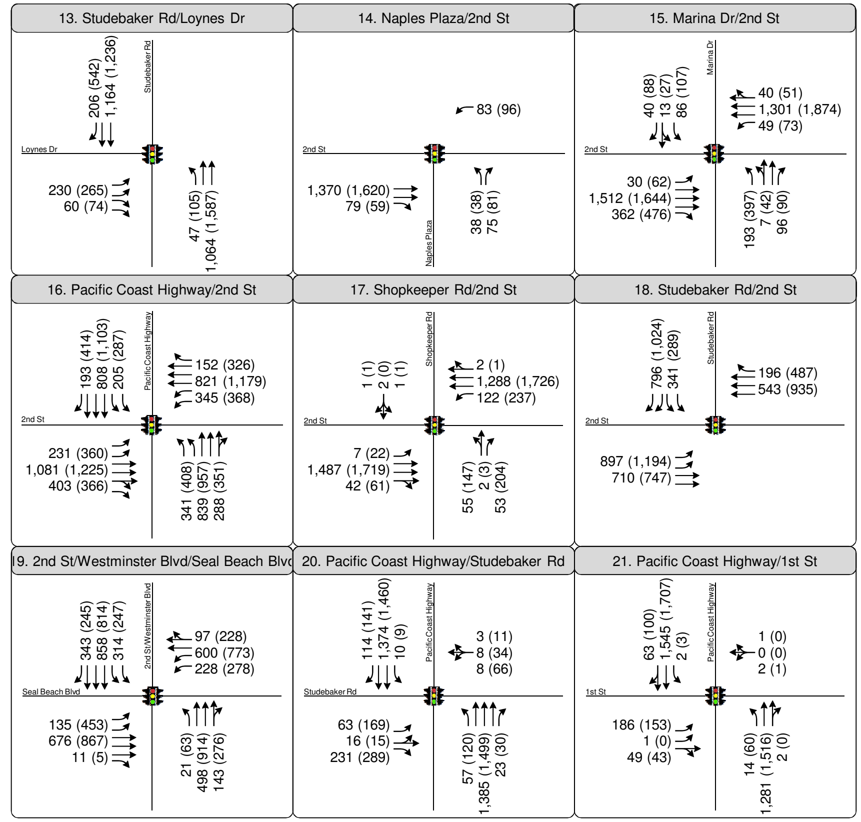


Figure 3-5
Peak Hour Traffic Volumes and Lane Configurations
Existing (2015) Conditions

TABLE 3-2 INTERSECTION LEVEL OF SERVICE EXISTING (2015) CONDITIONS

Intersection	Control	AM Peak		PM Peak	
		V/C[1] or Delay[2]	LOS	V/C[1] or Delay[2]	LOS
1. Studebaker Rd & I-405 Westbound On-Ramp[3]	Signal	8.7	A	9.4	A
2. Studebaker Rd & I-405 Eastbound Off-Ramp[4]	Side-Street Stop	12.8	B	12.8	B
3. Studebaker Rd & SR-22 Westbound Ramps	Signal	30.6	C	**>80.0**	**F**
4. 7th St & Ximeno Ave	Signal	0.899	D	**0.910**	**E**
5. Pacific Coast Hwy & 7th St	Signal	**43.8**	**D**	**59.6**	**E**
6. Bellflower Blvd & 7th St	Signal	34.1	C	32.8	C
7. Channel Dr & 7th St	Signal	7.1	A	**61.0**	**E**
8. Campus Dr & 7th St[3]	Signal	18.9	B	19.5	B
9. Bellflower Blvd & Pacific Coast Hwy	Signal	27.2	C	27.6	C
10. Channel Dr & Pacific Coast Hwy	Signal	16.0	B	13.0	B
11. Studebaker Rd & SR-22 Eastbound Ramps	Signal	6.2	A	5.6	A
12. Pacific Coast Hwy & Loynes Dr	Signal	30.1	C	38.3	D
13. Studebaker Rd & Loynes Dr	Signal	0.610	B	0.723	C
14. 2nd St & Naples Plaza	Signal	0.654	B	0.740	C
15. Marina Dr & 2nd St	Signal	0.609	B	0.772	C
16. Pacific Coast Hwy & 2nd St	Signal	**56.5**	**E**	**68.8**	**E**
17. Shopkeeper Rd & 2nd St	Signal	0.573	A	0.788	C
18. Studebaker Rd & 2nd St	Signal	0.629	B	0.807	D
19. 2nd St/Westminster Blvd & Seal Beach Blvd	Signal	0.577	A	0.857	D
20. Pacific Coast Hwy & Studebaker Rd	Signal	13.4	B	27.2	C
21. Pacific Coast Hwy & 1st St	Signal	13.9	B	13.5	B

Notes:

1. V/C for signalized intersections based on application of Intersection Capacity Utilization methodology using Traffix 7.9 software. V/C = Volume / Capacity Ratio.
2. Delay for unsignalized intersections based on application of Highway Capacity Methodology using Synchro 8 Build 806 software. Delay for side-street stop is reported as the worst-case approach delay.
3. Intersections were analyzed using Highway Capacity Manual 2000 as Highway Capacity Maunal 2010 does not analyze intersections with exclusive pedestrian phases.
4. Intersections were analyzed using Highway Capacity Manual 2000 as Highway Capacity Maunal 2010 does not analyze stop-controlled intersections with exclusive and shared turn lanes.
5. Intersections operating below acceptable LOS are shown in **bold**.

Source: Fehr & Peers, 2016

4. EXISTING (2015) PLUS PROJECT TRAFFIC CONDITIONS

This chapter evaluates the Existing (2015) Plus Project conditions. This scenario includes the addition of traffic generated from the proposed project. This condition is used to evaluate the net change in traffic conditions and to identify potential traffic impacts associated with the proposed project.

PROJECT TRANSPORTATION IMPROVEMENTS

As part of the proposed project, there are improvements to the roadway, bicycle, and pedestrian network. The following roadway connections and intersections will be improved:

- Marina Drive will have two lanes and connect Pacific Coast Highway to 2nd Street.
- Studebaker Road/Shopkeeper Road will have two lanes and connect Pacific Coast Highway to 2nd Street.
- Pacific Coast Highway & Studebaker Road westbound approach will be modified from one shared through-left-right lane to one shared through-left turn lane and one right turn lane. This improvement is consistent with the proposed roadway connection at Studebaker Road/Shopkeeper Road.

The proposed bikeways will improve bicycle connectivity and accessibility, allowing the City of Long Beach to achieve their goal of becoming the most bikeable city in the United States. The following bikeways will be improved:

- Class I bikeway adjacent to the Los Cerritos Channel from Pacific Coast Highway to Loynes Drive
- Class II bikeway along Loynes Drive from the Long Beach Bikeway Route 10 to Studebaker Road
- Class II bikeway along 2nd Street from Pacific Coast Highway and Studebaker Road
- Class II bikeway along Shopkeeper Road from Pacific Coast Highway and 2nd Street
- Class IV bikeway along Pacific Coast Highway from the San Gabriel River bridge to Bellflower Boulevard
- Class IV bikeway along Studebaker Road from 2nd Street/Westminster Boulevard to SR-22 Westbound Ramps

The following pedestrian facilities will be improved:

- Sidewalks on both sides of the street along Pacific Coast Highway from the San Gabriel River bridge to Bellflower Boulevard

- Sidewalks on both sides of the street along 2nd Street/Westminster Boulevard from Marina Drive to the Long Beach City limits
- Sidewalks on both sides of the street along Marina Drive from the Los Cerritos Channel to the San Gabriel River
- Sidewalks on both sides of the street along Studebaker Road from 2nd Street/Westminster Boulevard to SR-22 Westbound Ramps
- Sidewalks on one side of the street along Shopkeeper Road from Pacific Coast Highway to 2nd Street
- Sidewalks on both sides of the street along Channel Drive from Pacific Coast Highway to 7th Street
- Sidewalks on both sides of the street with in the project site adjacent to Pacific Coast Highway, Marina Drive, and 2nd Street
- Shorter block lengths at the project site to create more crossing opportunities

PROJECT TRAFFIC VOLUMES

TRIP GENERATION

The proposed project will generate additional vehicular travel in the study area. Given the mixed-use nature of the site, it will not generate traffic in a similar manner as traditional development sites. As such, the trip generation analysis considers the combined effects of the Project's mixed uses, regional location, demographics, and development scale. These factors contribute to a reduction (when compared to national homogeneous development projects) in off-site average weekday vehicle "trips" (e.g., one vehicle trip is when a person drives from their home to school, shopping or their job; their return drive home is counted as another trip). This reduction is due largely to the Project's ability to "internally capture" these trips. That is, most of the reduction in total daily vehicle off-site trips generated by the Project is attributable to those trips beginning and ending on the Project site. (e.g., both a person's home and their job, shopping or local school are on the project site.).

Traditionally, traffic engineers and transportation planners have estimated internalization of project trips using one of two methods. First, they would estimate it based on their professional judgment. Alternatively, professionals relied on the Institute of Transportation Engineers' (ITE) internalization methodology presented in the ITE Trip Generation Handbook. Although this has been applied in thousands of studies in California, the methodology is limited as it was based on only six surveys conducted in Florida. Additionally, the ITE internalization methodology only accounts for the land use types on the mixed-use site. Given the limited input information (land use amount and type) and the limited range of data (six surveys), the accuracy of the internalization estimates has recently been found to generally under-estimate internalization of trips from mixed-use projects.

Seeing the limited data set and simplified methodology applied in the ITE handbook, the United States Environmental Protection Agency (EPA) commissioned a study to develop a more substantial, statistically superior methodology. This methodology, identified as MXD (or mixed-use development trip generation), begins with ITE rates and develops trip internalization estimates in the ITE based on a series of factors tied to numerous site attributes. The MXD methodology is described in greater detail below.

<u>MXD Trip Internalization Methodology</u>

The internal capture percentage reported is not an "assumed" number, but rather is a number that was derived using a best practices trip generation model designed specifically for mixed-use development (MXD) projects. The MXD model was developed through collaboration between consultants, the EPA, and an academic research team. The MXD model estimates trip generation and internal capture by adjusting trip generation rates to account for the influence of built environment variables. A variety of research studies have demonstrated that these variables influence vehicle trip generation, most of which are summarized on the EPA's website (http://www.epa.gov/smartgrowth/mxd_tripgeneration.html).

Variables used in the MXD model include general site information such as geographic factors, the land use of the surrounding area, and site/surrounding area demographics. Geographic factors, such as the site of the developed area and intersection density, influence internalization from a spatial standpoint – the denser the area the more likely certain types of trips can be completed within the mixed-use development and without the need to travel externally. Land use factors and demographics, such as employment, average household size, and vehicle ownership, influence how people in the mixed-used development might decide to travel.

The MXD model was developed based on household travel survey data obtained from 239 existing mixed-use developments in six metropolitan regions throughout the U.S., including San Diego and Sacramento. The internal capture percentage calculated for the project is reflective of the varied land uses that would be developed as part of the Project, which would reduce the need to travel beyond the Project site, and is also consistent with the percentage found for other mixed-use developments of similar size and scope.

A set of 16 independent mixed use sites that were not included in the initial model were tested to help validate the model. Among the validation sites, use of the MXD model produced superior statistical performance when comparing the model results to observed data. Specifically, the MXD model had a significantly lower root mean squared error (RMSE) and higher pseudo-R squared than traditional methods when comparing estimated to observed external vehicle trips. Estimates from the ITE Trip Generation Manual had an RMSE of 40% and pseudo-R squared of 0.58 (i.e., the ITE method only explains about 58 percent of the variability in external vehicle trips), modified estimates using ITE's traditional trip internalization techniques had an RMSE of 32% and pseudo-R squared of 0.73, whereas modified estimates using the MXD model had an RMSE of only 26% and pseudo-R squared of 0.82. This means the MXD model is most accurate in predicting the actual observed external vehicle trips.

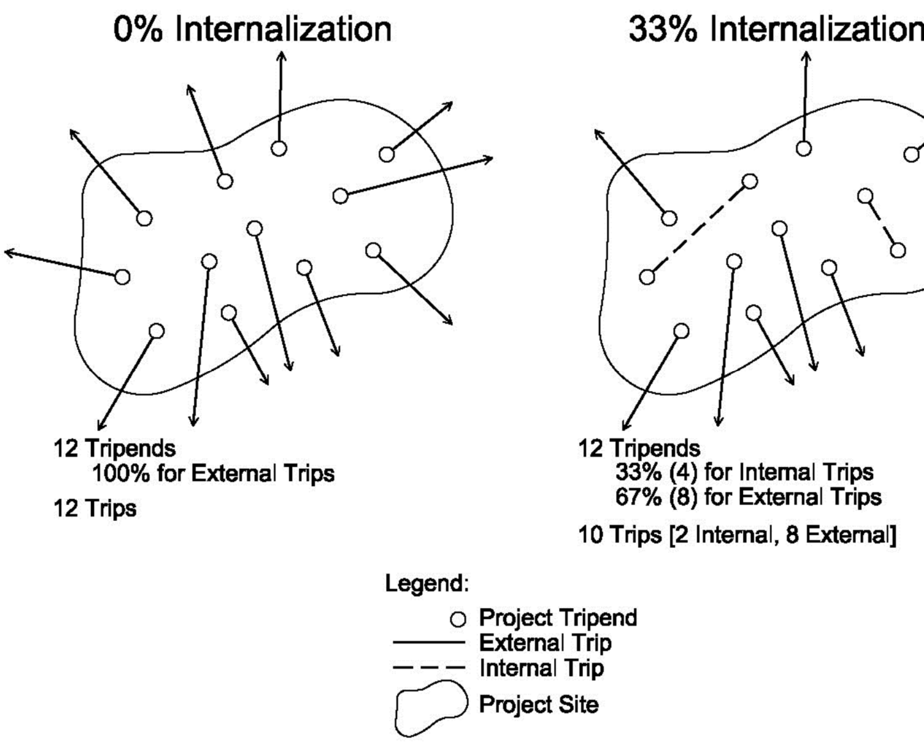
It should also be noted that the MXD model has been developed in cooperation with the EPA and ITE.

Given the statistical robustness of the MXD model, it was deemed the most appropriate approach for estimating internalization of project trips.

MXD Model Inputs and Trip Generation Estimates

To determine the amount of trips that would be internal to the Project site, an MXD trip generation estimate was prepared. The MXD analysis first begins with gross trip rates identified in the Institute of Transportation Engineers' Trip Generation (9th Edition, 2012). It then incorporates the MXD methodology for "matching" trips to estimate the amount of internalization within the project site.

It also is worth noting that internal capture represents the percentage of Project tripends for trips that would remain internal to the Project site, which differs from the overall percentage of the net number of Project trips that remain internal to the Project site. In layman's terms, since each trip has two tripends (i.e., the beginning of the trip and the end of the trip), if a project generates 100 internalized trip ends, this represents 50 trips that are internal to the Project site (i.e., 100 tripends/2 tripends per trip = 50 trips). As such, when the number of trips is applied to the tripends component of the project, the total internal capture is roughly twice that which would otherwise be accounted for in the trips component. An example of the relationship between tripends and trips is provided in the following illustration:



To develop trip estimates that would be generated by the changes in land use proposed by the Long Beach SEASP, Fehr & Peers developed trip estimates for the existing land use and the proposed land use in order to find the difference in trips between the two scenarios. This difference in trips is what is considered the project only trip generation estimates.

The MXD model inputs are shown in Table 4-1. These inputs shown were analyzed in MXD, which results in the existing trip generation as shown Table 4-2.

TABLE 4-1 EXISTING MXD MODEL INPUT VALUES

Input Variable	Input Value	Source
Developed Area (Acres)	1,520	Project Site
Transit Available within Site	Yes	Transit Maps
Employment within 1 mile of the Project Site	4,150	Estimated from SCAG 2012 Regional Transportation Plan
Employment within a 30 minute trip by Transit	1% of regional	SCAG 2012 Regional Transportation Plan
Single Family (Dwelling Units)	1,750	Project Land Use
Condominum/Townhouse (Dwelling Units)	2,329	Project Land Use

Input Variable	Input Value	Source
Retail (KSF)	637.3	Project Land Use
Office (KSF)	199.3	Project Land Use
Hotel (Rooms)	375	Project Land Use
Cinema (Seats)	4,504	Project Land Use
Elementary School (Students)	341	Project Land Use

Source: Fehr & Peers, 2016

TABLE 4-2 EXISTING LAND USE MXD TRIP GENERATION AND INTERNALIZATION ESTIMATES

Time Period	Gross Tripends	Net External Trips	Vehicle Tripend Internalization	Vehicle Trip Internalization
Daily	72,209	65,731	9%	5%
AM Peak Hour	4,486	3,047	32%	19%
PM Peak Hour	7,109	5,299	25%	15%

Source: Fehr & Peers, 2016

The proposed project input values show in Table 4-3 were analyzed with MXD, which results in the gross trip generation shown in Table 4-4.

TABLE 4-3 PROPOSED PROJECT MXD MODEL INPUT VALUES

Input Variable	Input Value	Source
Developed Area (Acres)	1,520	Project Site
Transit Available within Site	Yes	Transit Maps
Employment within 1 mile of the Project Site	4,150	Estimated from SCAG 2012 Regional Transportation Plan
Employment within a 30 minute trip by Transit	1% of regional	SCAG 2012 Regional Transportation Plan
Single Family (Dwelling Units)	1,750	Project Land Use
Condominum/Townhouse (Dwelling Units)	7,768	Project Land Use
Retail (KSF)	1,338.644	Project Land Use

Input Variable	Input Value	Source
Office (KSF)	109.8	Project Land Use
Hotel (Rooms)	425	Project Land Use
Elementary School (Students)	341	Project Land Use

Source: Fehr & Peers, 2016

After running the MXD model with the proposed land use, internalization was applied to the gross trip generation. However, MXD does not account for internalization for bicycle or pedestrian facility improvements that are contemplated in the project. As a result, the MXD internalization is under-predicting the share of active transportation. To account for pedestrian and bicycle activity, we utilized the California Air Pollution Control Officers Association (CAPCOA) methodology, which is considered the standard approach to analyzing internalization for bicycles and pedestrians.

The SEASP will offer pedestrian sidewalks on both sides of the street, providing connections within the site and off-site. The SEASP will also offer traffic calming measures on the streets and intersections in the project site. Using the CAPCOA methodology, these inputs result in a 2.5% split to active transportation. The SEASP will also offer an increase in bicycle lanes throughout the project site. CAPCOA specifies that for each increase in bicycle lane mile, an additional 1% of mode share can be accomplished. With all the pedestrian and bicycle facilities in the SEASP, the total active transportation mode share of 7.4% was identified and applied to the land use internalization calculated from MXD. The resulting trip generation after internalization is shown in Table 4-4.

TABLE 4-4 PROPOSED PROJECT MXD TRIP GENERATION AND INTERNALIZATION ESTIMATES

Time Period	Gross Tripends	Net External Trips	Vehicle Tripend Internalization	Vehicle Trip Internalization
Daily	124,075	101,170	37%	23%
AM Peak Hour	6,412	5,021	43%	28%
PM Peak Hour	11,226	8,569	47%	31%

Source: Fehr & Peers, 2016

TRIP DISTRIBUTION

The project trip distribution reflects the likely approach and departure routes to the project site, as determined through multiple sources such as the location of complementary land uses and existing traffic volumes on study roadways. Additionally, the 2010 Longitudinal Employer-Household Dynamics Origin Destination Employment Statistics were analyzed for the study area, which provide insight into local travel patterns. For purposes of trip distribution and assignment, the project site was separated into 14 zones to appropriately apply project trips to the network. Refer to Appendix E for the trip generation per zone. Trip distribution was assumed at a zone level with each zone containing a unique project trip distribution. All zones used similar assumptions for regional trip distribution and differences in distribution was typically based off geographic location relative to regional facilities. The trip distribution is shown in Figure 4-1.

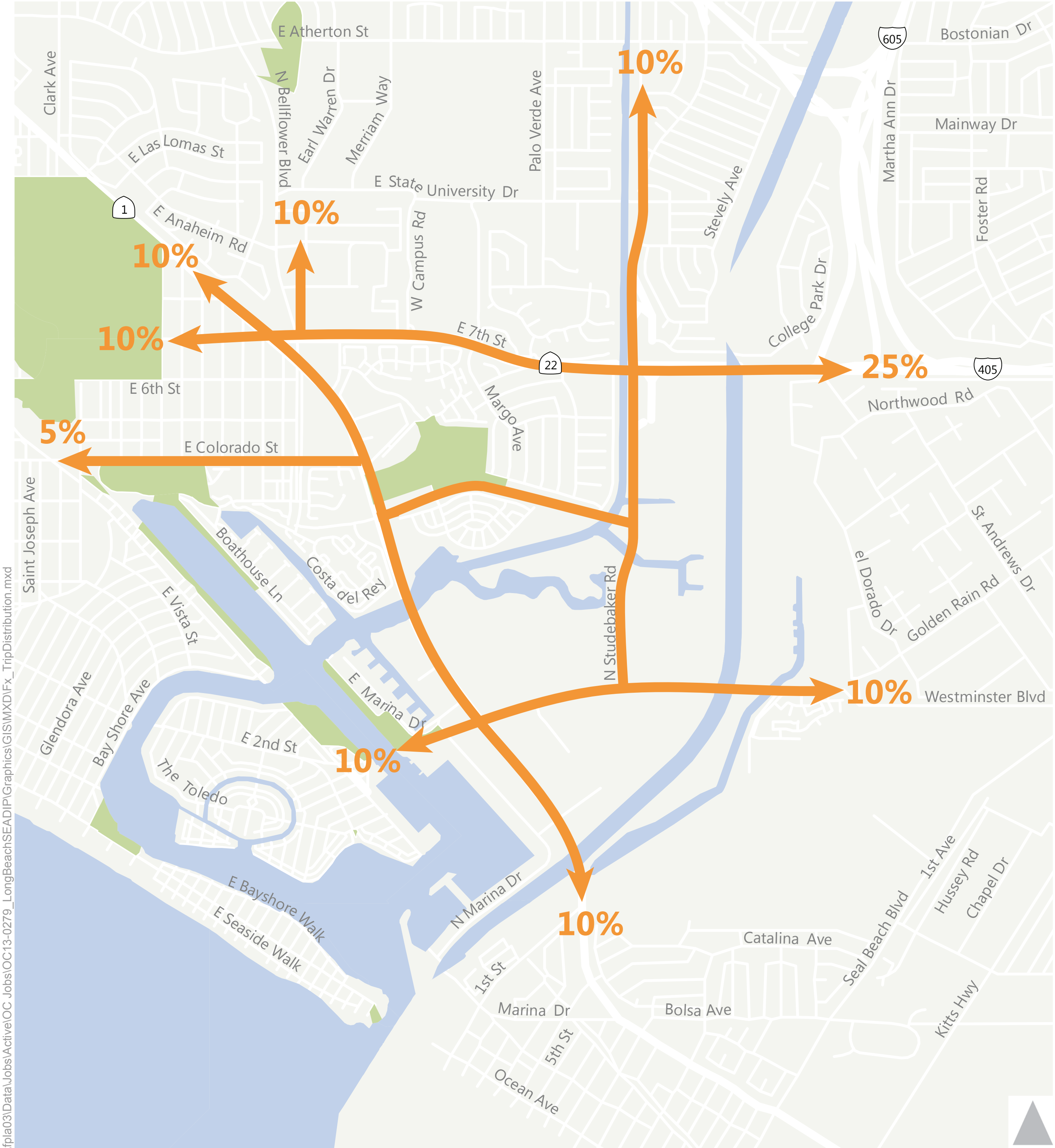
TRIP ASSIGNMENT

Based on the trip generation and trip distribution estimates developed and described above, project trips were assigned to the study area roadway network by district. The assignment of “project only” trips for the development is shown in Figure 4-2. Existing Plus Project volumes are shown in Figure 4-3.

Please note, for this assessment, roadway connection improvements were assumed for Marina Drive and Studebaker/Shopkeeper Road as proposed in the Specific Plan. Marina Drive will have two lanes connecting 2nd Street to Pacific Coast Highway. Studebaker Road/Shopkeeper Road will have two lanes and connect Pacific Coast Highway to 2nd Street. A portion of the trip forecast and project trip distribution were re-distributed along these new connections.

INTERSECTION OPERATIONS

Intersection LOS results and intersections impacts for Existing (2015) Plus Project Conditions are summarized in Table 4-5. LOS results are provided in Appendix B.



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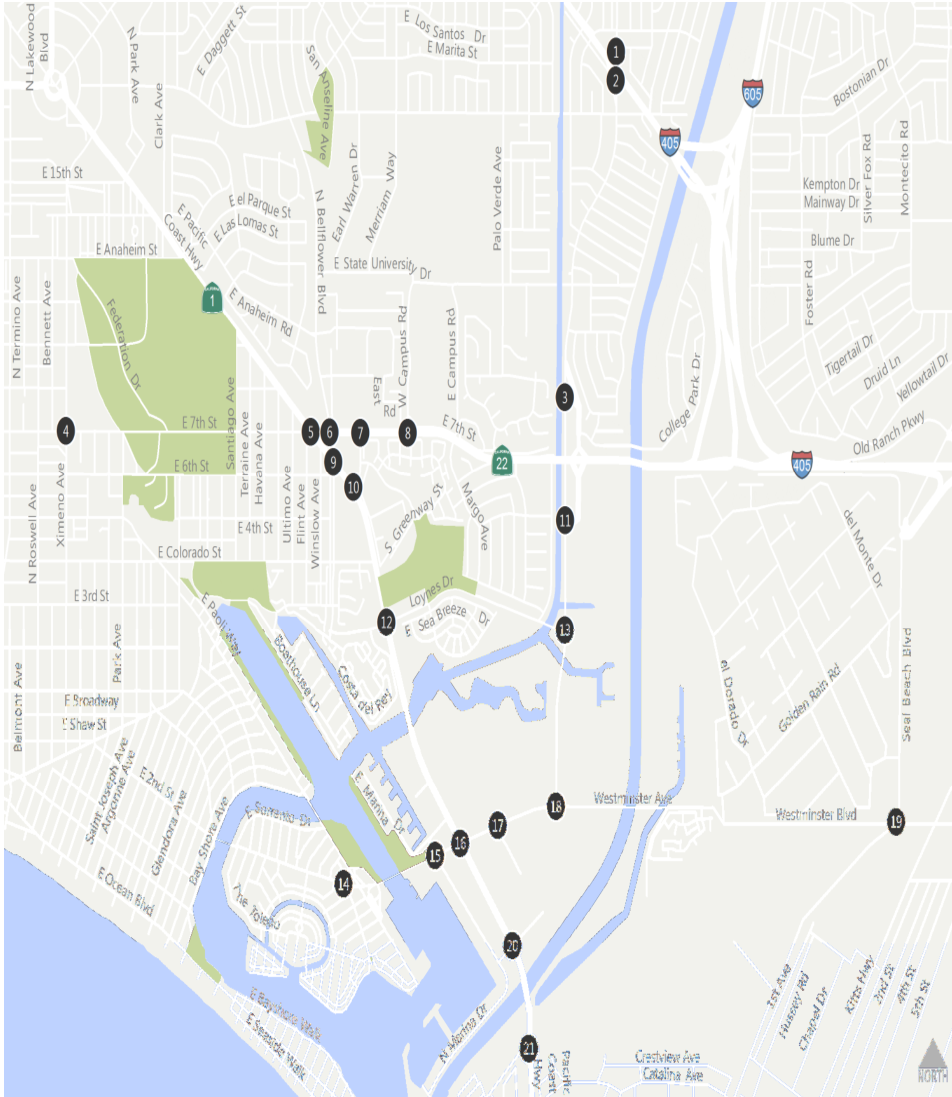
Trip Distribution

X%

Figure 4-1

Trip Distribution



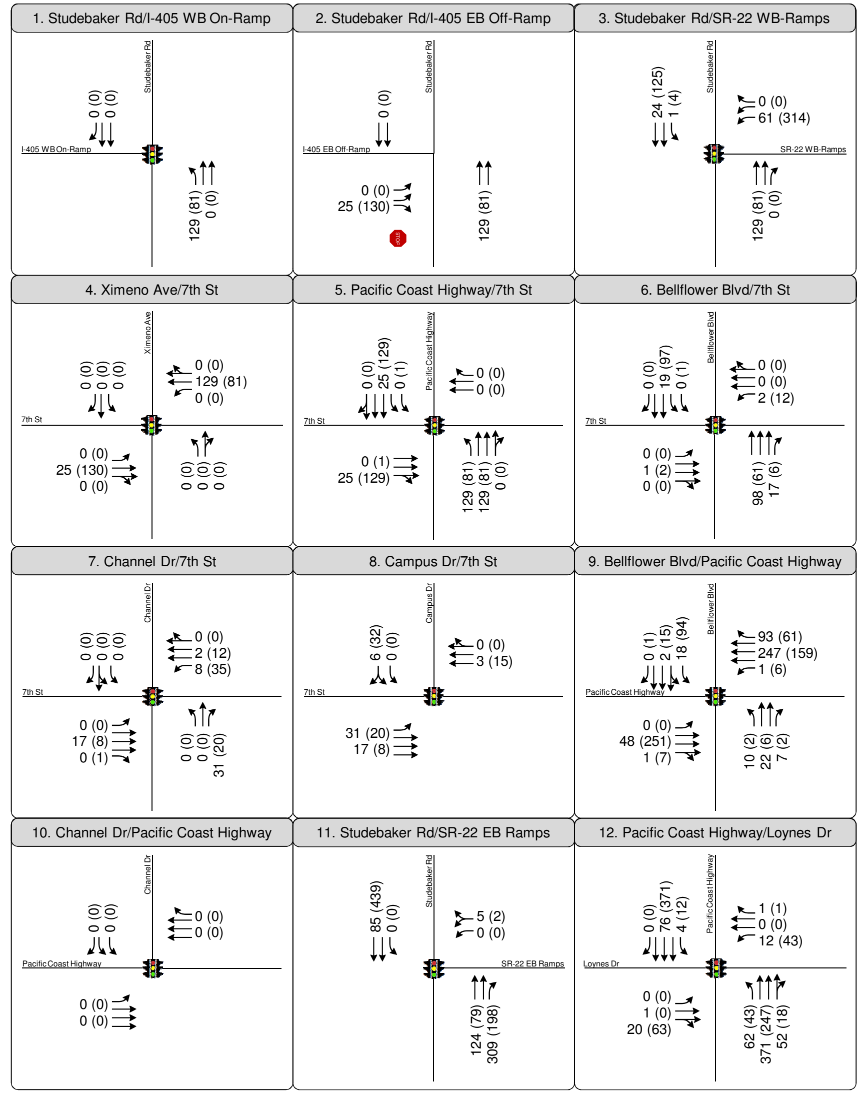
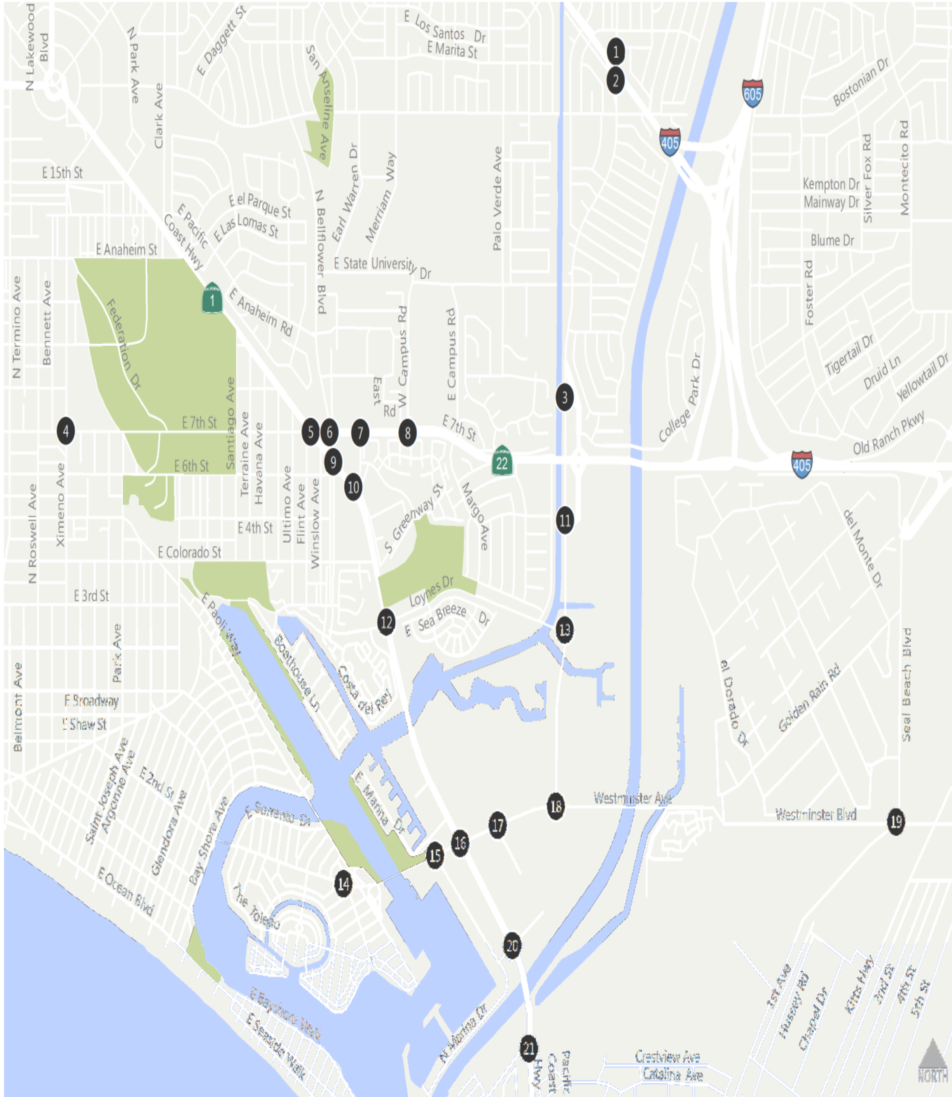


Figure 4-2
Peak Hour Traffic Volumes and Lane Configurations
Project Only



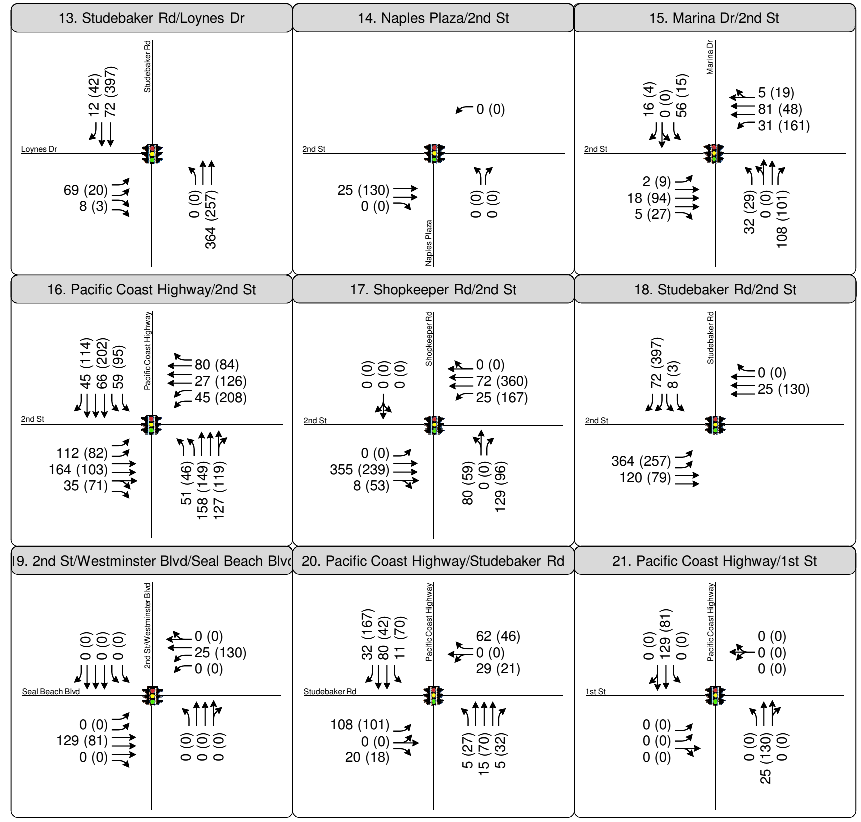
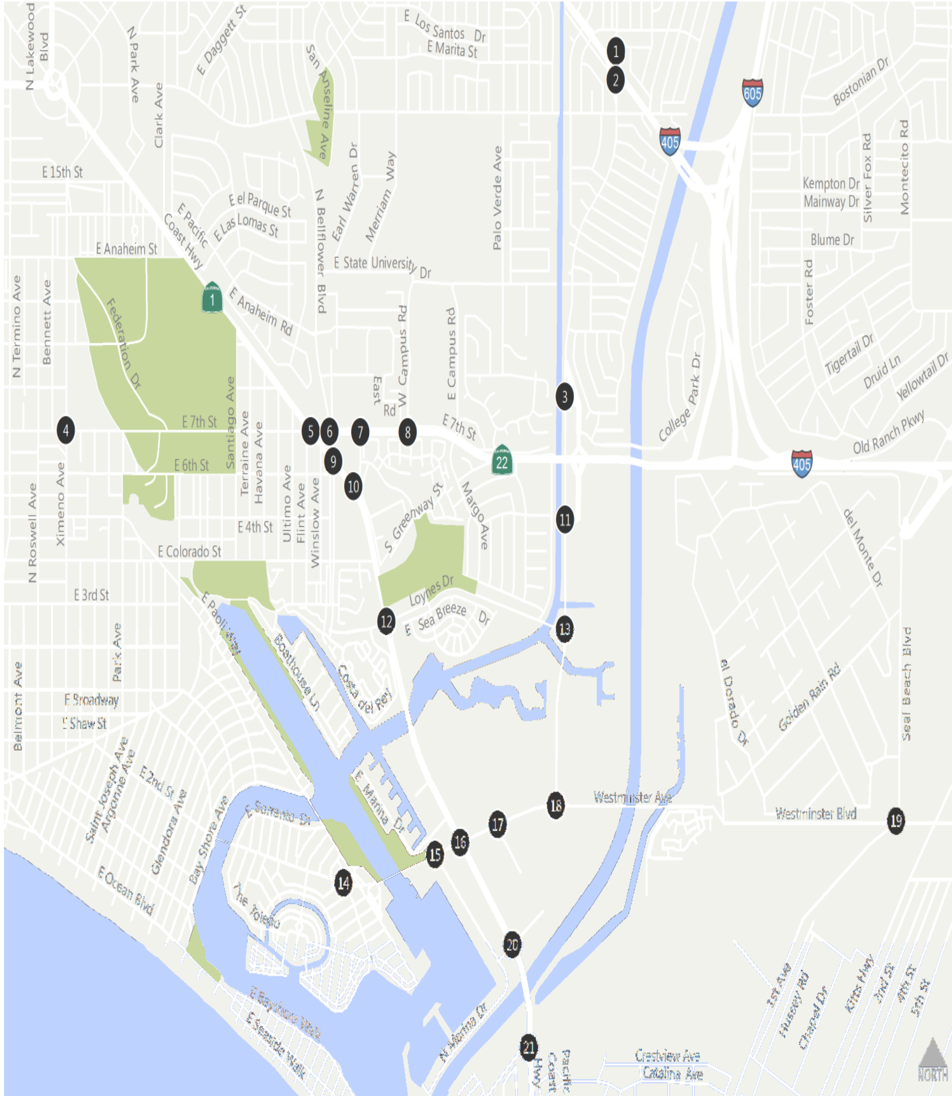


Figure 4-2
Peak Hour Traffic Volumes and Lane Configurations
Project Only



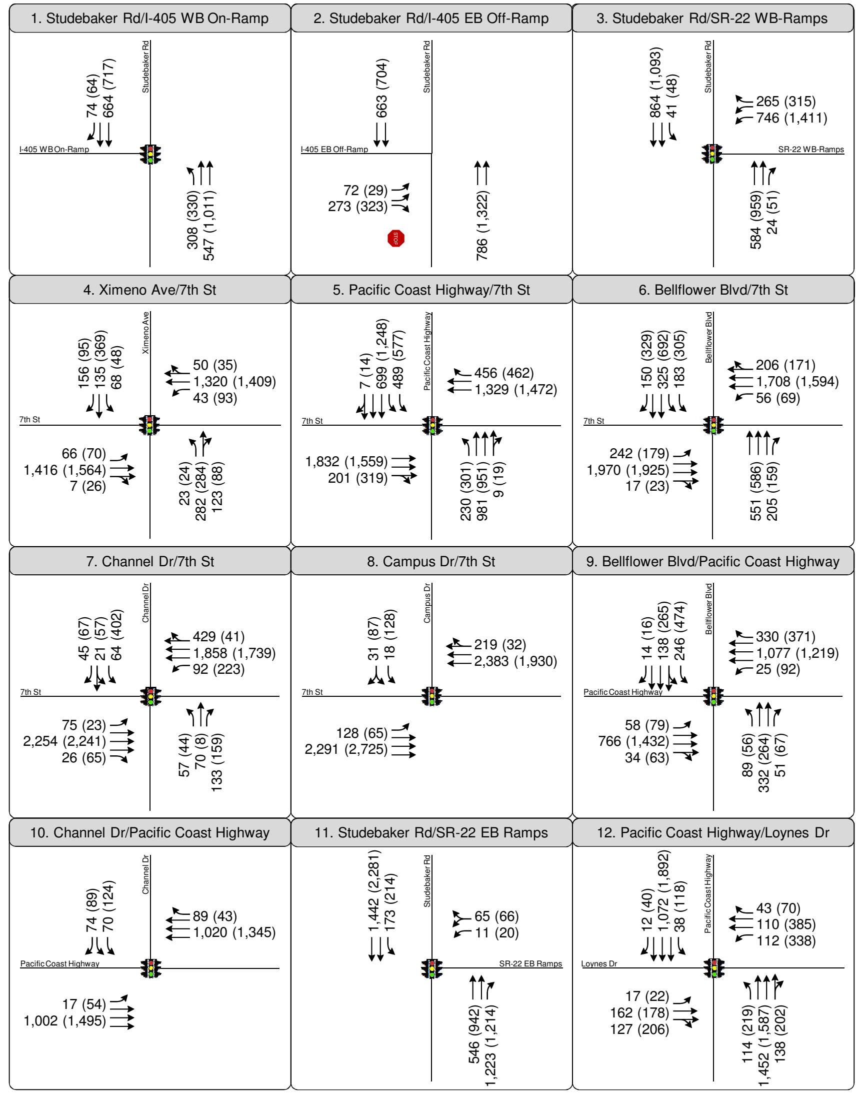
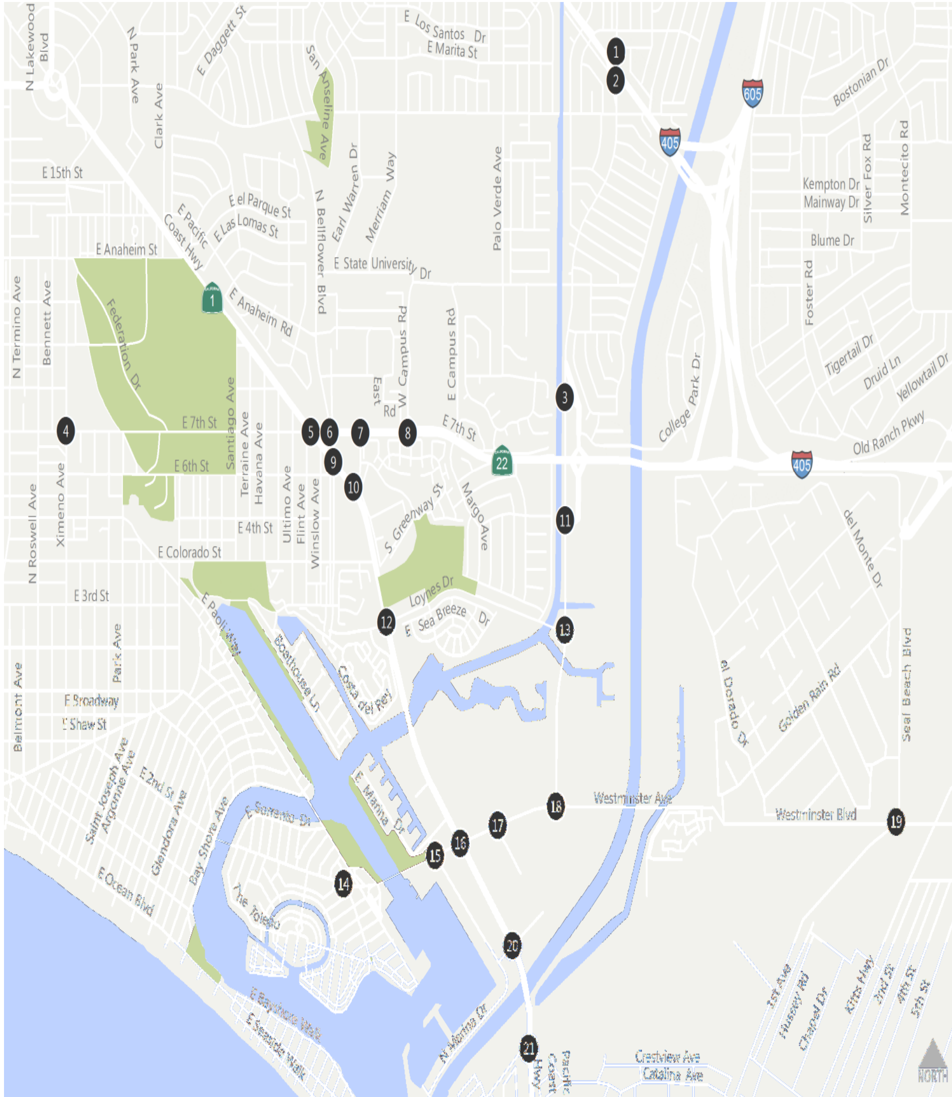


Figure 6-1
Peak Hour Traffic Volumes and Lane Configurations
Cumulative (2035) Plus Project Conditions



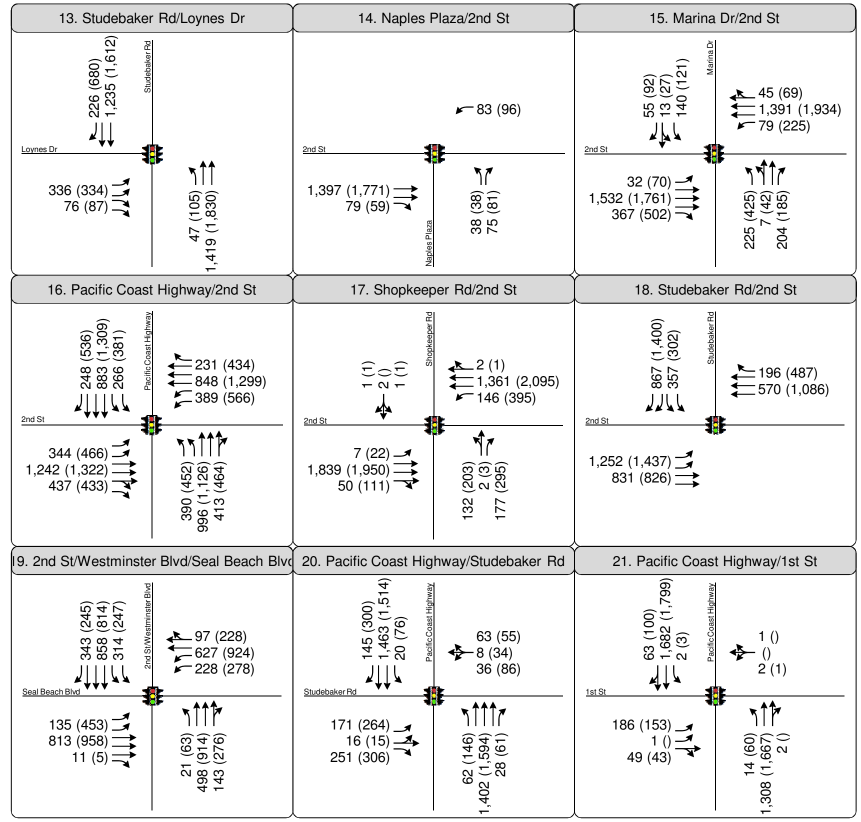


Figure 4-3
Peak Hour Traffic Volumes and Lane Configurations
Existing (2015) Plus Project Conditions

TABLE 4-5 INTERSECTION LEVEL OF SERVICE EXISTING (2015) PLUS PROJECT CONDITIONS

Intersection	Control	AM Peak		PM Peak	
		V/C[1] or Delay[2]	LOS	V/C[1] or Delay[2]	LOS
1. Studebaker Rd & I-405 Westbound On-Ramp[3]	Signal	15.1	B	13.4	B
2. Studebaker Rd & I-405 Eastbound Off-Ramp[4]	Side-Street Stop	13.2	B	13.4	B
3. Studebaker Rd & SR-22 Westbound Ramps	Signal	**40.2**	**D**	**>80.0**	**F**
4. 7th St & Zimeno Ave	Signal	**0.905**	**E**	**0.957**	**E**
5. Pacific Coast Hwy & 7th St	Signal	**52.5**	**D**	**78.2**	**E**
6. Bellflower Blvd & 7th St	Signal	**39.5**	**D**	**40.6**	**D**
7. Channel Dr & 7th St	Signal	7.3	A	**77.1**	**E**
8. Campus Dr & 7th St[3]	Signal	22.9	C	21.1	C
9. Bellflower Blvd & Pacific Coast Hwy	Signal	27.2	C	31.0	C
10. Channel Dr & Pacific Coast Hwy	Signal	15.6	B	11.6	B
11. Studebaker Rd & SR-22 Eastbound Ramps	Signal	5.9	A	6.1	A
12. Pacific Coast Hwy & Loynes Dr	Signal	29.0	C	**>80.0**	**F**
13. Studebaker Rd & Loynes Dr	Signal	0.691	B	0.817	D
14. 2nd St & Naples Plaza	Signal	0.662	B	0.787	C
15. Marina Dr & 2nd St	Signal	0.655	B	0.852	D
16. Pacific Coast Hwy & 2nd St	Signal	**75.6**	**E**	**>80.0**	**F**
17. Shopkeeper Rd & 2nd St	Signal	0.738	C	**1.002**	**F**
18. Studebaker Rd & 2nd St	Signal	0.738	C	0.883	D
19. 2nd St/Westminster Blvd & Seal Beach Blvd	Signal	0.585	A	**0.901**	**E**
20. Pacific Coast Hwy & Studebaker Rd	Signal	20.7	C	39.9	D
21. Pacific Coast Hwy & 1st St	Signal	14.9	B	17.0	B

Notes:
1. V/C for signalized intersections based on application of Intersection Capacity Utilization methodology using Traffix 7.9 software. V/C = Volume / Capacity Ratio.
2. Delay for unsignalized intersections based on application of Highway Capacity Methodology using Synchro 8 Build 806 software. Delay for side-street stop is reported as the worst-case approach delay.
3. Intersections were analyzed using Highway Capacity Manual 2000 as Highway Capacity Maunal 2010 does not analyze intersections with exclusive pedestrian phases.
4. Intersections were analyzed using Highway Capacity Manual 2000 as Highway Capacity Maunal 2010 does not analyze stop-controlled intersections with exclusive and shared turn lanes.
5. Intersections operating below acceptable LOS are shown in **bold**.

Source: Fehr & Peers, 2016

INTERSECTION IMPACTS

Intersection Impact Assessment

As shown in Table 4-6, the following study intersections are forecast to result in a significant impact based on agency thresholds for significance for Existing (2015) Plus Project Conditions:

- Westbound Ramps: SR-22 & Studebaker Road – AM Peak Hour (LOS D), PM Peak Hour (LOS F)
- Ximeno Avenue & 7th Street – AM Peak Hour (LOS E), PM Peak Hour (LOS E)
- Pacific Coast Highway & 7th Street – AM Peak Hour (LOS D), PM Peak Hour (LOS E)
- Bellflower Boulevard & 7th Street – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Channel Drive & 7th Street – PM Peak Hour (LOS E)
- Pacific Coast Highway & Loynes Drive – PM Peak Hour (LOS F)
- Pacific Coast Highway & 2nd Street – AM Peak Hour (LOS E), PM Peak Hour (LOS F)
- Shopkeeper Road & 2nd Street – PM Peak Hour (LOS F)
- 2nd Street/Westminster Boulevard & Seal Beach Boulevard – PM Peak Hour (LOS E)

TABLE 4-6 EXISTING (2015) PLUS PROJECT SIGNIFICANT IMPACTS

Intersection	Trafic Control	Peak Hour	Existing (2015) No Project		Existing (2015) Plus Project			Significant Impact?
			V/C[1] or Delay[2]	LOS	V/C[1] or Delay[2]	LOS	Project Change	
3. Studebaker Rd & SR-22 Westbound Ramps	Signal	AM	30.6	C	40.2	**D**	9.6	Yes
		PM	>80.0	**F**	>80.0	**F**	N/A	Yes
4. Ximeno Ave & 7th St	Signal	AM	0.899	D	0.905	**E**	0.006	Yes
		PM	0.910	**E**	0.957	**E**	0.047	Yes
5. Pacific Coast Hwy & 7th St	Signal	PM	59.6	**E**	78.2	**E**	18.6	Yes
7. Channel Dr & 7th St	Signal	PM	61.0	**E**	77.1	**E**	16.1	Yes
12. Pacific Coast Hwy & Loynes Dr	Signal	PM	38.3	D	>80.0	**E**	N/A	Yes
16. Pacific Coast Hwy & 2nd St	Signal	AM	56.5	**E**	75.6	**E**	19.1	Yes
		PM	68.8	**E**	>80.0	**F**	N/A	Yes
17. Shopkeeper Rd & 2nd St	Signal	PM	0.788	C	1.002	**F**	0.214	Yes
19. 2nd St/Westminster Blvd & Seal Beach Blvd	Signal	PM	0.857	D	0.901	**E**	0.044	Yes

Notes:

1. V/C for signalized intersections based on application of Intersection Capacity Utilization methodology using Traffix software. V/C = Volume / Capacity Ratio.
2. **Bold** indicates an LOS below the acceptable threshold.
3. Delay is average intersection delay (seconds) based on application of the Highway Capacity Manual 2010 methodology using Synchro 8 Build 806 software.
4. Highway Capacity Manual 2010 methodology cannot accurately estimate the change in delay for intersections operating at an average delay of 80 seconds or more.

Source: Fehr & Peers, 2016

5. CUMULATIVE YEAR (2035) NO PROJECT TRAFFIC CONDITIONS

This chapter evaluates the Cumulative Year (2035) No Project conditions. This scenario includes the addition of ambient growth from Existing volumes to Year 2035.

TRAFFIC FORECASTS

Future volumes for Cumulative Year (2035) Conditions were developed using a 0.505 percent per year growth rate consistent with the Los Angeles County CMP Guidelines. The growth rate accounts for pending and approved projects within the City of Long Beach as well as regional growth anticipated by Year 2035. Cumulative Year (2035) No Project AM and PM peak hour traffic volumes for study intersections are shown on Figure 5-1.

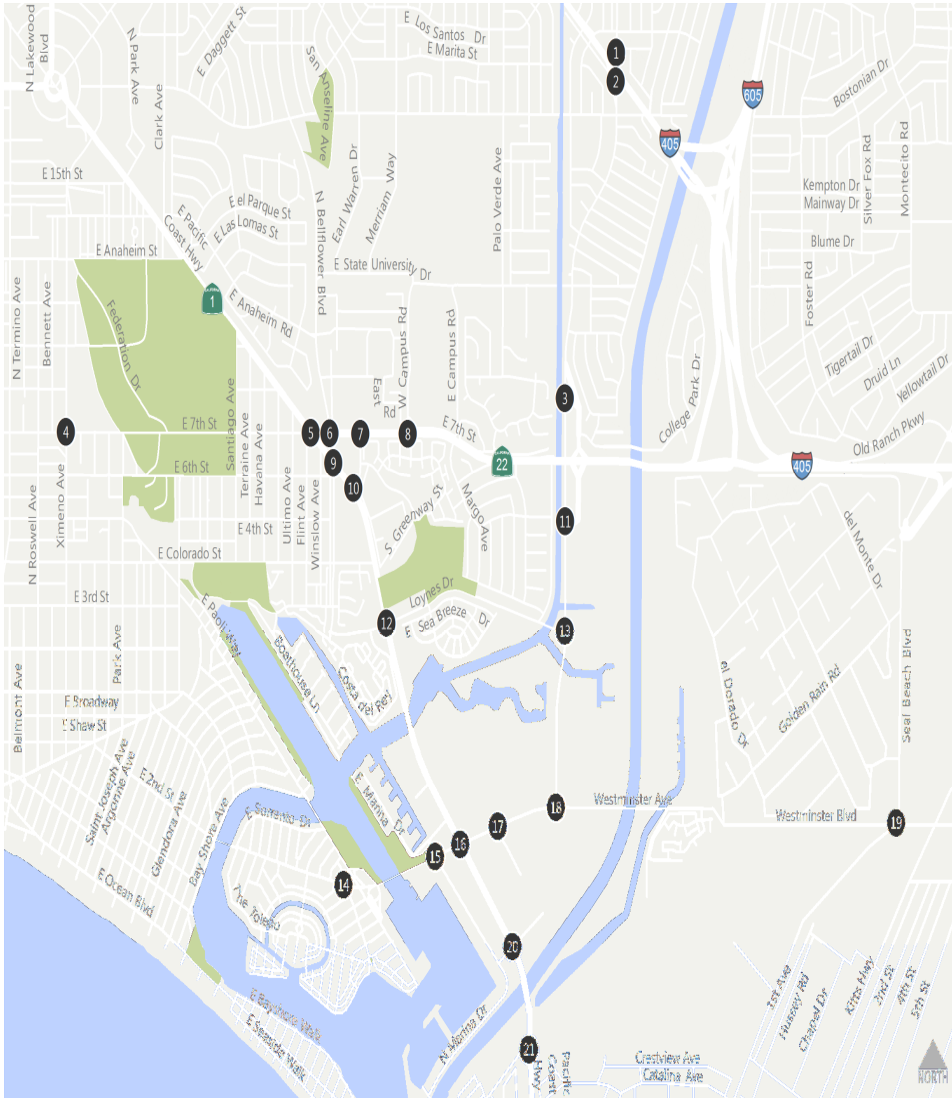
The growth rate applied to the Existing Year (2015) counts accounts for population and area growth. However, current pending or approved projects will generate additional traffic that needs to be accounted for individually. Cumulative projects within and outside of the SEASP area. The City of Long has the following approved and pending development projects:

- Consolidated Coastal Development will remove and consolidate existing industrial operations at the Synergy Oil Field.
- AES Battery grid energy storage facility will be constructed along Studebaker Road north of the existing AES facility.
- Light Industrial Development on Studebaker Road will zone for commercial/industrial uses, however the project has been stalled since September 2014.
- Demolition of the existing Seaport Marina Hotel and construction of a commercial center with retail and restaurant space located at the corner of 2nd St & Pacific Coast Highway.
- The Belmont Pool Revitalization Project will involve construction and operation of a replacement pool complex, providing seating for up to 3,500 people, at Olympic Plaza.

Although these are pending or approved projects, the City of Long Beach directed Fehr & Peers to only consider the demolition of the Seaport Marina Hotel and construction of the commercial center as the pending and approved project. All other project traffic is considered in buildout growth.

The City of Seal Beach directed Fehr & Peers to use the following approved and pending development project:

- 28 home residential subdivision southwest of 1st St & Pacific Coast Highway.



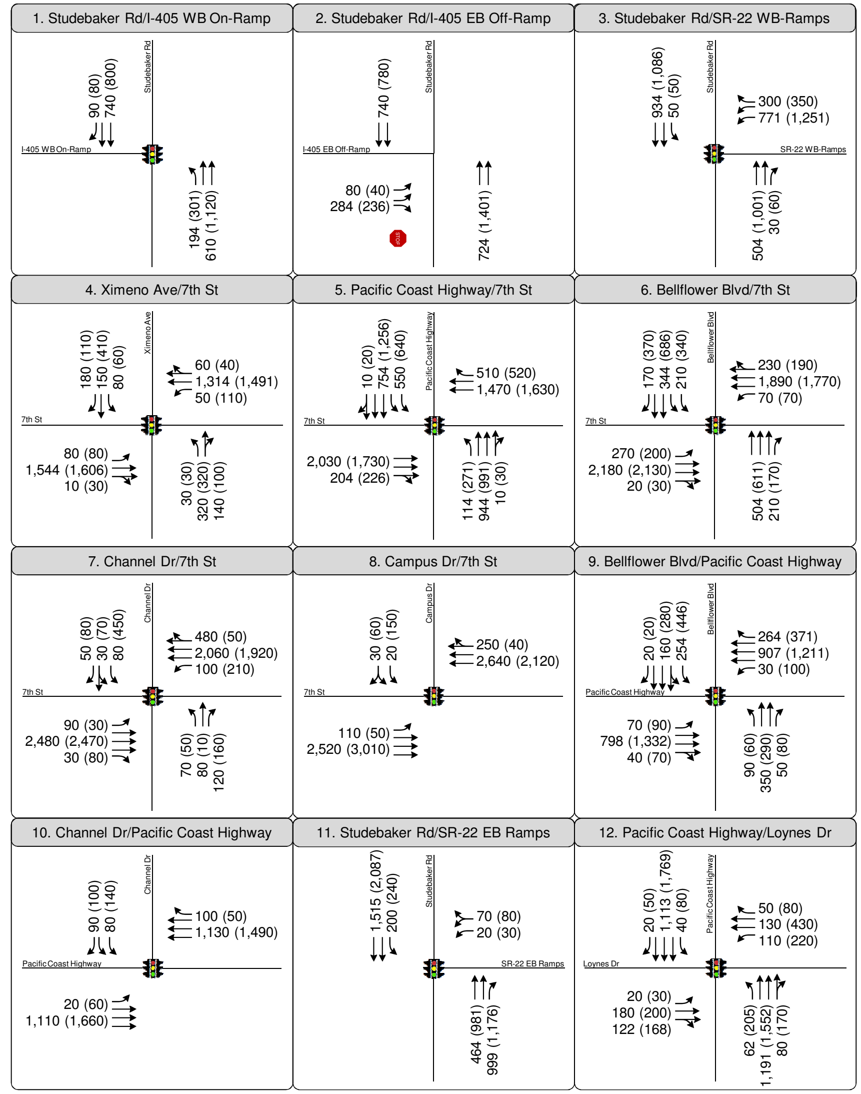


Figure 5-1
Peak Hour Traffic Volumes and Lane Configurations
Cumulative (2035) No Project Conditions

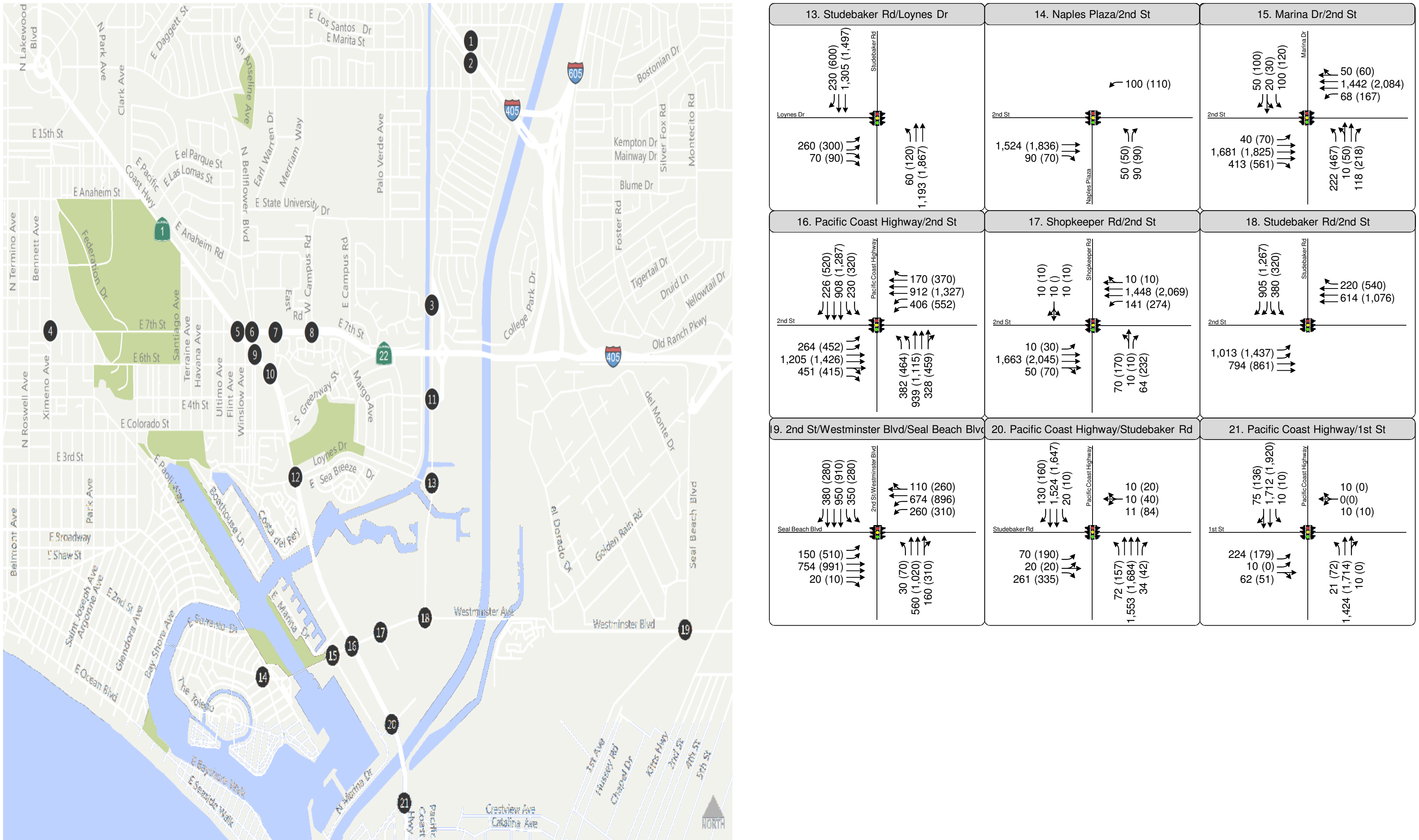


Figure 5-1
Peak Hour Traffic Volumes and Lane Configurations
Cumulative (2035) No Project Conditions

INTERSECTION OPERATIONS

Intersection LOS results for Cumulative Year (2035) No Project Conditions are summarized in Table 5-1. LOS sheets are provided in Appendix B. The following ten (10) intersections are expected to operate at a deficient LOS during one or more peak hours for Cumulative Year (2035) No Project Conditions:

- Studebaker Road & SR-22 Westbound Ramps – AM Peak Hour (LOS D), PM Peak Hour (LOS F)
- Ximeno Avenue & 7th Street – AM Peak Hour (LOS E), PM Peak Hour (LOS F)
- Pacific Coast Highway & 7th Street – AM Peak Hour (LOS F), PM Peak Hour (LOS F)
- Bellflower Boulevard & 7th Street – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Channel Drive & 7th Street – PM Peak Hour (LOS F)
- Campus Drive & 7th Street – AM Peak Hour (LOS D)
- Pacific Coast Highway & Loynes Drive – PM Peak Hour (LOS E)
- Pacific Coast Highway & 2nd Street – AM Peak Hour (LOS E), PM Peak Hour (LOS F)
- Seal Beach Boulevard & 2nd Street/Westminster Boulevard – PM Peak Hour (LOS E)
- Pacific Coast Highway & Studebaker Road – PM Peak Hour (LOS E)

TABLE 5-1 INTERSECTION LEVEL OF SERVICE CUMULATIVE YEAR (2035) NO PROJECT CONDITIONS

Intersection	Control	AM Peak		PM Peak	
		V/C[1] or Delay[2]	LOS	V/C[1] or Delay[2]	LOS
1. Studebaker Rd & I-405 Westbound On-Ramp[3]	Signal	9.2	A	11.8	B
2. Studebaker Rd & I-405 Eastbound Off-Ramp[4]	Side-Street Stop	13.2	B	14.3	B
3. Studebaker Rd & SR-22 Westbound Ramps	Signal	**36.9**	**D**	**>80.0**	**F**
4. 7th St & Zimeno Ave	Signal	**0.995**	**E**	**1.017**	**F**
5. Pacific Coast Hwy & 7th St	Signal	**>80.0**	**F**	**>80.0**	**F**
6. Bellflower Blvd & 7th St	Signal	**48.4**	**D**	**51.0**	**D**
7. Channel Dr & 7th St	Signal	10.4	B	**>80.0**	**F**
8. Campus Dr & 7th St[3]	Signal	**40.8**	**D**	32.6	C
9. Bellflower Blvd & Pacific Coast Hwy	Signal	28.8	C	31.6	C
10. Channel Dr & Pacific Coast Hwy	Signal	15.1	B	11.6	B
11. Studebaker Rd & SR-22 Eastbound Ramps	Signal	6.8	A	7.4	A
12. Pacific Coast Hwy & Loynes Dr	Signal	30.3	C	**57.7**	**E**
13. Studebaker Rd & Loynes Dr	Signal	0.672	B	0.809	D
14. 2nd St & Naples Plaza	Signal	0.724	C	0.833	D
15. Marina Dr & 2nd St	Signal	0.672	B	0.844	D
16. Pacific Coast Hwy & 2nd St	Signal	**69.8**	**E**	**>80.0**	**F**
17. Shopkeeper Rd & 2nd St	Signal	0.655	B	0.900	D
18. Studebaker Rd & 2nd St	Signal	0.686	B	0.896	D
19. 2nd St/Westminster Blvd & Seal Beach Blvd	Signal	0.634	B	**0.948**	**E**
20. Pacific Coast Hwy & Studebaker Rd	Signal	17.3	B	**56.9**	**E**
21. Pacific Coast Hwy & 1st St	Signal	19.5	B	19.3	B

Notes:
1. V/C for signalized intersections based on application of Intersection Capacity Utilization methodology using Traffix 7.9 software. V/C = Volume / Capacity Ratio.
2. Delay for unsignalized intersections based on application of Highway Capacity Methodology using Synchro 8 Build 806 software. Delay for side-street stop is reported as the worst-case approach delay.
3. Intersections were analyzed using Highway Capacity Manual 2000 as Highway Capacity Maunal 2010 does not analyze intersections with exclusive pedestrian phases.
4. Intersections were analyzed using Highway Capacity Manual 2000 as Highway Capacity Maunal 2010 does not analyze stop-controlled intersections with exclusive and shared turn lanes.
5. Intersections operating below acceptable LOS are shown in **bold.**

Source: Fehr & Peers, 2016

6. CUMULATIVE YEAR (2035) PLUS PROJECT TRAFFIC CONDITIONS

This chapter evaluates the Cumulative Year (2035) Plus Project conditions. This scenario analyzes the intersection conditions with the addition of ambient growth (0.505 percent per year) to Cumulative Year (2035) and traffic generated from the proposed project. Cumulative (2035) Plus Project traffic volumes and lane configurations are shown in Figure 6-1.

TRAFFIC FORECASTS

To estimate Cumulative Year Plus Project traffic volumes, the project-only volumes were added to Cumulative Year No Project traffic volumes based on the trip generation and trip distribution assumptions summarized previously. The resulting Cumulative Year Plus Project traffic volumes are shown on Figure 6-1.

INTERSECTION OPERATIONS

Intersection LOS results for Cumulative Year Plus Project Conditions are summarized in Table 6-1. LOS results are provided in Appendix B. Fifteen (15) intersections are forecast to operate at a deficient LOS during one or more peak hours for Cumulative Year (2035) Plus Project Conditions, as shown in Table 6-1.

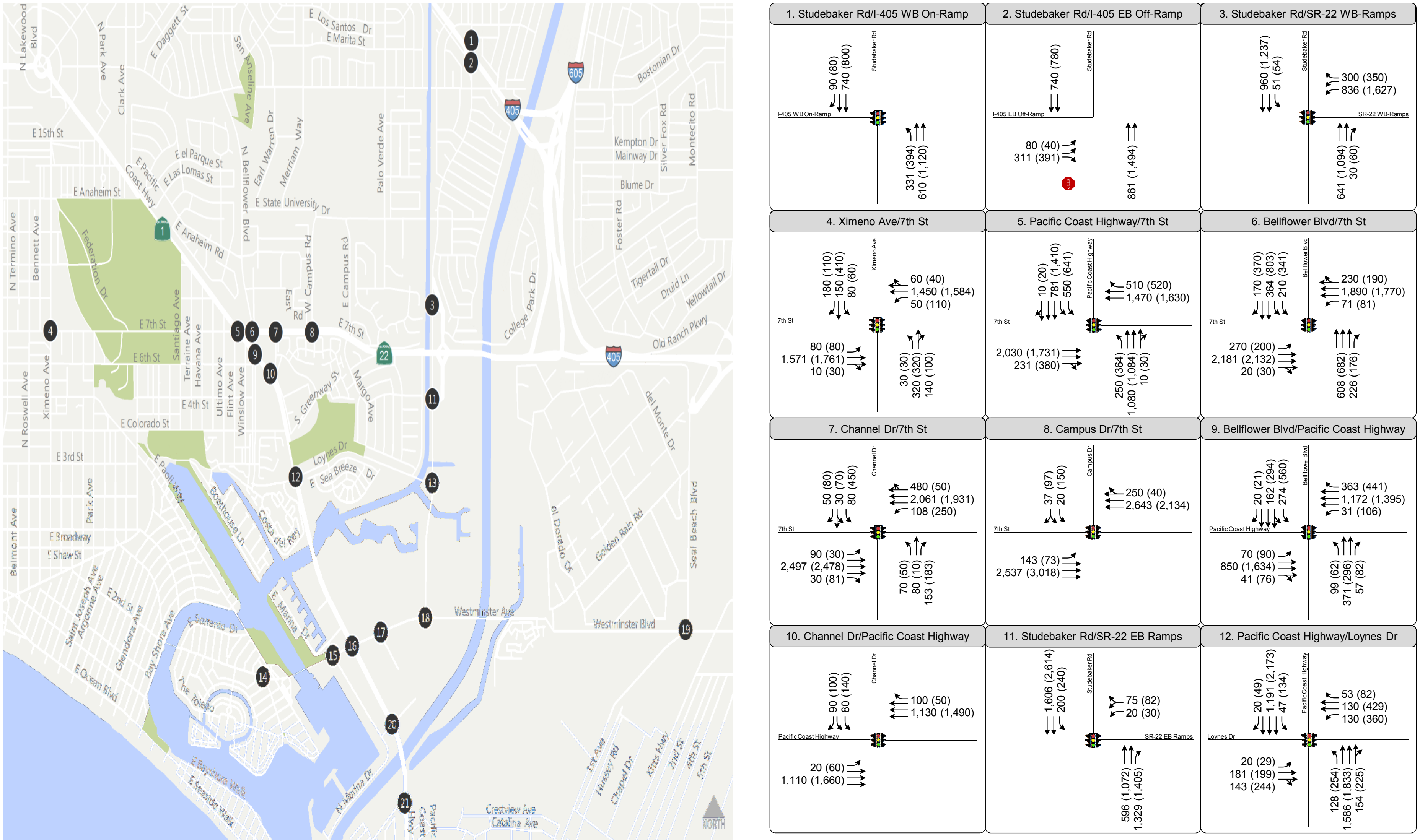
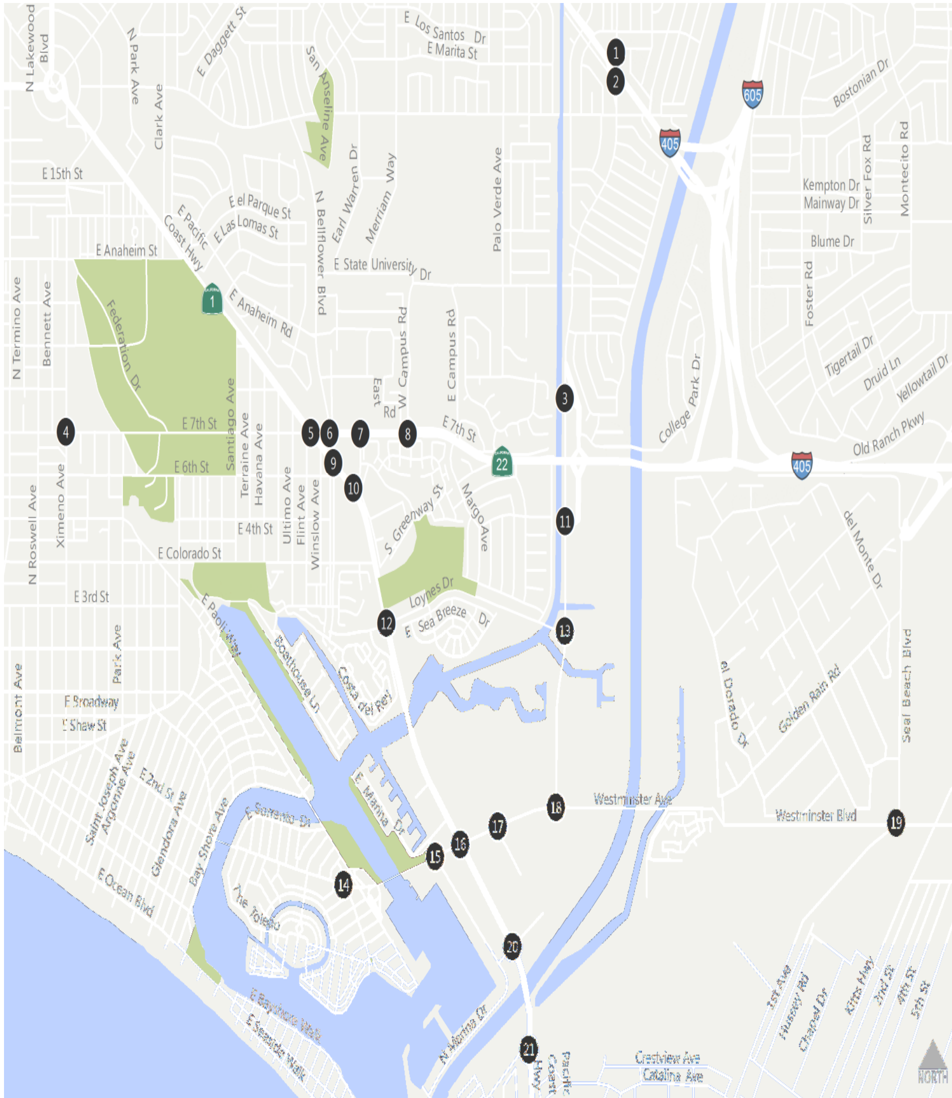


Figure 6-1
Peak Hour Traffic Volumes and Lane Configurations
Cumulative (2035) Plus Project Conditions



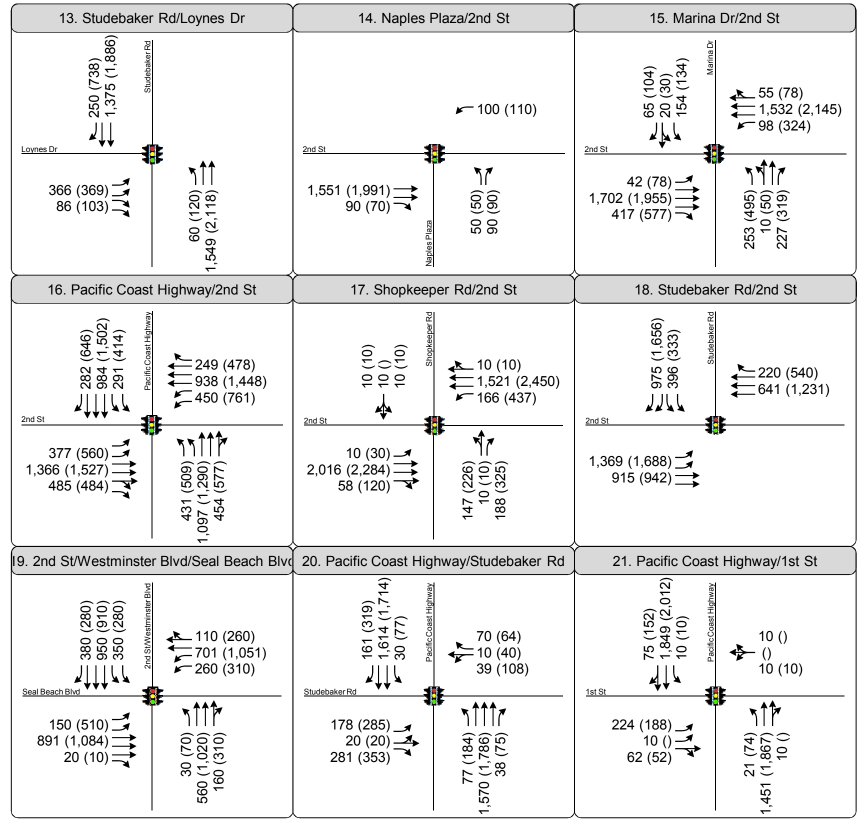


Figure 6-1
Peak Hour Traffic Volumes and Lane Configurations
Cumulative (2035) Plus Project Conditions

TABLE 6-1 INTERSECTION LEVEL OF SERVICE CUMULATIVE (2035) PLUS PROJECT CONDITIONS

Intersection	Control	AM Peak		PM Peak	
		V/C[1] or Delay[2]	LOS	V/C[1] or Delay[2]	LOS
1. Studebaker Rd & I-405 Westbound On-Ramp[3]	Signal	15.7	B	14.3	B
2. Studebaker Rd & I-405 Eastbound Off-Ramp[4]	Side-Street Stop	13.7	B	15.5	C
3. Studebaker Rd & SR-22 Westbound Ramps	Signal	**47.1**	**D**	**>80.0**	**F**
4. 7th St & Ximeno Ave	Signal	**0.999**	**E**	**1.068**	**F**
5. Pacific Coast Hwy & 7th St	Signal	**>80.0**	**F**	**>80.0**	**F**
6. Bellflower Blvd & 7th St	Signal	**55.6**	**E**	**63.6**	**E**
7. Channel Dr & 7th St	Signal	11.2	B	**>80.0**	**F**
8. Campus Dr & 7th St[3]	Signal	**50.6**	**D**	35.3	C
9. Bellflower Blvd & Pacific Coast Hwy	Signal	29.3	C	38.8	D
10. Channel Dr & Pacific Coast Hwy	Signal	14.5	B	10.0	A
11. Studebaker Rd & SR-22 Eastbound Ramps	Signal	6.5	A	**39.9**	**D**
12. Pacific Coast Hwy & Loynes Dr	Signal	30.4	C	**>80.0**	**F**
13. Studebaker Rd & Loynes Dr	Signal	0.741	C	**0.922**	**E**
14. 2nd St & Naples Plaza	Signal	0.728	C	0.872	D
15. Marina Dr & 2nd St	Signal	0.716	C	**0.979**	**E**
16. Pacific Coast Hwy & 2nd St	Signal	**>80.0**	**F**	**>80.0**	**F**
17. Shopkeeper Rd & 2nd St	Signal	0.812	D	**1.130**	**F**
18. Studebaker Rd & 2nd St	Signal	0.798	C	**0.996**	**E**
19. 2nd St/Westminster Blvd & Seal Beach Blvd	Signal	0.643	B	**1.005**	**F**
20. Pacific Coast Hwy & Studebaker Rd	Signal	25.2	C	**74.9**	**E**
21. Pacific Coast Hwy & 1st St	Signal	19.2	B	47.7	D

Notes:
1. V/C for signalized intersections based on application of Intersection Capacity Utilization methodology using Traffix 7.9 software. V/C = Volume / Capacity Ratio.
2. Delay for unsignalized intersections based on application of Highway Capacity Methodology using Synchro 8 Build 806 software. Delay for side-street stop is reported as the worst-case approach delay.
3. Intersections were analyzed using Highway Capacity Manual 2000 as Highway Capacity Maunal 2010 does not analyze intersections with exclusive pedestrian phases.
4. Intersections were analyzed using Highway Capacity Manual 2000 as Highway Capacity Maunal 2010 does not analyze stop-controlled intersections with exclusive and shared turn lanes.
5. Intersections operating below acceptable LOS are shown in **bold**.

Source: Fehr & Peers, 2016

INTERSECTION IMPACTS

As shown in Table 6-2, the addition of project traffic are forecast to cause a significant impact at the following based on agency thresholds of significance for Cumulative Year (2035) Plus Project conditions:

- Studebaker Road & SR-22 Westbound Ramps – AM Peak Hour (LOS D), PM Peak Hour (LOS F)
- Ximeno Avenue & 7th Street – PM Peak Hour (LOS F)
- Pacific Coast Highway & 7th Street – AM Peak Hour (LOS F), PM Peak Hour (LOS F)
- Bellflower Boulevard & 7th Street – AM Peak Hour (LOS E), PM Peak Hour (LOS E)
- Channel Drive & 7th Street – PM Peak Hour (LOS F)
- Campus Drive & 7th Street – AM Peak Hour (LOS D)
- Pacific Coast Highway & Loynes Drive – PM Peak Hour (LOS F)
- Studebaker Road & Loynes Drive – PM Peak Hour (LOS E)
- Marina Drive & 2nd Street – PM Peak Hour (LOS E)
- Pacific Coast Highway & 2nd Street – AM Peak Hour (LOS F), PM Peak Hour (LOS F)
- Shopkeeper Road & 2nd Street – PM Peak Hour (LOS F)
- Studebaker Road & 2nd Street – PM Peak Hour (LOS E)
- Seal Beach Boulevard & 2nd St/Westminster Bloulevard – PM Peak Hour (LOS F)
- Pacific Coast Highway & Studebaker Road – PM Peak Hour (LOS E)

TABLE 6-2 CUMULATIVE (2035) PLUS PROJECT SIGNIFICANT IMPACTS

Intersection	Trafic Control	Peak Hour	Cumulative (2035) No Project		Cumulative (2035) Plus Project			Significant Impact?
			V/C[1] or Delay[2]	LOS	V/C[1] or Delay[2]	LOS	Project Change	
3. Studebaker Rd & SR-22 Westbound Ramps	Signal	AM	36.9	D	47.1	**D**	10.2	Yes
		PM	>80.0	**F**	>80.0	**F**	N/A	Yes
4. Ximeno Ave & 7th St	Signal	PM	1.017	**F**	1.068	**F**	0.051	Yes
5. Pacific Coast Hwy & 7th St	Signal	AM	>80.0	**F**	>80.0	**F**	N/A	Yes
		PM	>80.0	**F**	>80.0	**F**	N/A	Yes
6. Bellflower Blvd & 7th St	Signal	AM	48.4	**D**	55.6	**E**	7.2	Yes
		PM	51.0	**D**	63.6	**E**	12.6	Yes
7. Channel Dr & 7th St	Signal	PM	>80.0	F	>80.0	**F**	N/A	Yes
8. Campus Dr & 7th St	Signal	AM	40.8	**D**	50.0	**D**	9.2	Yes
		PM	32.6	C	35.3	**D**	2.7	Yes
11. Studebaker Rd & SR-22 Eastbound Ramps	Signal	PM	11.6	B	39.9	**D**	28.3	Yes
12. Pacific Coast Hwy & Loynes Dr	Signal	PM	57.7	**E**	>80.0	**F**	N/A	Yes
13. Studebaker Rd & Loynes Dr	Signal	PM	0.809	D	0.914	**E**	0.105	Yes
15. Marina Dr & 2nd St	Signal	PM	0.844	D	0.980	**E**	0.136	Yes
16. Pacific Coast Hwy & 2nd St	Signal	AM	69.8	**E**	>80.0	**F**	N/A	Yes
		PM	>80.0	**F**	>80.0	**F**	N/A	Yes
17. Shopkeeper Rd & 2nd St	Signal	PM	0.900	**E**	1.140	**F**	0.240	Yes
18. Studebaker Rd & 2nd St	Signal	PM	0.896	D	0.992	**F**	0.085	Yes
19. 2nd St/Westminster Blvd & Seal Beach Blvd	Signal	PM	0.948	**E**	1.005	**F**	0.057	Yes
20. Pacific Coast Hwy & Studebaker Rd	Signal	PM	56.9	**E**	75.1	**E**	18.2	Yes

Notes:
1. V/C for signalized intersections based on application of Intersection Capacity Utilization methodology using Traffix software. V/C = Volume / Capacity Ratio.
2. Delay is average intersection delay (seconds) basec on application of the Highway Capacity Manual 2010 methodology using Synchro 8 Build 806 software.
3. **Bold** indicates an LOS below the acceptable threshold.
4. Highway Capacity Manual 2010 methodology cannot accurately estimate intersection delay or change in delay greater than 80 seconds for signalized intersections.

Source: Fehr & Peers, 2016

7. FREEWAY ANALYSIS

ANALYSIS METHODOLOGY

The freeway segments within the study area were analyzed for the basic, merge, and diverge components where capacity constraints typically occur on the freeway system utilizing the HCM 2010 methodologies upon requests from Caltrans. LOS for each of these segments is defined on the basis of density (passenger cars per mile per lane). Table 7-1 shows the LOS criteria for each freeway segment. Density and speed data was utilized from Caltrans.

TABLE 7-1 FREEWAY MAINLINE AND RAMP JUNCTION SECTION LOS THRESHOLD

Level of Service	Description	Density (vplpm)[1]	
		Mainline (Basic)	Ramp / Merge / Diverge
A	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	≤ 11	≤ 10
B	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 11 to 18	> 10 to 20
C	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	> 18 to 26	> 20 to 28
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	> 26 to 35	> 28 to 35
E	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.	> 35 to 45	> 35 to 45[2]
F	Represents a breakdown in flow.	> 45	> 45[2]

Notes:

1- Density is reported in vehicles per lane per mile.
2- The maximum density for ramp junctions and weaving sections under LOS E is not defined in the HCM. The maximum density for basic segments of 45 vplpm was assumed to apply to ramp junctions.

Source: Highway Capacity Manual (Transportation Research Board, 2010)

DATA COLLECTION

Traffic count data was gathered from available sources including the Caltrans Performance Measurement System (PeMS) and peak hour intersection counts collected at study intersections. Traffic counts on the I-405 mainline from July, 2015 were utilized from PeMS. Existing counts at the Campus Drive & 7th Street intersection were utilized to estimate the volume for the SR-22 mainline. These existing counts were compared to the Caltrans Annual Average Daily Traffic volumes. Since the existing counts were higher, they were used in the freeway analysis as a conservative approach. Ramp volumes were utilized based on existing count data at the following intersections:

- Studebaker Road & I-405 Westbound On-Ramp
- Studebaker Road & I-405 Eastbound Off-Ramp
- Studebaker Road & SR-22 Westbound Ramps
- Studebaker Road & SR-22 Eastbound Ramps

Cumulative (2035) No Project volumes were forecast using the previously discussed 0.505% growth rate. The Existing (2015) Plus Project and Cumulative (2035) Plus Project volumes were developed by adding the "project only" volumes.

EXISTING (2015) FREEWAY OPERATIONS

As shown in Table 7-2, the following three (3) freeway segments, off-ramps, and on-ramps are operating at a deficient LOS during the peak hours for Existing (2015) Conditions:

- Westbound SR-22 – AM Peak Hour (LOS D), PM Peak Hour (LOS E)
- Studebaker On-Ramp – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Eastbound SR-22 – AM Peak Hour (LOS D), PM Peak Hour (LOS D)

TABLE 7-2 FREEWAY MAINLINE AND RAMPS OPERATIONS: EXISTING (2015)

		AM Peak Hour			PM Peak Hour		
Segment	**Type**	**Density (pc/mi/ln)**	**LOS**	**Speed (mph)**	**Density (pc/mi/ln)**	**LOS**	**Speed (mph)**
Studebaker On-Ramp	Merge	12.2	B	65.0	14.5	B	65.0
I-405 Northbound North of Studebaker	Basic	19.2	C	65.0	22.7	C	65.0
I-405 Southbound North of Studebaker	Basic	17.9	B	53.0	19.5	C	53.0

TABLE 7-2 FREEWAY MAINLINE AND RAMPS OPERATIONS: EXISTING (2015)

Segment	Type	AM Peak Hour			PM Peak Hour		
		Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)
Studebaker Off-Ramp	Diverge	15.4	B	53.0	15.5	B	53.0
Westbound SR-22	Basic	29.0	**D**	55.0	38.9	**E**	55.0
Studebaker Off-Ramp	Diverge	25.0	C	55.0	27.6	C	55.0
Studebaker On-Ramp	Merge	31.8	**D**	55.0	29.2	**D**	55.0
Eastbound SR-22	Basic	31.4	**D**	55.0	27.9	**D**	55.0

Notes:
1- Pc/mi/ln = passenger cars per mile per lane.
2- Freeway facilities operating below acceptable LOS are shown in **bold**.
3- Calculations were made using Highway Capacity Manual 2010 methodologies.

Source: Fehr & Peers, 2015

EXISTING (2015) PLUS PROJECT FREEWAY OPERATIONS

As shown in Table 7-3, the following four (4) freeway segments, off-ramps, and on-ramps are operating at a deficient LOS during the peak hours for Existing (2015) Plus Project Conditions:

- Westbound SR-22 – AM Peak Hour (LOS F), PM Peak Hour (LOS E)
- Studebaker Off-Ramp – AM Peak Hour (LOS D)
- Studebaker On-Ramp – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Eastbound SR-22 – AM Peak Hour (LOS E), PM Peak Hour (LOS D)

TABLE 7-3 FREEWAY MAINLINE AND RAMPS OPERATIONS: EXISTING (2015) PLUS PROJECT

Segment	Type	AM Peak Hour			PM Peak Hour		
		Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)
Studebaker On-Ramp	Merge	13.3	B	65.0	15.2	B	65.0
I-405 Northbound North of Studebaker	Basic	19.6	C	65.0	23.0	C	65.0
I-405 Southbound North of Studebaker	Basic	18.0	B	53.0	20.0	C	53.0
Studebaker Off-Ramp	Diverge	15.5	B	53.0	16.3	B	53.0
Westbound SR-22	Basic	45.0	**F**	55.0	39.7	**E**	55.0

TABLE 7-3 FREEWAY MAINLINE AND RAMPS OPERATIONS: EXISTING (2015) PLUS PROJECT

Segment	Type	AM Peak Hour			PM Peak Hour		
		Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)
Studebaker Off-Ramp	Diverge	30.5	**D**	55.0	27.6	C	55.0
Studebaker On-Ramp	Merge	34.2	**D**	55.0	30.9	**D**	55.0
Eastbound SR-22	Basic	41.1	**E**	55.0	34.3	**D**	55.0

Notes:
1- Pc/mi/ln = passenger cars per mile per lane.
2- Freeway facilities operating below acceptable LOS are shown in **bold**.
3- Calculations were made using Highway Capacity Manual 2010 methodologies.

Source: Fehr & Peers, 2015

CUMULATIVE (2035) NO PROJECT FREEWAY OPERATIONS

As shown in Table 7-4, the following four (4) freeway segments, off-ramps, and on-ramps are operating at a deficient LOS during the peak hours for Cumulative (2035) No Project Conditions:

- Westbound SR-22 – AM Peak Hour (LOS D), PM Peak Hour (LOS F)
- Studebaker Off-Ramp – PM Peak Hour (LOS D)
- Studebaker On-Ramp – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Eastbound SR-22 – AM Peak Hour (LOS E), PM Peak Hour (LOS D)

TABLE 7-4 FREEWAY MAINLINE AND RAMPS OPERATIONS: CUMULATIVE (2035) NO PROJECT

Segment	Type	AM Peak Hour			PM Peak Hour		
		Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)
Studebaker On-Ramp	Merge	13.4	B	65.0	16.4	B	65.0
I-405 Northbound North of Studebaker	Basic	21.3	C	65.0	25.4	C	65.0
I-405 Southbound North of Studebaker	Basic	19.8	C	53.0	21.6	C	53.0
Studebaker Off-Ramp	Diverge	16.4	B	53.0	18.1	B	53.0
Westbound SR-22	Basic	33.7	**D**	55.0	-	**F**	55.0
Studebaker Off-Ramp	Diverge	27.2	C	55.0	29.4	**D**	55.0
Studebaker On-Ramp	Merge	34.3	**D**	55.0	32.0	**D**	55.0
Eastbound SR-22	Basic	37.0	**E**	55.0	32.0	**D**	55.0

Notes:
1- Pc/mi/ln = passenger cars per mile per lane.
2- Freeway facilities operating below acceptable LOS are shown in **bold**.
3- Calculations were made using Highway Capacity Manual 2010 methodologies.

Source: Fehr & Peers, 2015

CUMULATIVE (2035) PLUS PROJECT FREEWAY OPERATIONS

As shown in Table 7-5, the following four (4) freeway segments, off-ramps, and on-ramps are operating at a deficient LOS during the peak hours for Cumulative (2035) Plus Project Conditions:

- Westbound SR-22 – AM Peak Hour (LOS D), PM Peak Hour (LOS F)
- Studebaker Off-Ramp – PM Peak Hour (LOS F)
- Studebaker On-Ramp – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Eastbound SR-22 – AM Peak Hour (LOS E), PM Peak Hour (LOS D)

TABLE 7-5 FREEWAY MAINLINE AND RAMPS OPERATIONS: CUMULATIVE (2035) PLUS PROJECT

Segment	Type	AM Peak Hour			PM Peak Hour		
		Density (pc/mi/ln)	LOS	Speed (mph)	Density (pc/mi/ln)	LOS	Speed (mph)
Studebaker On-Ramp	Merge	14.7	B	65.0	16.9	B	65.0
I-405 Northbound North of Studebaker	Basic	21.3	C	65.0	25.4	C	65.0
I-405 Southbound North of Studebaker	Basic	19.8	C	53.0	21.6	C	53.0
Studebaker Off-Ramp	Diverge	16.5	B	53.0	18.4	B	53.0
Westbound SR-22	Basic	33.7	**D**	55.0	-	**F**	55.0
Studebaker Off-Ramp	Diverge	26.6	C	55.0	-	**F**	55.0
Studebaker On-Ramp	Merge	34.8	**D**	55.0	31.9	**D**	55.0
Eastbound SR-22	Basic	37.0	**E**	55.0	32.0	**D**	55.0

Notes:

1- Pc/mi/ln = passenger cars per mile per lane.
2- Freeway facilities operating below acceptable LOS are shown in **bold**.
3- Calculations were made using Highway Capacity Manual 2010 methodologies.

Source: Fehr & Peers, 2015

8. CONGESTION MANAGEMENT PROGRAM ANALYSIS

This section presents an analysis of potential impacts on the regional transportation system. This analysis was conducted in accordance with the procedures outlined in *Congestion Management Program for Los Angeles County* (CMP) (Metro, 2010). The CMP requires that, when an environmental impact report is prepared for a project, traffic and transit impact analyses be conducted for select regional facilities based on the quantity of project traffic expected to use those facilities. The CMP locations in the study area are the intersections of:

- Pacific Coast Highway & 7th Street
- Pacific Coast Highway & 2nd Street

Since the Los Angeles CMP guidelines use the ICU methodology for assessing CMP locations, the volume-to-capacity (V/C) ratio was used as described in Chapter 1.

SIGNIFICANT TRAFFIC IMPACT CRITERIA

The CMP traffic impact analysis guidelines establish that a significant project impact occurs when a certain threshold is exceeded. If the proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C ≥ 0.02), causing LOS F (V/C > 1.00), a significant impact would occur. If the facility is already at LOS F, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by 2% of capacity (V/C ≥ 0.02).

CMP ASSESSMENT

The CMP intersections operate at an acceptable level during the Existing (2015) scenario, but operates deficiently in the Existing (2015) Plus Project, Cumulative (2035), and Cumulative (2035) Plus Project Scenarios. Table 8-1 shows the LOS results for the CMP intersection.

TABLE 8-1 CMP INTERSECTION LEVEL OF SERVICE ANALYSIS

Intersection	Scenario	AM Peak		PM Peak	
		V/C[1]	LOS	V/C[1]	LOS
Pacific Coast Highway & 7th Street	Existing (2015)	0.886	D	0.972	E
	Existing (2015) Plus Project	0.913	E	1.050	**F**
	Cumulative (2035) No Project	0.968	E	1.068	**F**
	Cumulative (2035) Plus Project	1.006	**F**	1.174	**F**
Pacific Coast Highway & 2nd Street	Existing (2015)	0.807	D	0.899	D
	Existing (2015) Plus Project	0.928	E	1.064	**F**
	Cumulative (2035) No Project	0.879	D	0.978	E
	Cumulative (2035) Plus Project	1.009	**F**	1.231	**F**

Notes:

1. V/C for signalized intersections based on application of Intersection Capacity Utilization methodology using Traffix software. V/C = Volume / Capacity Ratio.
2. **Bold** indicates an LOS below the acceptable threshold.

Source: Fehr & Peers, 2016

Since the project increases the V/C by more than 0.02, as outlined in the Los Angeles County CMP, the project is required to mitigate the intersection. If the no project scenario is LOS E or better, then mitigation is required to bring the plus project LOS to LOS E or better.

CMP MITIGATION MEASURES

Pacific Coast Highway & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the westbound approach from having two through lanes and one right turn lane, to having three through lanes and one right turn lane. This would require an additional receiving lane.
- Modify the eastbound approach from having two through lanes and one shared through-right turn lane, to having three through lanes and one right turn lane.
- Modify the southbound approach from having two left turn lanes, two through lanes and one shared through-right turn lane, to having two left turn lanes, four through lanes and one right turn lane. This would require two additional receiving lanes.

With the above referenced improvements, operations are improved to an acceptable level of service E during the AM and PM peak hours. However, development exists on all four quadrants of the intersection and sufficient right of way does not exist at this intersection. Since this intersection exceeds the minimum standard of LOS E and no feasible mitigation is available, the Los Angeles CMP requires a deficiency plan. This plan includes improvement measures to implement at the intersection or Travel Demand Management (TDM) techniques that would decrease the reliance on a single-occupant vehicle. Example TDM measures include:

- Rideshare programs
- Pedestrian improvements, such as shorter crossing times, wider sidewalks, and landscaped buffers
- Bicycle infrastructure improvements, such as bike storage and showers
- Transit improvements, such as upgraded bus stops or shelter and increased service
- Parking management programs, such as charging for parking

Additionally, this intersections falls under the jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

Pacific Coast Highway & 2nd Street

To mitigate the project impact, the following improvements are required:

- Modify the eastbound approach from having two left turn lanes, two through lanes, one shared through-right turn lane, and one right turn lane, to having two left turn lanes, four through lanes, and one right turn lane with a right turn overlap phase. This would require an additional receiving lane.
- Modify the northbound approach from having two left turn lanes, two through lanes, and one shared through-right turn lane, to having three left turn lanes, four through lanes, and one right turn lane with a right turn overlap phase. This would require an additional receiving lane.
- Modify the southbound approach from having two left turn lanes, three through lanes and one right turn lane, to having two left turn lanes, four through lanes, and two right turn lanes. This would require an additional receiving lane.

With the above referenced improvements, operations are improved to a acceptable level of service E. However, there in insufficient right-of-way along 2nd Street and Pacific Coast Highway due to existing development. Additionally, this intersections falls under the jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

Since both intersections exceeds the minimum standard of LOS E and no feasible mitigation is available, the CMP requires a deficiency plan. As discussed above, this plan includes improvement measures to implement at the intersection or TDM techniques that would decrease the reliance on a single-occupant vehicle. These TDM techniques are outlined in the TDM strategies as identified in Chapter 6 of the Specific Plan.

9. INTERSECTION IMPACT SUMMARY

This chapter provides a summary of the key findings and project impacts for each scenario analyzed, and recommended mitigation measures to mitigate these impacts.

INTERSECTION IMPACTS

As stated previously, the following level of service significance criteria was employed to determine if the project causes significant traffic impacts to the study area.

City of Long Beach

For intersections under City of Long Beach's jurisdiction, the significance criteria is consistent with the City of Long Beach Mobility Element level of service policy and the Los Angeles County CMP Guidelines. A significant impact would occur at a signalized study intersection when the project-related traffic causes:

- A signalized intersection to degrade from an acceptable LOS D or better to LOS E or LOS F, or
- The V/C ratio to increase by 0.02 or more at a signalized intersection that operates at LOS E or LOS F, or
- Causes an unsignalized intersection operating at LOS D or better to degrade to LOS E or LOS F and the intersection satisfies the Manual for Uniform Traffic Control Devices (MUTCD) Peak Hour Volume Warrant for Traffic Signal Installation, or
- Adds traffic to an unsignalized intersection operating at an unacceptable LOS E or LOS F such that it satisfies the MUTCD Peak Hour Volume Warrant for traffic signal installation.

If a City of Long Beach intersection is operating at LOS E or worse, mitigation is needed to improve the "plus project" delay to the existing "no project" delay. If an impact drops an acceptable LOS to a below than acceptable LOS, mitigation is required to bring the LOS back to the acceptable threshold level. No mitigation is required for intersections operating at or above the acceptable threshold (LOS D).

City of Seal Beach

For intersections under City of Seal Beach's jurisdiction, the significance criteria is consistent with the City of Seal Beach Circulation Element level of service policy and the Orange County CMP Guidelines. A significant impact would occur at a signalized study intersection when the project-related traffic causes:

- A signalized intersection to degrade from an acceptable LOS D or better to LOS E or LOS F, or

- The V/C ratio to increase by 0.01 or more at a signalized intersection that operates at LOS E or LOS F, or

If a City of Seal Beach intersection is operating at LOS E or worse, mitigation is needed to improve the "plus project" delay to the existing "no project" delay. If an impact drops an acceptable LOS to a below than acceptable LOS, mitigation is required to bring the LOS back to the acceptable threshold level. No mitigation is required for intersections operating at or above the acceptable threshold (LOS D).

Caltrans

For intersections under Caltrans' jurisdiction, the significance criteria is consistent with the Caltran's *Guide for the Preparation of Traffic Impact Studies* and/or the *Transportation Concept Report* prepared for the facility. A significant impact would occur at a signalized study intersection when the project-related traffic causes:

- An intersection to degrade from an acceptable LOS to an unacceptable LOS[3]; or
- Any increase in delay for intersections already operating at an unacceptable LOS.

If a Caltrans intersection is operating at an unacceptable LOS, mitigation is needed to improve the "plus project" delay to existing "no project" delay. If an impact drops an acceptable LOS to an unacceptable LOS, mitigation is required to bring the LOS back to the acceptable threshold level. No mitigation is required for intersections operating at or above the acceptable threshold.

Congestion Management Program

The CMP traffic impact analysis guidelines establish that a significant project impact occurs when a certain threshold is exceeded. If the proposed project increases traffic demand on a CMP facility by 2% of capacity ($V/C \geq 0.02$), causing LOS F ($V/C > 1.00$), a significant impact would occur. If the facility is already at LOS F, a significant impact occurs when the proposed project increases traffic demand on a CMP facility by 2% of capacity ($V/C \geq 0.02$).

Based upon the significance criteria identified, the addition of the project will significantly impact the following locations under each analyzed scenario:

[3] Acceptable level of service is identified from the Caltrans *Transportation Concept Report* and is the Caltrans' target facility LOS. If a Transportation Concept Report is not available, LOS C is considered the minimum acceptable operating LOS. As such, for Pacific Coast Highway, LOS D is considered acceptable. For SR-22, LOS C is considered acceptable.

Existing (2015) Plus Project Conditions

- Westbound Ramps: SR-22 & Studebaker Road – AM Peak Hour (LOS D), PM Peak Hour (LOS F)
- Ximeno Avenue & 7th Street – AM Peak Hour (LOS E), PM Peak Hour (LOS E)
- Pacific Coast Highway & 7th Street – AM Peak Hour (LOS D), PM Peak Hour (LOS E)
- Bellflower Boulevard & 7th Street – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Channel Drive & 7th Street – PM Peak Hour (LOS E)
- Pacific Coast Highway & Loynes Drive – PM Peak Hour (LOS F)
- Pacific Coast Highway & 2nd Street – AM Peak Hour (LOS E), PM Peak Hour (LOS F)
- Shopkeeper Road & 2nd Street – PM Peak Hour (LOS F)
- Seal Beach Boulevard & 2nd Street/Westminster Boulevard – PM Peak Hour (LOS E)

CMP Intersection Impact:

- Pacific Coast Highway & 7th Street – PM Peak Hour (LOS F)
- Pacific Coast Highway & 2nd Street – PM Peak Hour (LOS F)

Cumulative Year (2035) Plus Project Conditions

- Studebaker Road & SR-22 Westbound Ramps – AM Peak Hour (LOS D), PM Peak Hour (LOS F)
- Ximeno Avenue & 7th Street – PM Peak Hour (LOS F)
- Pacific Coast Highway & 7th Street – AM Peak Hour (LOS F), PM Peak Hour (LOS F)
- Bellflower Boulevard & 7th Street – AM Peak Hour (LOS E), PM Peak Hour (LOS E)
- Channel Drive & 7th Street – PM Peak Hour (LOS F)
- Campus Drive & 7th Street – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Studebaker Road & SR-22 Eastbound Ramps – PM Peak Hour (LOS D)
- Pacific Coast Highway & Loynes Drive – PM Peak Hour (LOS F)
- Studebaker Road & Loynes Drive – PM Peak Hour (LOS E)
- Marina Drive & 2nd Street – PM Peak Hour (LOS E)
- Pacific Coast Highway & 2nd Street – AM Peak Hour (LOS F), PM Peak Hour (LOS F)
- Shopkeeper Road & 2nd Street – PM Peak Hour (LOS F)
- Studebaker Road & 2nd Street – PM Peak Hour (LOS E)
- Seal Beach Boulevard & 2nd Street/Westminster Boulevard – PM Peak Hour (LOS F)
- Pacific Coast Highway & Studebaker Road – PM Peak Hour (LOS E)

CMP Intersection Impact:

- Pacific Coast Highway & 7th Street – AM Peak Hour (LOS F), PM Peak Hour (LOS F)
- Pacific Coast Highway & 2nd Street – AM Peak Hour (LOS F), PM Peak Hour (LOS F)

10. BICYCLE/PEDESTRIAN/TRANSIT IMPACT SUMMARY

Bicycle Facility Impacts

As previously discussed, the existing bicycle facilities in the SEASP area are discontinuous. The project proposes new bicycle facilities throughout the SEASP site. A Class IV cycle track along Pacific Coast Highway and Studebaker Road will provide local access to Long Beach, while Class II bicycle facilities along 2nd Street, Shopkeeper Road, and Marina Drive will provide access throughout the project site. The proposed bicycle facilities will improve overall access throughout the SEASP site and mitigate the existing discontinuous facilities.

Because the SEASP proposes improvements to the existing bicycle network, there is no conflict with the adopted City of Long Beach Bicycle Master Plan or City of Long Beach Mobility Element. The proposed Class IV bikways provide a buffered bikeway, which increase the performance and safety of the bicycle facilities. The proposed Class II bikeways provide continuity between the existing bikeways, therefore increasing the performance of the bicycle facilities. As such, the Project would have a beneficial impact to bicycle facilities and is considered **less-than-significant.**

Pedestrian Facility Impacts

As previously discussed, the existing pedestrian facilities throughout the SEASP are continuous and present on both sides of the street. The SEASP proposed pedestrian connections within the project site and off-site. Major roadways throughout the SEASP will provide sidewalks on both sides of the road, increasing the performance of the pedestrian facilities. Additionally, certain locations will have a buffered sidewalk, providing enhanced pedestrian comfort and safety. As such, the Project would have a beneficial impact to pedestrian facilities and is considered **less-than-significant.**

Transit Impacts

The number of transit trips generated by the project was estimated by taking the peak hour trip generation (3,109 PM peak hour trips), multiplying it by 1.4 to convert auto trips to person trips (4,353 person trips), and assuming that up-to 3.5% of those trips could be transit trips. This results in a total potential of 152 PM peak hour transit trips generated by the site. With 13 transit routes serving the study area, this would equate to about 12 riders per route. Also, with multiple buses operating on most of the routes during the peak hours, this would result in an estimated 4 riders per transit vehicle. At an estimated increase of 4 riders per transit vehicle, the performance or safety of transit will not decrease. As such, the impact to transit is **less-than-significant.**

11. FREEWAY IMPACT SUMMARY

IMPACT CRITERIA

The Caltran's *Guide for the Preparation of Traffic Impact Studies* provides significance criteria for freeway mainline and ramp facilities. Based on the Caltrans guide, LOS C was utilized as an acceptable threshold for all Caltrans study facilities. This threshold was applied to determine when a facility degrades from acceptable to unacceptable levels. A significant impact would occur at a study freeway segment when the project-related traffic causes:

- A freeway segment to degrade from an acceptable LOS C or better to LOS D, LOS E or LOS F; or
- An increase in density for freeway segments already operating at LOS D, LOS E, or LOS F.

FREEWAY IMPACTS

Existing (2015) Plus Project Conditions

The following study freeway segments are forecast to result in a significant impact based on agency thresholds for significance for Existing (2015) Plus Project Conditions:

- Westbound SR-22 – AM Peak Hour (LOS F), PM Peak Hour (LOS E)
- Studebaker Off-Ramp – AM Peak Hour (LOS D)
- Studebaker On-Ramp – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Eastbound SR-22 – AM Peak Hour (LOS E), PM Peak Hour (LOS D)

Cumulative (2035) Plus Project Conditions

The following study freeway segments are forecast to result in a significant impact based on agency thresholds for significance for Buildout (2035) Plus Project Conditions:

- Westbound SR-22 – AM Peak Hour (LOS D), PM Peak Hour (LOS F)
- Studebaker Off-Ramp – PM Peak Hour (LOS F)
- Studebaker On-Ramp – AM Peak Hour (LOS D), PM Peak Hour (LOS D)
- Eastbound SR-22 – AM Peak Hour (LOS E), PM Peak Hour (LOS D)

12. MITIGATION MEASURES

INTERSECTION MITIGATION MEASURES

Improvement measures were developed to minimize the impact of the project on the study intersections. Mitigation measures were developed in order to bring project operations back to acceptable or pre-project conditions. Implementing the mitigation measures described below, the “with project” scenarios would no longer result in a significant impact. A description of the recommended mitigation measures is provided below. LOS results for mitigation measures are provided in Appendix D.

Please note for this assessment, the target LOS for Pacific Coast Highway is D, which is the target LOS used in the Caltrans Route Concept of Operations for Pacific Coast Highway.

The mitigation measures generally show the following trends:

- 7th Street will need 8 lanes, with or without the project
- Pacific Coast Highway & Loynes Drive needs additional turn lanes
- Pacific Coast Highway & 2nd Street is fully built out with little flexibility in mitigation

Existing (2015) Plus Project Conditions

Studebaker Road & SR-22 Westbound Ramps

To mitigate the project impact and to be consistent with the City of Long Beach Capital Improvement Plan (CIP), construction of a roundabout would mitigate impacts to a pre-project conditions. A spiral striped roundabout with two circulating lanesand a southbound slip lane would provide acceptable operations[4]. The southbound approach requires two through lanes and one shared through-left turn lane, the westbound approach requires two left turn lanes and one right turn slip lane, and the northbound approach requires two through lanes and one right turn slip lane. Funding for this mitigation measure is provided through the City of Long Beach CIP.

Alternatively, the intersection could remain signalized but would require the following improvements:

- Modify the westbound approach from having two left turn lanes and one right turn lane, to having three left turn lanes and one right turn lane.
- Modify the southbound approach from having one left turn lane and two through lanes, to having one left turn lane and three through lanes.
- Optimize the AM and PM signal cycle lengths and splits.

[4] The roundabout was analyzed using SIDRA 6.0 software.

With the above referenced improvements, operations are improved to an acceptable LOS C during the AM and PM peak hours. Mitigation for the signalized improvements is also feasible as sufficient right-of-way exists.

However, both improvements are within the responsibility and jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

Since the intersection is operating at a deficient LOS during the PM Peak period, any addition of the project trip generation (more than 0%) requires mitigation.

Ximeno Avenue & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the eastbound approach from having one left turn lane, one through lane, one shared through-right turn lane, to having one left turn, two through lanes, and one shared through-right turn lane. This requires an additional receiving lane.

With the above referenced improvements, operations are improved to an acceptable LOS D during the AM and PM peak hours. The improvements would require right-of-way dedication along 7th Street to accommodate the additional lanes due to existing development. Since there is insufficient right-of-way to implement these improvements, the impact is considered **significant and unavoidable.**

The intersection requires mitigation at 30% of the addition of project trip generation.

Pacific Coast Highway & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the westbound approach from having two through lanes and one right turn lane, to having three through lanes and one right turn lane. This would require an additional receiving lane.
- Modify the eastbound approach from having two through lanes and one shared through-right turn lane, to having three through lanes and one right turn lane.
- Modify the northbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, three through lanes, and one shared through-right turn lane. This would require an additional receiving lane.
- Modify the southbound approach from having two left turn lanes, two through lanes and one shared through-right turn lane, to having two left turn lanes, three through lanes and one right turn lane.
- Optimizate the AM and PM signal cycle lengths and splits.

Even with the above referenced improvements, operations are improved to LOS D during the AM and PM peak hours. These improvements would require right-of-way dedication along 7th Street and Pacific Coast Highway to accommodate the additional lanes. However, there is insufficient right-of-way due to current development and the intersection is within the responsibility and jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

It should also be noted that the City of Long Beach Mobility Element identifies a grade separation at the "Iron Triangle," which is the triangle configuration of the Pacific Coast Highway/7th Street/Bellflower Boulevard intersections. This would include the closure of Bellflower Boulevard Southbound to simplify movements. This project grade separation would reduce congestion at the "Iron Triangle" but is still in the conceptual phase.

Since the intersection is operating at a deficient LOS during the PM Peak period, any addition of the project trip generation (more than 0%) requires mitigation.

Channel Drive & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the eastbound approach from having one left turn lane, three through lanes, and one right turn lane, to having one left turn lane, four through lanes, and one right turn lane. This would require an additional receiving lane.
- Optimize the PM signal cycle lengths and splits.

With the above referenced improvements, operations are improved to an acceptable LOS C during the PM peak hour. These mitigations would require right of way dedication along 7th Street to accommodate the additional lanes and sufficient right-of-way does exist along 7th Street. However, the improvements fall under the jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

Since the intersection is operating at a deficient LOS during the PM Peak period, any addition of the project trip generation (more than 0%) requires mitigation.

Pacific Coast Highway & Loynes Drive

To mitigate the project impact, the following improvements are required:

- Modify the westbound approach from having one left turn lane, two through lanes, and one right turn lane, to having two left turn lanes, two through lanes, and one right turn lane.
- Optimizate the PM signal cycle lengths and splits.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. There is sufficient right-of-way, as the existing right-of-way contains sidewalks and grass buffers. However, the roadway improvements may encroach upon the adjacent wetlands. Additionally, the improvements fall under the jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. Given these constraints (limited right-of-way, potential wetland constraints, and the inability to guarantee implementation of the improvements), the impact is considered **significant and unavoidable.**

Since the intersection is operating at a deficient LOS during the PM Peak period, any addition of the project trip generation (more than 0%) requires mitigation.

Pacific Coast Highway & 2nd Street

To mitigate the project impact, the following improvements are required:

- Modify the northbound approach from having two left turn lanes, two through lanes, and one shared through-right turn lane, to having three left turn lanes, four through lanes, and two right turn lanes with a right turn overlap phase. This would require an additional receiving lane.
- Modify the southbound approach from having two left turn lanes, three through lanes, and one right turn lane, to having two left turn lanes, four through lanes, and two right turn lanes with a right turn ovelap phase. This would require an additional receiving lane.
- Modify the eastbound approach from having two left turn lanes, two through lanes, one shared through-right turn lane, and one right turn lane, to having two left turn lanes, four through lanes, and one right turn lane with a right turn overlap phase. This would require an additional receiving lane.
- Modify the westbound approach from having two left turn lanes, three through lanes, and one right turn lane, to having three left turn lanes, four through lanes, and two right turn lanes with a right turn overlap phase. This would require an additional receiving lane.

With the above referenced improvements, operations are improved to pre-project conditions during the AM and PM peak hours. These mitigations would require right-of-way dedication along Pacific Coast Highway and 2nd Street to accommodate the additional lanes. Additionally, widening 2nd Street and Pacific Coast Highway are not consistent with the goals of the Specific Plan, as outlined in Chapter 3 of the SEASP. Finally, the improvements fall under the jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

Since the intersection is operating at a deficient LOS during the PM Peak period, any addition of the project trip generation (more than 0%) requires mitigation.

Shopkeeper Road & 2nd Street

To mitigate the project impact, the following improvements are required:

- Modify the northbound approach from having one shared through-left turn lane and one right turn lane, to having one shared through-left turn lane and two right turn lanes.
- Modify the westbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having two left turn lanes, two through lanes, and one shared through-right lane.

With the above referenced improvements, operations are improved to an acceptable level of service during the PM peak hour. However, the improvements may impact adjacent wetlands in the area. As such, the impact is considered **significant and unavoidable.**

This intersection requires mitigation at 60% of the addition of project trip generation.

Seal Beach Boulevard & 2nd Street/Westminster Boulevard

To mitigate the project impact, the following improvements are required:

- Modify the northbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, three through lanes, and one right turn lane.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. These mitigations would require right-of-way dedication along Seal Beach Boulevard and 2nd Street/Westminster Boulevard to accommodate the additional lanes. Sufficient right-of-way does exist along Seal Beach Boulevard and 2nd Street/Westminster Boulevard. However, these improvements encroach upon the adjacent wetlands, require median modification, or would require removal of the bicycle lane. Additionally, the improvements fall under thethe jurisdiction of another public agency (City of Seal Beach) and not the lead agency (City of Long Beach). The improvements require City of Seal Beach approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

This intersection requires mitigation at 80% of the addition of project trip generation.

Cumulative Year (2035) Plus Project Conditions

Studebaker Road & SR-22 Westbound Ramps

To mitigate the project impact and to be consistent with the City of Long Beach Capital Improvement Plan (CIP), construction of a roundabout would mitigate impacts to a pre-project conditions. A spiral striped roundabout with two circulating lanes and a southbound slip lane would provide acceptable operations[5]. The southbound approach requires two through lanes and one shared through-left turn lane, the westbound approach requires two left turn lanes and one right turn slip lane, and the northbound approach requires two through lanes and one right turn slip lane. Funding for this mitigation measure is provided through the City of Long Beach CIP.

Alternatively, the intersection could remain signalized and with the following improvements:

- Modify the westbound approach from having two left turn lanes and one right turn lane, to having three left turn lanes and one right turn lane.
- Modify the northbound approach from having one through lane and one shared through-right turn lane, to having two through lanes and one shared through-right turn lane.
- Modify the southbound approach from having one left turn lane and one through lane, to having one left turn lane and two through lanes.
- Optimize the AM and PM signal cycle lengths and splits.

With the above referenced signalization improvements, operations are improved to an acceptable LOS C during the AM and PM peak hours. Mitigation for the signal improvements is also feasible as sufficient right-of-way exists.

However, both improvements are within the responsibility and jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

The project fair share contribution[6] for this intersection is 12%.

Ximeno Avenue & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the eastbound approach from having one left turn lane, one through lane, one shared through-right turn lane, to having one left turn, two through lanes, and one shared through-right turn lane. This requires an additional receiving lane.

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[5] The roundabout was analyzed using SIDRA 6.0 software.

[6] For intersections that were operating acceptably before the addition of project traffic, project fair share contribution was estimated by dividing the net new project traffic at the intersection by the total growth at the intersection (ambient growth and traffic generated by the proposed project). For intersections already operating deficiently before the addition of project traffic, the project fair share contribution was estimated by dividing the net new project traffic at the intersection by the total volume at the intersection.

- Modify the westbound approach from having one left turn, one through lane, and one shared through-right turn lane, to having one left turn lane, two through lanes, and one shared through-right turn lane. This requires an additional receiving lane.

With the above referenced improvements, operations are improved to an acceptable LOS D during the AM and PM peak hours. The improvements would require right-of-way dedication along 7th Street to accommodate the additional lanes due to existing development. Since there is insufficient right-of-way to implement these improvements, the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 5%.

Pacific Coast Highway & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the westbound approach from having two through lanes and one right turn lane, to having four through lanes and one right turn lane. This requires two additional receiving lanes.

- Modify the eastbound approach from having two through lanes and one shared through-right turn lane, to having four through lanes and one right turn lane. This requires an additional receiving lane.

- Modify the northbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, three through lanes, and one shared through-right turn lane. This requires an additional receiving lane.

- Modify the southbound approach from having two left turn lanes, two through lanes and one shared through-right turn lane, to having two left turn lanes, three through lanes and one right turn lane. This requires an additional receiving lane.

- Optimize the AM and PM signal cycle lengths and splits.

With the above referenced improvements, operations are improved to an acceptable LOS D during the AM and PM peak hours. These improvements would require right-of-way dedication along 7th Street and Pacific Coast Highway to accommodate the additional lanes. However, there is insufficient right-of-way due to current development and the intersection is within the responsibility and jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

However, as discussed in the City of Long Beach Mobility Element, the City of Long Beach is considering a grade separation at the “Iron Triangle,” which is the triangle configuration of the Pacific Coast Highway/7th Street/Bellflower Boulevard intersections. This would include the closure of Bellflower Boulevard

Southbound to simplify movements. This project could be a mitigation to reduce congestion at the "Iron Triangle" but is still in the conceptual phase.

The project fair share contribution for this intersection is 5%.

Bellflower Boulevard & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the westbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, three through lanes, and one shared through-right turn lane. This would require an additional receiving lane.
- Modify the eastbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, three through lanes and one shared through-right turn lane.
- Modify the northbound approach from having three through lanes and one right turn lane, to having four through lanes and one right turn lane.
- Modify the southbound approach from having two left turn lanes, one through lane, and one right turn lane, to having two left turn lanes, three through lanes, and one right turn lane.
- Optimize the AM and PM signal cycle lengths and splits.

With the above referenced improvements, operations are improved to an acceptable LOS C during the PM peak hour. These mitigations would require right of way dedication along Pacific Coast Highway to accommodate the additional lanes. Additionally, the improvements cannot be guaranteed by the project or the City of Long Beach as the improvement would require the approval from Caltrans, who is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 19%.

Channel Drive & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the eastbound approach from having one left turn lane, three through lanes, and one right turn lane, to having one left turn lane, four through lanes, and one shared through-right turn lane. This would require two additional receiving lanes.
- Modify the westbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, three through lanes, and one shared through-right turn lane. This would require an additional receiving lane.
- Optimizate the PM signal cycle lengths and splits.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. These mitigations would require right of way dedication along 7th Street to accommodate the additional lanes. Additionally, the improvements cannot be guaranteed by the project or the City of Long Beach as the improvement would require the approval from Caltrans, who is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 1%.

Campus Drive & 7th Street

To mitigate the project impact, the following improvements are required:

- Modify the westbound approach from having two through lanes and a shared through-right turn lane, to having three through lanes and a shared through-right turn lane. This would require an additional receiving lane.
- Optimizate the AM signal cycle lengths and splits.

With the above referenced improvements, operations are improved to an acceptable LOS C during the AM peak hours. This would require right-of-way dedication along 7th Street to accommodate the additional lanes. However, there is not sufficient right-of-way to implement these improvements. Additionally, the improvements cannot be guaranteed by the project or the City of Long Beach, as these improvements would require the approval from Caltrans, who is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable**.

The project fair share contribution for this intersection is 1%.

Studebaker Road & SR-22 Eastbound Ramps

To mitigate the project impact and to be consistent with the City of Long Beach Capital Improvement Plan (CIP), construction of a roundabout would mitigate impacts to an acceptable LOS C. A spiral striped roundabout with two circulating lanes and a southbound slip lane, would provide acceptable operations[7]. The southbound approach requires two through lanes and one shared through-left turn lane, the westbound approach requires one left turn lane and one right turn slip lane, and the northbound approach requires two through lanes and two right turn slip lanes. Funding for this mitigation measure is provided through the City of Long Beach CIP.

Alternatively, the intersection could remain signalized and with the following improvement:

- Optimize the AM and PM signal cycle lengths and splits.

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[7] The roundabout was analyzed using SIDRA 6.0 software.

With the above referenced improvements, operations are improved to an acceptable LOS C during the AM and PM peak hours. Mitigation for the signal timing optimization improvements is feasible as signal timing updates are part of Caltrans standard maintenenace activity. However, both improvement options are within the responsibility and jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

This intersection requires mitigation at 28% addition of the project trip generation.

Pacific Coast Highway & Loynes Drive

To mitigate the project impact, the following improvements are required:

- Modify the westbound approach from having one left turn lane, two through lanes, and one right turn lane, to having two left turn lanes, two through lanes, and one right turn lane.
- Modify the northbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, two through lanes, and one right turnlane..
- Modify the eastbound approach from from having one left turn lane, one through lane, and one shared through-right turn lane, to having one left turn lane, two through lanes, and one right turn lane.
- Optimize the PM signal cycle lengths and splits.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. These mitigations would require right-of-way dedication along Pacific Coast Highway and Loynes Drive to accommodate the additional lanes. Additionally, the roadway improvements may encroach upon the adjacent wetlands. Finally, the improvements fall under the jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. Given these constraints (limited right-of-way, potential wetland constraints, and the inability to guarantee implementation of the improvements), the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 13%.

Studebaker Road & Loynes Drive

To mitigate the project impact, the following improvements are required:

- Modify the northbound approach from having one left turn and two through lanes, to having one left turn lane and three through lanes. This would require an additional receiving lane.

- Modify the southbound approach from having two through lanes and one right turn lane, to having three through lanes and one right turn lane. This would require an additional receiving lane.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. However, these mitigations encroach upon the adjacent wetlands. As such, the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 47%.

Marina Drive & 2nd Street

To mitigate the project impact, the following improvements are required:

- Modify the northbound approach from having one left turn lane, one shared through-left turn lane, one through lane, and one right turn lane, to having two left turn lanes, one through lane, and one right turn lane.
- Modify the southbound approach from having one left turn lane, one shared through-left turn lane, and one right turn lane, to having two left turn lanes, one through lane, and one right turn lane.
- Modify the westbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having two left turn lanes, two through lanes, and one shared through-right turn lane.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. These mitigations would require right-of-way dedication along 2nd Street to accommodate the additional lane and restriping of Marina Drive. Since the proposed redevelopment of SEASP is along 2nd Street, there is sufficient right-of-way. As such, the impact is considered **less-than-significant.**

The project fair share contribution for this intersection is 37%.

Pacific Coast Highway & 2nd Street

To mitigate the project impact, the following improvements are required:

- Modify the northbound approach from having two left turn lanes, two through lanes, and on shared through-right turn lane, to having two left turn lane, four through lanes, and two right turn lanes with a right turn overlap phase. This would require an additional receiving lane.

- Modify the southbound approach from having two left turn lanes, three through lanes, and one right turn lane, to having two left turn lanes, four through lanes, and two right turn lanes with a right turn ovelap phase. This would require an additional receiving lane.

- Modify the eastbound approach from having two left turn lanes, two through lanes, one shared through-right turn lane, and one right turn lane, to having two left turn lanes, five through lanes, and one right turn lane with a right turn overlap phase. This would require two additional receiving lanes.

- Modify the westbound approach from having two left turn lanes, three through lanes, and one right turn lane, to having two left turn lanes, four through lanes, and one right turn lane with a right turn overlap phase. This would require an additional receiving lane.

With the above referenced improvements, operations are improved to pre-project conditions during the AM and PM peak hours. These mitigations would require right-of-way dedication along Pacific Coast Highway and 2nd Street to accommodate the additional lanes. Additionally, the improvements fall under the jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 14%.

Shopkeeper Road & 2nd Street

To mitigate the project impact, the following improvements are required:

- Modify the westbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having two left turn lanes, two through lanes, and one shared through-right turn lane.
- Modify the eastbound approach would have to be modified from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, three through lanes, and one right turn lane.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. These improvements require additional right-of-way along 2nd Street and Shopkeeper Road to accommodate the additional lanes. Additionally, the improvements may encroach upon the adjacent wetlands. As such, the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 16%.

Studebaker Road & 2nd Street

To mitigate the project impact, the following improvements are required:

- Modify the southbound approach from having two left turn lanes and two right turn lanes, to having two left turn lanes and three right turn lanes.

- Modify the eastbound approach from having two left turn lanes and two through lanes, to having three left turn lanes and two through lanes.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. These mitigations would require right-of-way dedication along Studebaker Road and 2nd

Street/Westminster Boulevard to accommodate the additional lanes. Additionally, these improvements may encroach upon the adjacent wetlands. As such, the impact is considered **significant and unavoidable.**

This intersection requires mitigation at 14% addition of the project trip generation.

Seal Beach Boulevard & 2nd Street/Westminster Boulevard

To mitigate the project impact, the following improvements are required:

- Modify the northbound approach from having one left turn lane, two through lanes, and one shared through-right turn lane, to having one left turn lane, three through lanes, and one right turn lane.
- Modify the westbound approach from having two left turn lanes, one through lane, and one shared through-right turn lane, to having two left turn lanes, two through lanes, and one right turn lane.

With the above referenced improvements, operations are improved to an acceptable LOS D during the PM peak hour. These mitigations would require right-of-way, median modification, or bike lane removal along Seal Beach Boulevard and 2nd Street/Westminster Boulevard to accommodate the additional lanes. Additionally, these improvements encroach upon the adjacent wetlands. Finally, the improvements fall under thethe jurisdiction of another public agency (City of Seal Beach) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 23%.

Pacific Coast Highway & Studebaker Road

To mitigate the project impact, the following improvements are required:

- Modify the southbound approach from having one left turn lane, two through lanes, one right turn lane, and one right turn lane, to having one left turn lane, three through lanes, one right turn lane.
- Optimization of the PM signal cycle lengths and splits.

With the above referenced improvements, operations are improved to an acceptable LOS C during the PM peak hours. However, the improvements fall under the jurisdiction of another public agency (Caltrans) and not the lead agency (City of Long Beach). The improvements require Caltrans approval, since it is the owner/operator of this intersection. As such, the impact is considered **significant and unavoidable.**

The project fair share contribution for this intersection is 12%.

FREEWAY MITIGATION MEASURES

Many of the freeway segments will operate at an unacceptable level and the project adds traffic to these facilities. As such, there are project-level impacts and cumulative impacts to the freeway system near the project site.

To mitigate the impacts at the identified locations, freeway mainline widening or freeway ramps widening would be required.

However, this type of infrastructure is extremely costly and is typically infeasible for one development project to undertake. Additionally, the facility is not controlled by the project applicant nor is it controlled by the City; as such, they could not guarantee implementation of the mitigation measures. As such the identified impacts to the freeway system are considered **significant and unavoidable**.

APPENDIX A: TRAFFIC COUNTS

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-001 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			I-405 WB On-Ramp			I-405 WB On-Ramp			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	2	1	0	0	0	0	0	0	
7:00 AM	46	96	0	0	109	14	0	0	0	0	0	0	265
7:15 AM	45	108	0	0	143	17	0	0	0	0	0	0	313
7:30 AM	50	114	0	0	155	28	0	0	0	0	0	0	347
7:45 AM	45	138	0	0	156	19	0	0	0	0	0	0	358
8:00 AM	33	116	0	0	154	17	0	0	0	0	0	0	320
8:15 AM	41	137	0	0	141	16	0	0	0	0	0	0	335
8:30 AM	57	139	0	0	184	19	0	0	0	0	0	0	399
8:45 AM	40	155	0	0	185	22	0	0	0	0	0	0	402
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	357	1003	0	0	1227	152	0	0	0	0	0	0	2739
APPROACH %'s :	26.25%	73.75%	0.00%	0.00%	88.98%	11.02%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	

	UTURNS			
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
	NB	SB	EB	WB
TOTAL VOLUMES :	0	0	0	0

PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	171	547	0	0	664	74	0	0	0	0	0	0	1456
PEAK HR FACTOR :		0.916			0.891			0.000			0.000		0.905

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-001 | **Day:** Tuesday

City: Long Beach | **Date:** 7/14/2015

PM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			I-405 WB On-Ramp			I-405 WB On-Ramp			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	2	1	0	0	0	0	0	0	
4:00 PM	43	235	0	0	148	16	0	0	0	0	0	0	442
4:15 PM	47	227	0	0	167	23	0	0	0	0	0	0	464
4:30 PM	43	218	0	1	182	17	0	0	0	0	0	0	461
4:45 PM	41	230	0	0	170	18	0	0	0	0	0	0	459
5:00 PM	81	288	0	0	173	16	0	0	0	0	0	0	558
5:15 PM	74	275	0	0	192	13	0	0	0	0	0	0	554
5:30 PM	51	214	0	0	165	16	0	0	0	0	0	0	446
5:45 PM	39	183	0	0	164	18	0	0	0	0	0	0	404
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	419	1870	0	1	1361	137	0	0	0	0	0	0	3788
APPROACH %'s :	18.30%	81.70%	0.00%	0.07%	90.79%	9.14%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	239	1011	0	1	717	64	0	0	0	0	0	0	2032
PEAK HR FACTOR :		0.847			0.954			0.000			0.000		0.910

UTURNS			
NB	SB	EB	WB
1	0	0	0
1	0	0	0
1	1	0	0
0	0	0	0
1	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
4	1	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-002 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			I-405 EB Off-Ramp			I-405 EB Off-Ramp			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	2	0	1	0	0	0	
7:00 AM	0	127	0	0	114	0	17	0	67	0	0	0	325
7:15 AM	0	139	0	0	138	0	13	0	73	0	0	0	363
7:30 AM	0	148	0	0	152	0	15	0	80	0	0	0	395
7:45 AM	0	169	0	0	159	0	15	0	77	0	0	0	420
8:00 AM	0	130	0	0	146	0	18	0	46	0	0	0	340
8:15 AM	0	158	0	0	150	0	21	0	56	0	0	0	385
8:30 AM	0	179	0	0	183	0	18	0	66	0	0	0	446
8:45 AM	0	182	0	0	184	0	15	0	78	0	0	0	459
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	1232	0	0	1226	0	132	0	543	0	0	0	3133
APPROACH %'s :	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	19.56%	0.00%	80.44%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	0	649	0	0	663	0	72	0	246	0	0	0	1630
PEAK HR FACTOR :		0.891			0.901			0.855			0.000		0.888

	UTURNS			
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
	NB	SB	EB	WB
TOTAL VOLUMES	0	0	0	0

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-002

Day: Tuesday

City: Long Beach

Date: 7/14/2015

PM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			I-405 EB Off-Ramp			I-405 EB Off-Ramp			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	0	0	2	0	2	0	1	0	0	0	
4:00 PM	0	262	0	0	141	0	7	0	45	0	0	0	455
4:15 PM	0	259	0	1	172	0	10	0	39	0	0	0	481
4:30 PM	0	266	0	0	181	0	9	0	54	0	0	0	510
4:45 PM	0	262	0	0	174	0	4	0	34	0	0	0	474
5:00 PM	0	361	0	0	163	0	7	0	41	0	0	0	572
5:15 PM	0	342	0	0	186	0	9	0	43	0	0	0	580
5:30 PM	0	252	0	0	176	0	7	0	59	0	0	0	494
5:45 PM	0	220	0	0	169	0	6	0	59	0	0	0	454
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	2224	0	1	1362	0	59	0	374	0	0	0	4020
APPROACH %'s :	0.00%	100.00%	0.00%	0.07%	99.93%	0.00%	13.63%	0.00%	86.37%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	0	1231	0	0	704	0	29	0	172	0	0	0	2136
PEAK HR FACTOR :		0.852			0.946			0.798			0.000		0.921

UTURNS	NB	SB	EB	WB
4:00 PM	0	0	0	0
4:15 PM	0	1	0	0
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	0	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	0	0	0	0
TOTAL	0	1	0	0

CONTROL : 1-Way Stop (EB)

Intersection Turning Movement
Prepared by:
National Data & Surveying Services

Project ID: 15-5431-003

Day: Tuesday

City: Long Beach

Date: 7/14/2015

AM

NS/EW Streets:	Ximeno Ave			Ximeno Ave			7th St			7th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	0	1	1	1	1	2	0	1	2	0	
7:00 AM	1	50	25	6	34	14	19	341	2	11	259	5	767
7:15 AM	6	47	37	12	30	17	15	375	3	10	288	11	851
7:30 AM	4	69	31	19	36	67	23	344	2	6	331	27	959
7:45 AM	4	82	21	21	26	61	17	345	1	15	264	6	863
8:00 AM	9	84	34	16	43	11	11	325	1	12	300	6	852
8:15 AM	4	60	34	6	37	10	9	323	0	9	314	8	814
8:30 AM	12	86	33	11	36	18	18	328	4	20	311	2	879
8:45 AM	4	52	28	13	67	18	24	273	12	21	278	8	798
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	44	530	243	104	309	216	136	2654	25	104	2345	73	6783
APPROACH %'s :	5.39%	64.87%	29.74%	16.53%	49.13%	34.34%	4.83%	94.28%	0.89%	4.12%	92.98%	2.89%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	23	282	123	68	135	156	66	1389	7	43	1183	50	3525
PEAK HR FACTOR :		0.843			0.736			0.930			0.876		0.919

	UTURNS			
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	1	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	1	0
	NB	SB	EB	WB
TOTAL VOLUMES	0	0	2	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-003 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Ximeno Ave			Ximeno Ave			7th St			7th St					UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND								
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
LANES:	1	1	0	1	1	1	1	2	0	1	2	0						
4:00 PM	12	93	13	13	83	28	20	285	7	23	310	8	895		0	0	0	0
4:15 PM	13	94	30	10	74	20	21	331	6	16	319	9	943		0	0	0	0
4:30 PM	5	80	19	15	81	22	23	356	4	20	311	7	943		0	0	0	0
4:45 PM	6	93	21	12	79	28	14	326	8	24	305	8	924		0	0	0	0
5:00 PM	2	81	26	9	93	22	19	385	6	24	304	10	981		0	0	0	0
5:15 PM	6	63	25	10	108	23	14	342	3	23	345	6	968		0	0	0	0
5:30 PM	5	78	24	15	89	24	12	356	8	20	342	7	980		0	0	0	0
5:45 PM	11	62	13	14	79	26	25	330	9	26	326	12	933		0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
TOTAL VOLUMES :	60	644	171	98	686	193	148	2711	51	176	2562	67	7567		0	0	0	0
APPROACH %'s :	6.86%	73.60%	19.54%	10.03%	70.21%	19.75%	5.09%	93.16%	1.75%	6.27%	91.34%	2.39%						
PEAK HR START TIME :	500 PM												TOTAL					
PEAK HR VOL :	24	284	88	48	369	95	70	1413	26	93	1317	35	3862					
PEAK HR FACTOR :		0.908			0.908			0.920			0.966		0.984					

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-004
Day: Tuesday
City: Long Beach
Date: 7/14/2015

AM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			7th St			7th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	2	3	0	0	3	0	0	2	1	
7:00 AM	15	163	0	122	130	3	0	462	52	0	267	71	1285
7:15 AM	24	187	1	131	182	2	0	524	45	0	333	88	1517
7:30 AM	24	241	1	114	171	2	0	437	45	0	369	113	1517
7:45 AM	13	223	7	101	159	1	0	462	54	0	309	130	1459
8:00 AM	32	193	0	143	161	2	0	409	31	0	318	125	1414
8:15 AM	19	187	2	90	150	2	0	503	42	0	386	131	1512
8:30 AM	33	190	5	128	161	2	0	408	49	0	334	119	1429
8:45 AM	31	209	5	104	158	3	0	388	48	0	319	111	1376
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	191	1593	21	933	1272	17	0	3593	366	0	2635	888	11509
APPROACH %'s :	10.58%	88.25%	1.16%	41.99%	57.25%	0.77%	0.00%	90.76%	9.24%	0.00%	74.79%	25.21%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	93	844	9	489	673	7	0	1832	175	0	1329	456	5907
PEAK HR FACTOR :		0.889			0.928			0.882			0.926		0.973

UTURNS	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	1	0	0	0
7:45 AM	0	0	0	0
8:00 AM	1	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL	2	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-004

Day: Tuesday

City: Long Beach

Date: 7/14/2015

PM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			7th St			7th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	2	3	0	0	3	0	0	2	1	
4:00 PM	46	165	5	136	229	1	0	406	39	0	373	128	1528
4:15 PM	47	218	2	124	261	1	0	375	35	0	337	100	1500
4:30 PM	45	164	1	130	226	3	0	407	56	0	380	143	1555
4:45 PM	55	229	4	143	294	3	0	366	36	0	321	115	1566
5:00 PM	44	215	7	126	267	3	0	405	45	0	385	125	1622
5:15 PM	61	225	4	158	295	4	0	376	34	0	343	98	1598
5:30 PM	53	229	3	137	266	5	0	393	43	0	364	112	1605
5:45 PM	51	190	5	155	270	2	0	384	47	0	380	127	1611
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	402	1635	31	1109	2108	22	0	3112	335	0	2883	948	12585
APPROACH %'s :	19.44%	79.06%	1.50%	34.24%	65.08%	0.68%	0.00%	90.28%	9.72%	0.00%	75.25%	24.75%	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	209	859	19	576	1098	14	0	1558	169	0	1472	462	6436
PEAK HR FACTOR :		0.937			0.923			0.959			0.948		0.992

	UTURNS			
	NB	SB	EB	WB
4:00 PM	0	0	0	0
4:15 PM	0	0	0	0
4:30 PM	0	0	0	0
4:45 PM	0	1	0	0
5:00 PM	0	0	0	0
5:15 PM	1	0	0	0
5:30 PM	1	1	0	0
5:45 PM	1	0	0	0
	NB	SB	EB	WB
TOTAL VOLUMES :	3	2	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-005 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Bellflower Blvd			Bellflower Blvd			7th St			7th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	3	1	2	2	1	1	3	0	1	3	0	
7:00 AM	0	77	42	50	50	21	34	556	1	12	332	56	1231
7:15 AM	0	84	49	38	68	31	60	581	4	6	378	60	1359
7:30 AM	0	103	33	39	60	39	56	506	3	12	455	72	1378
7:45 AM	0	107	47	42	84	28	75	480	6	13	398	68	1348
8:00 AM	0	104	45	33	69	26	48	470	5	17	436	36	1289
8:15 AM	0	102	45	48	67	52	62	547	4	12	453	64	1456
8:30 AM	0	134	52	60	85	44	57	472	2	13	421	38	1378
8:45 AM	0	125	44	44	107	38	71	436	3	13	393	57	1331
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	836	357	354	590	279	463	4048	28	98	3266	451	10770
APPROACH %'s :	0.00%	70.08%	29.92%	28.95%	48.24%	22.81%	10.20%	89.18%	0.62%	2.57%	85.61%	11.82%	
PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	0	447	189	183	305	150	242	1969	17	55	1708	206	5471
PEAK HR FACTOR :		0.855			0.844			0.909			0.931		0.939

UTURNS				
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	1
8:00 AM	0	0	0	2
8:15 AM	0	1	0	1
8:30 AM	0	1	0	1
8:45 AM	0	0	0	2
	NB	SB	EB	WB
TOTAL	0	2	0	7

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-005 | **Day:** Tuesday

City: Long Beach | **Date:** 7/14/2015

PM

NS/EW Streets:	Bellflower Blvd			Bellflower Blvd			7th St			7th St				UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND							
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
LANES:	0	3	1	2	2	1	1	3	0	1	3	0					
4:00 PM	0	122	46	77	137	89	50	502	6	15	399	42	1485	0	0	0	2
4:15 PM	0	133	33	69	151	61	42	448	5	14	408	48	1412	0	0	0	1
4:30 PM	0	113	38	84	137	89	45	499	5	13	404	39	1466	0	0	0	0
4:45 PM	0	149	36	74	154	90	42	474	7	16	383	42	1467	0	0	0	0
5:00 PM	0	134	38	67	132	85	42	497	2	13	412	30	1452	0	0	0	0
5:15 PM	0	150	41	68	165	79	24	503	3	10	371	26	1440	0	0	0	0
5:30 PM	0	109	51	33	135	58	39	508	5	17	447	21	1423	0	0	0	0
5:45 PM	0	108	39	65	159	87	44	495	10	15	393	21	1436	0	0	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES :	0	1018	322	537	1170	638	328	3926	43	113	3217	269	11581	0	0	0	3
APPROACH %'s :	0.00%	75.97%	24.03%	22.90%	49.89%	27.21%	7.63%	91.37%	1.00%	3.14%	89.39%	7.47%					
PEAK HR START TIME :	400 PM												TOTAL				
PEAK HR VOL :	0	517	153	304	579	329	179	1923	23	58	1594	171	5830				
PEAK HR FACTOR :		0.905			0.953			0.952			0.970		0.981				

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-006

Day: Tuesday

City: Long Beach

Date: 7/14/2015

AM

NS/EW Streets:	Channel Dr			Channel Dr			7th St			7th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1.5	0.5	1	1	3	1	1	3	0	
7:00 AM	11	14	26	4	2	4	8	612	10	25	367	113	1196
7:15 AM	12	10	23	8	4	9	15	644	5	21	437	126	1314
7:30 AM	23	21	28	11	4	10	19	534	6	16	489	106	1267
7:45 AM	12	22	24	12	2	12	27	554	6	22	476	115	1284
8:00 AM	10	17	25	33	11	14	14	505	9	25	455	82	1200
8:15 AM	20	9	28	24	9	15	15	597	4	19	486	83	1309
8:30 AM	8	9	35	25	7	11	11	556	9	27	465	64	1227
8:45 AM	17	11	39	19	3	6	25	468	14	25	430	68	1125
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	113	113	228	136	42	81	134	4470	63	180	3605	757	9922
APPROACH %'s :	24.89%	24.89%	50.22%	52.51%	16.22%	31.27%	2.87%	95.78%	1.35%	3.96%	79.37%	16.67%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	57	70	100	64	21	45	75	2237	26	84	1857	429	5065
PEAK HR FACTOR :		0.788			0.560			0.880			0.967		0.964

CONTROL : Signalized

	UTURNS			
	NB	SB	EB	WB
7:00 AM	1	0	0	1
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	2	0	0
8:15 AM	1	1	0	0
8:30 AM	1	0	1	1
8:45 AM	0	0	0	0
	NB	SB	EB	WB
TOTAL VOLUMES	3	3	1	2

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-006

Day: Tuesday

City: Long Beach

Date: 7/14/2015

PM

NS/EW Streets:	Channel Dr			Channel Dr			7th St			7th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	1	1	1.5	0.5	1	1	3	1	1	3	0	
4:00 PM	12	2	33	126	19	28	9	579	18	24	430	13	1293
4:15 PM	11	2	29	94	8	17	8	521	16	66	428	11	1211
4:30 PM	7	1	39	118	17	17	3	591	16	42	444	6	1301
4:45 PM	14	3	35	64	13	5	3	542	14	51	426	11	1181
5:00 PM	6	3	26	37	13	10	2	574	21	41	430	10	1173
5:15 PM	11	1	31	38	12	9	1	574	18	37	405	9	1146
5:30 PM	14	4	27	26	9	8	4	583	21	44	447	12	1199
5:45 PM	12	3	35	28	14	5	9	567	12	48	422	5	1160
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	87	19	255	531	105	99	39	4531	136	353	3432	77	9664
APPROACH %'s :	24.10%	5.26%	70.64%	72.24%	14.29%	13.47%	0.83%	96.28%	2.89%	9.14%	88.87%	1.99%	
PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	44	8	136	402	57	67	23	2233	64	183	1728	41	4986
PEAK HR FACTOR :		0.904			0.760			0.951			0.966		0.958

UTURNS				
	NB	SB	EB	WB
4:00 PM	0	0	0	0
4:15 PM	0	0	1	1
4:30 PM	0	0	0	0
4:45 PM	0	0	0	0
5:00 PM	2	0	0	0
5:15 PM	0	0	0	0
5:30 PM	0	0	0	0
5:45 PM	2	0	1	1
	NB	SB	EB	WB
TOTAL	4	0	2	2

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-007 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Campus Dr			Campus Dr			7th St			7th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	0.5	1	3	0	0	3	0	
7:00 AM	0	0	0	0	0	3	6	627	0	0	523	20	1179
7:15 AM	0	0	0	0	0	9	18	650	0	0	551	27	1255
7:30 AM	0	0	0	1	0	4	20	570	0	0	619	47	1261
7:45 AM	0	0	0	6	0	10	27	543	0	0	611	63	1260
8:00 AM	0	0	0	5	0	4	25	554	0	0	544	63	1195
8:15 AM	0	0	0	6	0	6	23	607	0	0	606	46	1294
8:30 AM	0	0	0	14	0	15	32	589	0	0	521	55	1226
8:45 AM	0	0	0	13	0	18	22	501	0	0	535	50	1139
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	45	0	69	173	4641	0	0	4510	371	9809
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	39.47%	0.00%	60.53%	3.59%	96.41%	0.00%	0.00%	92.40%	7.60%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	0	0	0	18	0	24	95	2274	0	0	2380	219	5010
PEAK HR FACTOR :	0.000			0.656			0.940			0.964			0.968

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement
Prepared by:
National Data & Surveying Services

Project ID: 15-5431-007 | **Day:** Tuesday

City: Long Beach | **Date:** 7/14/2015

PM

NS/EW Streets:	Campus Dr			Campus Dr			7th St			7th St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	1.5	0	0.5	1	3	0	0	3	0	
4:00 PM	0	0	0	36	0	19	12	698	0	0	466	12	1243
4:15 PM	0	0	0	41	0	12	7	665	0	0	481	5	1211
4:30 PM	0	0	0	23	0	12	13	705	0	0	491	9	1253
4:45 PM	0	0	0	28	0	7	10	649	0	0	478	6	1178
5:00 PM	0	0	0	72	0	15	7	641	0	0	457	7	1199
5:15 PM	0	0	0	36	0	13	11	615	0	0	443	8	1126
5:30 PM	0	0	0	47	0	9	5	646	0	0	498	17	1222
5:45 PM	0	0	0	8	0	7	9	604	0	0	466	4	1098
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	291	0	94	74	5223	0	0	3780	68	9530
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	75.58%	0.00%	24.42%	1.40%	98.60%	0.00%	0.00%	98.23%	1.77%	
PEAK HR START TIME :	400 PM												TOTAL
PEAK HR VOL :	0	0	0	128	0	50	42	2717	0	0	1916	32	4885
PEAK HR FACTOR :	0.000			0.809			0.961			0.974			0.975

UTURNS			
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-008 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Bellflower Blvd			Bellflower Blvd			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1.5	2.5	1	1	3	0	1	3	1	
7:00 AM	13	34	23	41	17	2	19	187	1	7	162	70	576
7:15 AM	20	60	9	60	17	3	10	192	4	8	187	50	620
7:30 AM	21	53	14	49	17	1	16	208	4	4	251	59	697
7:45 AM	20	83	10	60	43	5	11	194	8	2	211	58	705
8:00 AM	17	77	13	46	33	4	11	174	8	8	206	48	645
8:15 AM	15	66	11	63	28	3	20	175	8	5	183	51	628
8:30 AM	28	85	10	57	32	2	16	171	9	9	213	74	706
8:45 AM	22	70	7	76	38	4	15	172	11	13	202	57	687
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	156	528	97	452	225	24	118	1473	53	56	1615	467	5264
APPROACH %'s :	19.97%	67.61%	12.42%	64.48%	32.10%	3.42%	7.18%	89.60%	3.22%	2.62%	75.54%	21.84%	
PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	80	311	44	226	136	14	58	714	33	24	813	231	2684
PEAK HR FACTOR :		0.884			0.870			0.945			0.902		0.950

CONTROL : Signalized

UTURNS				
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	3	0	1
7:30 AM	0	1	0	0
7:45 AM	0	2	1	0
8:00 AM	0	1	0	0
8:15 AM	0	2	0	0
8:30 AM	0	0	0	1
8:45 AM	0	0	0	0
	NB	SB	EB	WB
TOTAL	0	9	1	2

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-008 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Bellflower Blvd			Bellflower Blvd			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	1	1.5	2.5	1	1	3	0	1	3	1	
4:00 PM	9	57	9	90	62	3	22	250	12	21	182	64	781
4:15 PM	20	64	15	92	65	8	22	243	17	19	236	95	896
4:30 PM	11	43	13	93	68	4	18	265	14	15	207	69	820
4:45 PM	13	67	15	89	68	3	20	274	13	16	267	77	922
5:00 PM	13	49	7	89	53	4	26	288	17	19	259	87	911
5:15 PM	19	75	25	101	71	2	15	280	19	24	252	73	956
5:30 PM	9	67	18	85	59	6	18	296	8	27	261	66	920
5:45 PM	10	55	16	114	69	3	23	284	16	23	216	75	904
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	104	477	118	753	515	33	164	2180	116	164	1880	606	7110
APPROACH %'s :	14.88%	68.24%	16.88%	57.88%	39.58%	2.54%	6.67%	88.62%	4.72%	6.19%	70.94%	22.87%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	54	258	65	364	251	15	79	1138	57	86	1039	303	3709
PEAK HR FACTOR :		0.792			0.905			0.962			0.978		0.970

UTURNS			
NB	SB	EB	WB
0	3	1	1
0	0	1	0
0	3	0	0
0	2	0	0
0	1	0	1
0	0	0	0
0	2	0	1
0	6	2	0
NB	SB	EB	WB
0	17	4	3

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-009 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Channel Dr			Channel Dr			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	2	0	1	1	3	0	0	3	1	
7:00 AM	0	0	0	17	0	22	4	224	0	0	201	18	486
7:15 AM	0	0	0	17	0	19	3	278	0	0	233	16	566
7:30 AM	0	0	0	15	0	15	8	230	0	0	292	22	582
7:45 AM	0	0	0	14	0	21	4	277	0	0	269	29	614
8:00 AM	0	0	0	24	0	19	2	217	0	0	226	22	510
8:15 AM	0	0	0	14	0	13	6	249	0	0	244	20	546
8:30 AM	0	0	0	13	0	18	6	230	0	0	264	21	552
8:45 AM	0	0	0	18	0	17	6	244	0	0	260	27	572
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	132	0	144	39	1949	0	0	1989	175	4428
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	47.83%	0.00%	52.17%	1.96%	98.04%	0.00%	0.00%	91.91%	8.09%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	0	0	70	0	74	17	1002	0	0	1020	89	2272
PEAK HR FACTOR :		0.000			0.837			0.907			0.883		0.925

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-009 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Channel Dr			Channel Dr			Pacific Coast Hwy			Pacific Coast Hwy			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	2	0	1	1	3	0	0	3	1	
4:00 PM	0	0	0	24	0	20	4	330	0	0	263	25	666
4:15 PM	0	0	0	43	0	30	9	322	0	0	282	10	696
4:30 PM	0	0	0	44	0	19	7	357	0	0	302	16	745
4:45 PM	0	0	0	31	0	18	10	372	0	0	347	12	790
5:00 PM	0	0	0	33	0	16	9	360	0	0	350	12	780
5:15 PM	0	0	0	30	0	23	19	401	0	0	345	10	828
5:30 PM	0	0	0	30	0	32	16	362	0	0	303	9	752
5:45 PM	0	0	0	20	0	36	19	407	0	0	286	13	781
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	255	0	194	93	2911	0	0	2478	107	6038
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	56.79%	0.00%	43.21%	3.10%	96.90%	0.00%	0.00%	95.86%	4.14%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	124	0	89	54	1495	0	0	1345	43	3150
PEAK HR FACTOR :		0.000			0.859			0.922			0.959		0.951

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	1	0
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
0	0	2	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-010 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			SR-22 WB Ramps			SR-22 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	1	1	2	0	0	0	0	2	0	1	
7:00 AM	0	72	4	9	180	0	0	0	0	153	0	39	457
7:15 AM	0	85	3	5	207	0	0	0	0	124	0	49	473
7:30 AM	0	84	8	12	193	0	0	0	0	123	0	67	487
7:45 AM	0	118	6	9	205	0	0	0	0	191	0	82	611
8:00 AM	0	99	8	13	198	0	0	0	0	144	0	53	515
8:15 AM	0	100	3	7	185	0	0	0	0	188	0	67	550
8:30 AM	0	118	5	9	218	0	0	0	0	160	0	74	584
8:45 AM	0	130	8	11	237	0	0	0	0	189	0	71	646
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	806	45	75	1623	0	0	0	0	1272	0	502	4323
APPROACH %'s :	0.00%	94.71%	5.29%	4.42%	95.58%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	71.70%	0.00%	28.30%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	0	447	24	40	838	0	0	0	0	681	0	265	2295
PEAK HR FACTOR :		0.853			0.885			0.000			0.910		0.888

CONTROL : Signalized

UTURNS				
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
TOTAL VOLUMES	0	0	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-010 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			SR-22 WB Ramps			SR-22 WB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	1	1	2	0	0	0	0	2	0	1	
4:00 PM	0	185	10	14	185	0	0	0	0	232	0	63	689
4:15 PM	0	202	15	8	215	0	0	0	0	222	0	69	731
4:30 PM	0	177	8	11	213	0	0	0	0	231	0	75	715
4:45 PM	0	215	7	6	201	0	0	0	0	267	0	88	784
5:00 PM	0	255	11	17	254	0	0	0	0	239	0	72	848
5:15 PM	0	211	19	13	274	0	0	0	0	269	0	94	880
5:30 PM	0	187	14	8	217	0	0	0	0	268	0	61	755
5:45 PM	0	156	15	12	233	0	0	0	0	252	0	71	739
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	1588	99	89	1792	0	0	0	0	1980	0	593	6141
APPROACH %'s :	0.00%	94.13%	5.87%	4.73%	95.27%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	76.95%	0.00%	23.05%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	868	51	44	946	0	0	0	0	1043	0	315	3267
PEAK HR FACTOR :		0.864			0.862			0.000			0.935		0.928

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
0	1	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-011

City: Long Beach

Day: Tuesday

Date: 7/14/2015

AM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			SR-22 EB Ramps			SR-22 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	1	1	2	0	0	0	0	2	0	1	
7:00 AM	0	60	209	61	272	0	0	0	0	2	0	13	617
7:15 AM	0	77	208	54	291	0	0	0	0	1	0	15	646
7:30 AM	0	75	221	35	282	0	0	0	0	0	0	12	625
7:45 AM	0	98	210	41	338	0	0	0	0	2	0	22	711
8:00 AM	0	90	235	48	308	0	0	0	0	2	0	20	703
8:15 AM	0	98	220	44	311	0	0	0	0	2	0	10	685
8:30 AM	0	107	214	40	335	0	0	0	0	4	0	11	711
8:45 AM	0	119	224	41	397	0	0	0	0	3	0	19	803
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	724	1741	364	2534	0	0	0	0	16	0	122	5501
APPROACH %'s :	0.00%	29.37%	70.63%	12.56%	87.44%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	11.59%	0.00%	88.41%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	0	414	893	173	1351	0	0	0	0	11	0	60	2902
PEAK HR FACTOR :		0.953			0.870			0.000			0.807		0.903

UTURNS				
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	0	0	0
8:00 AM	0	1	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
	NB	SB	EB	WB
TOTAL VOLUMES	0	1	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-011

Day: Tuesday

City: Long Beach

Date: 7/14/2015

PM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			SR-22 EB Ramps			SR-22 EB Ramps			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	2	1	1	2	0	0	0	0	2	0	1	
4:00 PM	0	175	266	48	362	0	0	0	0	4	0	25	880
4:15 PM	0	189	261	47	392	0	0	0	0	8	0	25	922
4:30 PM	0	175	237	38	401	0	0	0	0	10	0	16	877
4:45 PM	0	208	244	44	420	0	0	0	0	5	0	15	936
5:00 PM	0	249	281	53	443	0	0	0	0	2	0	12	1040
5:15 PM	0	218	234	65	464	0	0	0	0	7	0	15	1003
5:30 PM	0	178	232	52	439	0	0	0	0	6	0	22	929
5:45 PM	0	156	190	47	449	0	0	0	0	2	0	12	856
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	1548	1945	394	3370	0	0	0	0	44	0	142	7443
APPROACH %'s :	0.00%	44.32%	55.68%	10.47%	89.53%	0.00%	#DIV/0!	#DIV/0!	#DIV/0!	23.66%	0.00%	76.34%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	853	991	214	1766	0	0	0	0	20	0	64	3908
PEAK HR FACTOR :		0.870			0.936			0.000			0.750		0.939

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	1	0	0
NB	SB	EB	WB
0	1	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-012 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			Loynes Dr			Loynes Dr				UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND							
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
LANES:	1	3	0	1	3	1	1	2	0	1	2	1					
7:00 AM	5	199	12	2	211	4	3	42	18	17	10	8	531	0	0	0	0
7:15 AM	6	249	4	6	303	4	1	40	20	11	20	13	677	0	0	0	1
7:30 AM	7	297	10	11	223	3	3	42	25	25	34	6	686	0	0	0	0
7:45 AM	10	289	18	9	279	6	1	33	28	17	17	10	717	0	1	0	0
8:00 AM	21	222	16	7	234	3	3	37	20	19	30	15	627	0	0	0	0
8:15 AM	10	250	20	4	258	0	10	49	33	31	29	9	703	2	0	0	0
8:30 AM	12	258	11	7	214	7	8	42	31	26	23	13	652	1	0	0	0
8:45 AM	15	271	17	13	261	2	4	44	28	33	41	15	744	0	1	0	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES :	86	2035	108	59	1983	29	33	329	203	179	204	89	5337	3	2	0	1
APPROACH %'s :	3.86%	91.30%	4.85%	2.85%	95.75%	1.40%	5.84%	58.23%	35.93%	37.92%	43.22%	18.86%					
PEAK HR START TIME :	730 AM												TOTAL				
PEAK HR VOL :	48	1058	64	31	994	12	17	161	106	92	110	40	2733				
PEAK HR FACTOR :		0.923			0.882			0.772			0.877		0.953				

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-012

Day: Tuesday

City: Long Beach

Date: 7/14/2015

PM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			Loynes Dr			Loynes Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	1	3	1	1	2	0	1	2	1	
4:00 PM	39	257	31	16	327	3	7	40	18	41	65	14	858
4:15 PM	29	276	48	21	336	11	7	41	30	42	69	16	926
4:30 PM	34	278	33	16	386	5	7	46	28	47	69	22	971
4:45 PM	36	330	44	16	372	11	10	45	30	44	95	27	1060
5:00 PM	55	349	34	13	366	10	4	38	32	44	103	13	1061
5:15 PM	36	333	38	17	400	12	6	56	31	54	106	13	1102
5:30 PM	44	300	31	18	360	8	3	40	39	56	82	15	996
5:45 PM	45	277	29	21	388	7	6	49	43	45	91	19	1020
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	318	2400	288	138	2935	67	50	355	251	373	680	139	7994
APPROACH %'s :	10.58%	79.84%	9.58%	4.39%	93.47%	2.13%	7.62%	54.12%	38.26%	31.29%	57.05%	11.66%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	171	1312	147	64	1498	41	23	179	132	198	386	68	4219
PEAK HR FACTOR :		0.930			0.934			0.898			0.942		0.957

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
4	1	0	0
2	0	0	0
0	0	0	0
0	0	0	0
4	0	0	0
1	0	0	0
1	1	0	0
1	2	0	0
NB	SB	EB	WB
13	4	0	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-013 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			Loynes Dr			Loynes Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	2	1	2	0	2	0	0	0	
7:00 AM	6	224	0	0	233	27	45	0	13	0	0	0	548
7:15 AM	7	235	0	0	286	26	54	0	20	0	0	0	628
7:30 AM	6	241	0	0	249	33	39	0	14	0	0	0	582
7:45 AM	15	267	0	0	306	38	59	0	13	0	0	0	698
8:00 AM	13	254	0	0	249	53	54	0	13	0	0	0	636
8:15 AM	5	271	0	0	265	54	58	0	15	0	0	0	668
8:30 AM	16	266	0	0	302	48	57	0	12	0	0	0	701
8:45 AM	13	273	0	0	348	51	61	0	20	0	0	0	766
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	81	2031	0	0	2238	330	427	0	120	0	0	0	5227
APPROACH %'s :	3.84%	96.16%	0.00%	0.00%	87.15%	12.85%	78.06%	0.00%	21.94%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	47	1064	0	0	1164	206	230	0	60	0	0	0	2771
PEAK HR FACTOR :		0.971			0.858			0.895			0.000		0.904

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
1	0	0	0
0	0	0	0
NB	SB	EB	WB
1	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-013 | **Day:** Tuesday

City: Long Beach | **Date:** 7/14/2015

PM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			Loynes Dr			Loynes Dr			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	0	2	1	2	0	2	0	0	0	
4:00 PM	29	382	0	0	269	94	56	0	19	0	0	0	849
4:15 PM	31	394	0	0	315	88	58	0	15	0	0	0	901
4:30 PM	17	335	0	0	288	119	59	0	14	0	0	0	832
4:45 PM	27	409	0	0	301	125	63	0	21	0	0	0	946
5:00 PM	21	456	0	0	310	142	63	0	14	0	0	0	1006
5:15 PM	32	368	0	0	319	148	80	0	22	0	0	0	969
5:30 PM	25	354	0	0	306	127	59	0	17	0	0	0	888
5:45 PM	28	295	0	0	326	126	50	0	22	0	0	0	847
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	210	2993	0	0	2434	969	488	0	144	0	0	0	7238
APPROACH %'s :	6.56%	93.44%	0.00%	0.00%	71.53%	28.47%	77.22%	0.00%	22.78%	#DIV/0!	#DIV/0!	#DIV/0!	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	105	1587	0	0	1236	542	265	0	74	0	0	0	3809
PEAK HR FACTOR :		0.887			0.952			0.831			0.000		0.947

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
2	0	0	0
0	0	1	0
0	0	0	0
0	0	1	0
NB	SB	EB	WB
2	0	2	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-014 | **Day:** Tuesday

City: Long Beach | **Date:** 7/14/2015

AM

NS/EW Streets:	Naples Plaza			Naples Plaza			2nd St			2nd St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0	1	0	0	0	0	2	1	1	2	0	
7:00 AM	5	0	18	0	0	0	0	336	2	7	237	0	605
7:15 AM	2	0	17	0	0	0	0	375	8	5	252	0	659
7:30 AM	9	0	19	0	0	0	0	345	7	15	311	0	706
7:45 AM	8	0	18	0	0	0	0	381	15	27	276	0	725
8:00 AM	8	0	13	0	0	0	0	339	16	16	353	0	745
8:15 AM	8	0	19	0	0	0	0	343	17	16	316	0	719
8:30 AM	11	0	23	0	0	0	0	368	19	22	297	0	740
8:45 AM	11	0	20	0	0	0	0	320	27	29	322	0	729
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	62	0	147	0	0	0	0	2807	111	137	2364	0	5628
APPROACH %'s :	29.67%	0.00%	70.33%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	96.20%	3.80%	5.48%	94.52%	0.00%	
PEAK HR START TIME :	800 AM												TOTAL
PEAK HR VOL :	38	0	75	0	0	0	0	1370	79	83	1288	0	2933
PEAK HR FACTOR :		0.831			0.000			0.936			0.929		0.984

	UTURNS			
	NB	SB	EB	WB
7:00 AM	1	0	0	0
7:15 AM	0	0	0	1
7:30 AM	0	0	0	1
7:45 AM	0	0	0	1
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
	NB	SB	EB	WB
TOTAL VOLUMES :	1	0	0	3

CONTROL : Signalized

Intersection Turning Movement
Prepared by:
National Data & Surveying Services

Project ID: 15-5431-014
Day: Tuesday
City: Long Beach
Date: 7/14/2015

PM

NS/EW Streets:	Naples Plaza			Naples Plaza			2nd St			2nd St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	0	1	0	0	0	0	2	1	1	2	0	
4:00 PM	14	0	34	0	0	0	0	409	24	23	359	0	863
4:15 PM	15	0	26	0	0	0	0	432	18	15	396	0	902
4:30 PM	14	0	18	0	0	0	0	434	19	25	378	0	888
4:45 PM	11	0	16	0	0	0	0	458	22	26	356	0	889
5:00 PM	12	0	26	0	0	0	0	403	12	29	427	0	909
5:15 PM	9	0	20	0	0	0	0	437	19	26	462	0	973
5:30 PM	10	0	22	0	0	0	0	401	9	17	449	0	908
5:45 PM	7	0	13	0	0	0	0	379	19	24	452	0	894
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	92	0	175	0	0	0	0	3353	142	185	3279	0	7226
APPROACH %'s :	34.46%	0.00%	65.54%	#DIV/0!	#DIV/0!	#DIV/0!	0.00%	95.94%	4.06%	5.34%	94.66%	0.00%	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	38	0	81	0	0	0	0	1620	59	96	1790	0	3684
PEAK HR FACTOR :		0.783			0.000			0.921			0.966		0.947

UTURNS			
NB	SB	EB	WB
0	0	0	1
0	0	0	1
0	0	0	1
0	0	0	2
0	0	0	0
0	0	0	2
1	0	0	2
0	0	0	1
NB	SB	EB	WB
1	0	0	10

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-015

Day: Tuesday

City: Long Beach

Date: 7/14/2015

AM

NS/EW Streets:	Marina Dr			Marina Dr			2nd St			2nd St				UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND							
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
LANES:	1.5	1.5	1	1.5	0.5	1	1	3	1	1	3	0					
7:00 AM	40	2	12	19	3	7	5	312	70	17	208	5	700	0	0	1	0
7:15 AM	27	2	10	13	7	3	3	403	93	8	286	5	860	0	0	0	0
7:30 AM	45	2	11	18	3	7	5	381	97	17	282	7	875	0	0	3	1
7:45 AM	41	0	17	23	5	3	10	409	99	15	297	9	928	0	0	0	1
8:00 AM	57	1	42	20	5	18	6	347	91	12	337	12	948	0	0	0	0
8:15 AM	56	3	22	25	2	7	7	385	88	11	326	9	941	0	0	0	0
8:30 AM	39	3	15	18	1	12	7	371	84	11	341	10	912	0	0	1	0
8:45 AM	44	2	8	15	2	7	7	348	83	12	382	14	924	0	0	2	1
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES :	349	15	137	151	28	64	50	2956	705	103	2459	71	7088	0	0	7	3
APPROACH %'s :	69.66%	2.99%	27.35%	62.14%	11.52%	26.34%	1.35%	79.66%	19.00%	3.91%	93.39%	2.70%					

PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	193	7	96	86	13	40	30	1512	362	49	1301	40	3729
PEAK HR FACTOR :		0.740			0.808			0.919			0.960		0.983

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-015 | **Day:** Tuesday

City: Long Beach | **Date:** 7/14/2015

PM

NS/EW Streets:	Marina Dr			Marina Dr			2nd St			2nd St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1.5	1.5	1	1.5	0.5	1	1	3	1	1	3	0	
4:00 PM	84	8	34	26	7	16	11	392	103	11	367	9	1068
4:15 PM	94	5	23	21	9	12	12	456	104	13	426	12	1187
4:30 PM	87	6	19	24	5	9	18	378	114	30	348	17	1055
4:45 PM	71	9	29	23	8	15	21	444	129	15	424	12	1200
5:00 PM	115	8	35	34	8	19	16	417	111	15	447	14	1239
5:15 PM	98	8	21	16	5	23	20	435	121	15	430	13	1205
5:30 PM	79	15	19	26	5	15	15	423	122	20	533	10	1282
5:45 PM	105	11	15	31	9	31	11	369	122	23	464	14	1205
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	733	70	195	201	56	140	124	3314	926	142	3439	101	9441
APPROACH %'s :	73.45%	7.01%	19.54%	50.63%	14.11%	35.26%	2.84%	75.94%	21.22%	3.86%	93.40%	2.74%	
PEAK HR START TIME :	500 PM												TOTAL
PEAK HR VOL :	397	42	90	107	27	88	62	1644	476	73	1874	51	4931
PEAK HR FACTOR :		0.837			0.782			0.947			0.887		0.962

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	0	2	0
0	0	1	2
0	0	8	1
0	0	3	3
0	0	1	1
0	0	3	1
0	0	1	0
0	0	2	2
NB	SB	EB	WB
0	0	21	10

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-016 | **Day:** Tuesday

City: Long Beach | **Date:** 7/14/2015

AM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			2nd St			2nd St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	2	3	1	2	2.5	1.5	2	3	1	
7:00 AM	87	170	66	48	198	24	39	215	80	79	116	21	1143
7:15 AM	98	170	60	57	212	32	42	286	112	87	178	32	1366
7:30 AM	96	248	80	54	204	31	48	240	126	78	175	43	1423
7:45 AM	73	189	69	52	214	43	65	298	100	108	232	41	1484
8:00 AM	95	191	72	57	178	64	49	285	81	73	209	36	1390
8:15 AM	77	211	67	42	212	55	69	258	96	86	205	32	1410
8:30 AM	98	201	61	38	159	53	60	273	77	81	232	25	1358
8:45 AM	87	193	77	34	198	75	63	253	65	98	249	36	1428
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	711	1573	552	382	1575	377	435	2108	737	690	1596	266	11002
APPROACH %'s :	25.07%	55.47%	19.46%	16.37%	67.48%	16.15%	13.26%	64.27%	22.47%	27.04%	62.54%	10.42%	
PEAK HR START TIME :	730 AM												TOTAL
PEAK HR VOL :	341	839	288	205	808	193	231	1081	403	345	821	152	5707
PEAK HR FACTOR :		0.866			0.976			0.926			0.865		0.961

UTURNS				
	NB	SB	EB	WB
7:00 AM	0	0	0	2
7:15 AM	0	0	0	1
7:30 AM	0	0	0	1
7:45 AM	0	0	1	3
8:00 AM	0	0	0	4
8:15 AM	0	0	0	0
8:30 AM	0	0	0	2
8:45 AM	0	0	0	1
	NB	SB	EB	WB
TOTAL	0	0	1	14

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-016 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			2nd St			2nd St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	2	3	0	2	3	1	2	2.5	1.5	2	3	1	
4:00 PM	78	217	81	45	242	87	104	279	75	86	238	31	1563
4:15 PM	123	206	75	70	210	83	88	323	77	82	264	65	1666
4:30 PM	65	207	76	45	268	80	74	276	89	96	261	62	1599
4:45 PM	84	219	70	70	270	81	96	318	97	91	296	83	1775
5:00 PM	117	268	99	71	278	118	92	301	76	92	260	86	1858
5:15 PM	94	237	104	59	290	100	97	311	84	96	303	76	1851
5:30 PM	113	233	78	87	265	115	75	295	109	89	320	81	1860
5:45 PM	91	236	83	61	290	127	98	228	86	99	293	65	1757
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	765	1823	666	508	2113	791	724	2331	693	731	2235	549	13929
APPROACH %'s :	23.51%	56.02%	20.47%	14.89%	61.93%	23.18%	19.32%	62.19%	18.49%	20.80%	63.58%	15.62%	

UTURNS				
	NB	SB	EB	WB
4:00 PM	0	0	0	4
4:15 PM	0	0	0	0
4:30 PM	0	0	2	3
4:45 PM	0	0	0	0
5:00 PM	0	0	0	3
5:15 PM	0	0	0	5
5:30 PM	0	0	1	1
5:45 PM	0	0	0	4
	NB	SB	EB	WB
TOTAL	0	0	3	20

PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	408	957	351	287	1103	414	360	1225	366	368	1179	326	7344
PEAK HR FACTOR :		0.886			0.966			0.955			0.956		0.987

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-017

Day: Tuesday

City: Long Beach

Date: 7/14/2015

AM

NS/EW Streets:	Shopkeeper Rd			Shopkeeper Rd			2nd St			2nd St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	1	0	0	1	0	1	3	0	1	3	0	
7:00 AM	8	0	11	0	2	0	0	331	3	11	220	0	586
7:15 AM	5	0	14	0	1	0	0	395	3	22	288	1	729
7:30 AM	6	1	17	1	0	0	2	380	2	12	302	1	724
7:45 AM	6	1	14	0	1	1	1	392	11	23	361	1	812
8:00 AM	18	1	10	0	0	0	3	388	12	26	299	0	757
8:15 AM	20	0	14	1	1	0	3	353	15	36	312	1	756
8:30 AM	11	0	15	0	0	0	0	354	4	37	316	0	737
8:45 AM	21	0	12	0	0	1	4	342	9	51	355	0	795
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	95	3	107	2	5	2	13	2935	59	218	2453	4	5896
APPROACH %'s :	46.34%	1.46%	52.20%	22.22%	55.56%	22.22%	0.43%	97.61%	1.96%	8.15%	91.70%	0.15%	
PEAK HR START TIME :	745 AM												TOTAL
PEAK HR VOL :	55	2	53	1	2	1	7	1487	42	122	1288	2	3062
PEAK HR FACTOR :		0.809			0.500			0.950			0.917		0.943

UTURNS				
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	2	0
7:45 AM	0	0	1	0
8:00 AM	0	0	3	0
8:15 AM	0	0	2	0
8:30 AM	0	0	0	0
8:45 AM	0	0	4	0
	NB	SB	EB	WB
TOTAL	0	0	12	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-017 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Shopkeeper Rd			Shopkeeper Rd			2nd St			2nd St					UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND								
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
LANES:	0	1	0	0	1	0	1	3	0	1	3	0						
4:00 PM	43	0	42	1	0	0	6	387	9	51	318	0	857		0	0	6	0
4:15 PM	33	0	37	0	1	0	8	436	16	55	384	0	970		0	0	8	1
4:30 PM	37	0	37	0	0	0	5	388	17	49	378	0	911		0	0	5	0
4:45 PM	40	0	54	0	0	0	10	429	4	46	413	0	996		0	0	10	0
5:00 PM	32	1	51	1	0	1	4	443	17	58	411	1	1020		0	0	3	1
5:15 PM	30	2	49	0	0	0	5	437	26	76	452	0	1077		0	0	5	0
5:30 PM	45	0	50	0	0	0	3	410	14	57	450	0	1029		0	0	3	0
5:45 PM	42	0	35	0	1	0	9	353	21	69	409	0	939		0	0	9	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL		NB	SB	EB	WB
TOTAL VOLUMES :	302	3	355	2	2	1	50	3283	124	461	3215	1	7799		0	0	49	2
APPROACH %'s :	45.76%	0.45%	53.79%	40.00%	40.00%	20.00%	1.45%	94.97%	3.59%	12.54%	87.44%	0.03%						
PEAK HR START TIME :	445 PM												TOTAL					
PEAK HR VOL :	147	3	204	1	0	1	22	1719	61	237	1726	1	4122					
PEAK HR FACTOR :		0.932			0.250			0.963			0.930		0.957					

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-018 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

AM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			2nd St			2nd St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	2	0	2	2	2	0	0	3	1	
7:00 AM	0	0	0	115	0	137	192	156	0	0	96	39	735
7:15 AM	0	0	0	103	0	192	210	190	0	0	120	40	855
7:30 AM	0	0	0	93	0	172	217	188	0	0	158	56	884
7:45 AM	0	0	0	84	0	231	215	184	0	0	136	59	909
8:00 AM	0	0	0	61	0	201	255	148	0	0	129	41	835
8:15 AM	0	0	0	64	0	227	225	144	0	0	133	47	840
8:30 AM	0	0	0	66	0	232	225	136	0	0	109	50	818
8:45 AM	0	0	0	77	0	281	239	110	0	0	132	52	891
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	663	0	1673	1778	1256	0	0	1013	384	6767
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	28.38%	0.00%	71.62%	58.60%	41.40%	0.00%	0.00%	72.51%	27.49%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	0	0	0	341	0	796	897	710	0	0	543	196	3483
PEAK HR FACTOR :		0.000			0.902			0.992			0.863		0.958

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-018 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Studebaker Rd			Studebaker Rd			2nd St			2nd St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	0	0	0	2	0	2	2	2	0	0	3	1	
4:00 PM	0	0	0	53	0	227	301	135	0	0	148	106	970
4:15 PM	0	0	0	83	0	252	301	163	0	0	188	108	1095
4:30 PM	0	0	0	62	0	227	237	176	0	0	193	114	1009
4:45 PM	0	0	0	85	0	241	322	177	0	0	223	122	1170
5:00 PM	0	0	0	61	0	259	310	199	0	0	215	165	1209
5:15 PM	0	0	0	71	0	267	286	203	0	0	255	103	1185
5:30 PM	0	0	0	72	0	257	276	168	0	0	242	97	1112
5:45 PM	0	0	0	85	0	261	240	158	0	0	224	95	1063
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	0	0	0	572	0	1991	2273	1379	0	0	1688	910	8813
APPROACH %'s :	#DIV/0!	#DIV/0!	#DIV/0!	22.32%	0.00%	77.68%	62.24%	37.76%	0.00%	0.00%	64.97%	35.03%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	0	0	0	289	0	1024	1194	747	0	0	935	487	4676
PEAK HR FACTOR :		0.000			0.971			0.953			0.936		0.967

UTURNS			
NB	SB	EB	WB
NB	SB	EB	WB
0	0	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-019

Day: Tuesday

City: Long Beach

Date: 7/14/2015

AM

NS/EW Streets:	Seal Beach Blvd			Seal Beach Blvd			2nd St/Westminster Blvd			2nd St/Westminster Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	2	3	1	2	3	1	2	2	0	
7:00 AM	4	118	34	101	243	63	28	140	5	59	117	17	929
7:15 AM	6	111	37	71	206	107	41	192	5	74	138	19	1007
7:30 AM	8	135	37	80	205	96	29	173	1	41	180	29	1014
7:45 AM	3	134	35	62	204	77	37	171	0	54	165	32	974
8:00 AM	11	121	46	67	191	69	43	118	0	42	143	25	876
8:15 AM	10	132	31	62	180	82	41	128	0	44	123	28	861
8:30 AM	6	175	42	50	215	79	40	124	2	46	141	28	948
8:45 AM	8	151	32	36	182	67	58	103	3	62	128	37	867
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	56	1077	294	529	1626	640	317	1149	16	422	1135	215	7476
APPROACH %'s :	3.92%	75.47%	20.60%	18.93%	58.18%	22.90%	21.39%	77.53%	1.08%	23.81%	64.05%	12.13%	
PEAK HR START TIME :	700 AM												TOTAL
PEAK HR VOL :	21	498	143	314	858	343	135	676	11	228	600	97	3924
PEAK HR FACTOR :		0.919			0.931			0.863			0.921		0.967

	UTURNS			
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	1	0
7:30 AM	0	0	0	0
7:45 AM	0	2	0	0
8:00 AM	0	2	0	0
8:15 AM	0	1	1	0
8:30 AM	0	0	0	0
8:45 AM	0	0	1	0
	NB	SB	EB	WB
TOTAL	0	5	3	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-019 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Seal Beach Blvd			Seal Beach Blvd			2nd St/Westminster Blvd			2nd St/Westminster Blvd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	0	2	3	1	2	3	1	2	2	0	
4:00 PM	16	247	46	52	182	55	80	175	1	55	152	59	1120
4:15 PM	10	213	65	51	165	57	94	129	3	62	172	53	1074
4:30 PM	16	210	56	78	185	66	112	229	1	37	169	65	1224
4:45 PM	20	238	70	51	186	61	108	183	1	85	201	61	1265
5:00 PM	20	253	83	58	221	57	122	247	1	78	209	57	1406
5:15 PM	7	213	67	60	222	61	111	208	2	78	194	45	1268
5:30 PM	13	181	51	56	188	60	85	189	2	57	222	46	1150
5:45 PM	9	196	31	58	254	81	100	159	2	77	178	46	1191
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	111	1751	469	464	1603	498	812	1519	13	529	1497	432	9698
APPROACH %'s :	4.76%	75.12%	20.12%	18.09%	62.50%	19.42%	34.64%	64.80%	0.55%	21.52%	60.90%	17.58%	
PEAK HR START TIME :	430 PM												TOTAL
PEAK HR VOL :	63	914	276	247	814	245	453	867	5	278	773	228	5163
PEAK HR FACTOR :		0.880			0.952			0.895			0.921		0.918

CONTROL : Signalized

UTURNS			
NB	SB	EB	WB
0	1	0	0
0	3	1	0
0	5	0	0
0	2	0	0
1	2	0	0
0	5	3	0
0	0	0	0
0	1	1	0
NB	SB	EB	WB
1	19	5	0

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-020

Day: Tuesday

City: Long Beach

Date: 7/14/2015

AM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			Studebaker Rd			Studebaker Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	1	1	2	1	1.5	0.5	1	0	1	0	
7:00 AM	8	344	0	0	321	20	7	1	48	3	1	3	756
7:15 AM	8	345	4	1	378	23	13	3	60	0	2	0	837
7:30 AM	11	374	5	0	354	22	9	1	57	2	2	0	837
7:45 AM	16	353	5	6	328	38	20	5	44	3	2	0	820
8:00 AM	22	313	9	3	314	31	21	7	70	3	2	3	798
8:15 AM	17	323	5	1	339	27	20	5	56	2	3	1	799
8:30 AM	12	367	6	2	269	33	25	0	51	7	2	1	775
8:45 AM	15	334	7	2	279	36	9	4	40	6	4	0	736
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	109	2753	41	15	2582	230	124	26	426	26	18	8	6358
APPROACH %'s :	3.75%	94.83%	1.41%	0.53%	91.33%	8.14%	21.53%	4.51%	73.96%	50.00%	34.62%	15.38%	
PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	57	1385	23	10	1374	114	63	16	231	8	8	3	3292
PEAK HR FACTOR :		0.939			0.932			0.791			0.594		0.983

UTURNS				
	NB	SB	EB	WB
7:00 AM	0	0	0	0
7:15 AM	0	0	0	0
7:30 AM	0	0	0	0
7:45 AM	0	2	0	0
8:00 AM	0	0	0	0
8:15 AM	0	0	0	0
8:30 AM	0	0	0	0
8:45 AM	0	0	0	0
	NB	SB	EB	WB
TOTAL	0	2	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-020 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			Studebaker Rd			Studebaker Rd			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	3	1	1	2	1	1.5	0.5	1	0	1	0	
4:00 PM	29	312	11	7	315	38	50	9	55	13	8	4	851
4:15 PM	32	349	5	6	313	19	36	1	56	15	4	5	841
4:30 PM	24	296	3	3	347	35	43	1	61	10	6	2	831
4:45 PM	29	354	10	6	350	44	36	4	65	10	6	1	915
5:00 PM	34	374	7	2	355	33	57	3	66	17	8	5	961
5:15 PM	31	380	7	1	360	28	33	3	83	19	5	1	951
5:30 PM	26	391	6	0	395	36	43	5	75	20	15	4	1016
5:45 PM	33	339	5	2	366	38	25	6	71	17	9	1	912
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	238	2795	54	27	2801	271	323	32	532	121	61	23	7278
APPROACH %'s :	7.71%	90.54%	1.75%	0.87%	90.38%	8.74%	36.41%	3.61%	59.98%	59.02%	29.76%	11.22%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	120	1499	30	9	1460	141	169	15	289	66	34	11	3843
PEAK HR FACTOR :		0.975			0.934			0.938			0.712		0.946

UTURNS			
NB	SB	EB	WB
0	0	0	0
0	1	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
NB	SB	EB	WB
0	1	0	0

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-021

Day: Tuesday

City: Long Beach

Date: 7/14/2015

AM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			1st St			1st St				UTURNS			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND							
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
LANES:	1	2	0	1	2	0	2	1	0	0	1	0					
7:00 AM	2	311	0	0	357	6	35	1	12	0	0	0	724	0	0	0	0
7:15 AM	2	319	1	0	434	12	42	0	13	0	0	0	823	0	0	1	0
7:30 AM	4	323	0	0	392	12	62	0	13	0	0	0	806	1	0	0	0
7:45 AM	4	338	0	1	360	17	45	0	17	2	0	1	785	1	0	0	0
8:00 AM	4	301	1	1	359	22	37	1	6	0	0	0	732	0	1	0	0
8:15 AM	3	332	0	0	383	25	25	0	6	0	0	0	774	0	0	0	0
8:30 AM	3	327	0	4	312	17	51	1	10	1	1	1	728	0	0	0	0
8:45 AM	8	336	1	3	308	23	24	1	8	0	0	0	712	1	1	1	0
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL	NB	SB	EB	WB
TOTAL VOLUMES :	30	2587	3	9	2905	134	321	4	85	3	1	2	6084	3	2	2	0
APPROACH %'s :	1.15%	98.74%	0.11%	0.30%	95.31%	4.40%	78.29%	0.98%	20.73%	50.00%	16.67%	33.33%					

PEAK HR START TIME :	715 AM												TOTAL
PEAK HR VOL :	14	1281	2	2	1545	63	186	1	49	2	0	1	3146
PEAK HR FACTOR :		0.948			0.902			0.787			0.250		0.956

CONTROL : Signalized

Intersection Turning Movement

Prepared by:

National Data & Surveying Services

Project ID: 15-5431-021 **Day:** Tuesday

City: Long Beach **Date:** 7/14/2015

PM

NS/EW Streets:	Pacific Coast Hwy			Pacific Coast Hwy			1st St			1st St			
	NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
LANES:	1	2	0	1	2	0	2	1	0	0	1	0	
4:00 PM	9	310	0	1	341	31	36	0	11	1	0	2	742
4:15 PM	7	344	0	0	365	17	34	0	8	0	0	0	775
4:30 PM	7	301	0	1	407	22	32	0	5	0	0	2	777
4:45 PM	20	356	0	2	404	22	41	0	9	0	0	0	854
5:00 PM	15	398	0	0	408	28	33	0	11	0	0	0	893
5:15 PM	13	378	0	1	425	20	28	0	13	1	0	0	879
5:30 PM	12	384	0	0	470	30	51	0	10	0	0	0	957
5:45 PM	15	339	0	0	417	24	30	0	11	0	0	0	836
	NL	NT	NR	SL	ST	SR	EL	ET	ER	WL	WT	WR	TOTAL
TOTAL VOLUMES :	98	2810	0	5	3237	194	285	0	78	2	0	4	6713
APPROACH %'s :	3.37%	96.63%	0.00%	0.15%	94.21%	5.65%	78.51%	0.00%	21.49%	33.33%	0.00%	66.67%	
PEAK HR START TIME :	445 PM												TOTAL
PEAK HR VOL :	60	1516	0	3	1707	100	153	0	43	1	0	0	3583
PEAK HR FACTOR :		0.954			0.905			0.803			0.250		0.936

UTURNS				
	NB	SB	EB	WB
4:00 PM	1	1	0	0
4:15 PM	0	0	1	0
4:30 PM	1	1	0	0
4:45 PM	2	1	1	0
5:00 PM	1	0	0	0
5:15 PM	0	1	0	0
5:30 PM	1	0	0	0
5:45 PM	1	0	0	0
	NB	SB	EB	WB
TOTAL	7	4	2	0

CONTROL : Signalized

APPENDIX B: LOS REPORTS

TRAFFIX REPORTS

Completion Year No Project PM Conditions

Long Beach SEADIP

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection		Ex AM LOS	Ex AM Avg Del (sec)	Ex AM Crit V/C	Ex AM Avg Crit Del (sec)	Ex PM LOS	Ex PM Avg Del (sec)	Ex PM Crit V/C	Ex PM Avg Crit Del (sec)	CY NP AM LOS	CY NP AM Avg Del (sec)	CY NP AM Crit V/C	CY NP AM Crit V/C Change	CY NP AM Avg Crit Del (sec)	CY NP AM Avg Crit Del Change	CY NP PM LOS	CY NP PM Avg Del (sec)	CY NP PM Crit V/C	CY NP PM Avg Crit Del (sec)
#4	Ximeno & 7th	D	27.8	0.899	30.1	E	29.4	0.910	31.3	E	40.5	0.994	+ 0.084	46.9	+ 15.7	F	46.3	1.020	54.9
#13	Studebaker & Loynes	B	8.6	0.610	11.5	C	10.5	0.723	9.6	B	9.4	0.671	- 0.052	12.7	+ 3.0	D	12.2	0.821	11.7
#14	Naples & 2nd	B	9.4	0.654	8.3	C	10.5	0.740	9.5	C	11.1	0.720	- 0.020	10.1	+ 0.6	D	13.0	0.824	12.2
#15	Marina & 2nd	B	11.3	0.609	13.5	C	17.2	0.772	20.1	B	12.8	0.670	- 0.102	15.3	- 4.8	D	22.3	0.848	23.8
#17	Shopkeeper & 2nd	A	7.9	0.573	12.0	C	16.0	0.788	21.0	B	10.4	0.654	- 0.134	14.6	- 6.4	E	21.1	0.909	28.2
#18	Studebaker & 2nd	B	14.5	0.624	22.3	D	18.0	0.803	23.8	B	15.1	0.684	- 0.118	23.2	- 0.7	E	21.6	0.907	30.3
#19	Seal Beach & 2nd/Westminster	A		0.577		D		0.857		B		0.634				E		0.948	

Completion Year No Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #4: Ximeno & 7th

Scenario #1: Ex AM

Northbound approach (top): Signal=Permit/Rights=Include

Initial Vol:	156		135		68***
Lanes:	1	0	1	0	1

Initial Vol:	Lanes:	Signal=Permit Rights=Include			Signal=Permit Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
66	1		Cycle Time (sec):	100		0	50
			Loss Time (sec):	14			
	0					1	
1389***	1		Critical V/C:	0.899		1	1183
	1		Avg Crit Del (sec/veh):	30.1		0	
7	0		Avg Delay (sec/veh):	27.8		1	43***
			LOS:	D			

Lanes:	1	0	0	1	0
Initial Vol:	23		282***		123

Signal=Permit/Rights=Include

Scenario #3: CY NP AM

Signal=Permit/Rights=Include

Initial Vol:	180		150		80***
Lanes:	1	0	1	0	1

Initial Vol:	Lanes:	Signal=Permit Rights=Include			Signal=Permit Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
80	1		Cycle Time (sec):	100		0	60
			Loss Time (sec):	14			
	0					1	
1544***	1		Critical V/C:	0.994		1	1314
	1		Avg Crit Del (sec/veh):	46.9		0	
10	0		Avg Delay (sec/veh):	40.5		1	50***
			LOS:	E			

Lanes:	1	0	0	1	0
Initial Vol:	30		320***		140

Signal=Permit/Rights=Include

Change	
Crit V/C:	+ 0.084
Avg Crit Del:	+ 15.7
Avg Del:	+ 11.1

Scenario #2: Ex PM

Signal=Permit/Rights=Include

Initial Vol:	95		369		48***
Lanes:	1	0	1	0	1

Initial Vol:	Lanes:	Signal=Permit Rights=Include			Signal=Permit Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
70	1		Cycle Time (sec):	100		0	35
			Loss Time (sec):	14			
	0					1	
1413***	1		Critical V/C:	0.910		1	1317
	1		Avg Crit Del (sec/veh):	31.3		0	
26	0		Avg Delay (sec/veh):	29.4		1	93***
			LOS:	E			

Lanes:	1	0	0	1	0
Initial Vol:	24		284***		88

Signal=Permit/Rights=Include

Change	
Crit V/C:	+ 0.012
Avg Crit Del:	+ 1.1
Avg Del:	+ 1.7

Scenario #4: CY NP PM

Signal=Permit/Rights=Include

Initial Vol:	110		410		60***
Lanes:	1	0	1	0	1

Initial Vol:	Lanes:	Signal=Permit Rights=Include			Signal=Permit Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
80	1		Cycle Time (sec):	100		0	40
			Loss Time (sec):	14			
	0					1	
1606***	1		Critical V/C:	1.020		1	1491
	1		Avg Crit Del (sec/veh):	54.9		0	
30	0		Avg Delay (sec/veh):	46.3		1	110***
			LOS:	F			

Lanes:	1	0	0	1	0
Initial Vol:	30		320***		100

Signal=Permit/Rights=Include

Change	
Crit V/C:	+ 0.026
Avg Crit Del:	+ 7.9
Avg Del:	+ 5.9

Completion Year No Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #12: PCH & Loynes

Scenario #1: Ex AM

Northbound/Southbound: Signal=Protect/Rights=Include
Eastbound/Westbound: Signal=Permit, Rights=Include

Approach					
Southbound Initial Vol:	12		994		31***
Southbound Lanes:	1	0	3	0	1
Northbound Lanes:	1	0	2	1	0
Northbound Initial Vol:	48		1058***		64

Eastbound Initial Vol	Eastbound Lanes	Westbound Lanes	Westbound Initial Vol
17	1	1	40
	0	0	
161***	1	2	110
	1	0	
106	0	1	92***

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 14
Critical V/C: 0.534
Avg Crit Del (sec/veh): 16.9
Avg Delay (sec/veh): 16.3
LOS: A

Scenario #2: Ex PM

Northbound/Southbound: Signal=Protect/Rights=Include
Eastbound/Westbound: Signal=Permit, Rights=Include

Approach					
Southbound Initial Vol:	41		1498***		64
Southbound Lanes:	1	0	3	0	1
Northbound Lanes:	1	0	2	1	0
Northbound Initial Vol:	171***		1312		147

Eastbound Initial Vol	Eastbound Lanes	Westbound Lanes	Westbound Initial Vol
23	1	1	68
	0	0	
179***	1	2	386
	1	0	
132	0	1	198***

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 14
Critical V/C: 0.780
Avg Crit Del (sec/veh): 26.0
Avg Delay (sec/veh): 22.1
LOS: C

Change
Crit V/C: + 0.246
Avg Crit Del: + 9.1
Avg Del: + 5.8

Scenario #3: CY NP AM

Northbound/Southbound: Signal=Protect/Rights=Include
Eastbound/Westbound: Signal=Permit, Rights=Include

Approach					
Southbound Initial Vol:	20		1113		40***
Southbound Lanes:	1	0	3	0	1
Northbound Lanes:	1	0	2	1	0
Northbound Initial Vol:	62		1191***		80

Eastbound Initial Vol	Eastbound Lanes	Westbound Lanes	Westbound Initial Vol
20	1	1	50
	0	0	
180***	1	2	130
	1	0	
122	0	1	110***

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 14
Critical V/C: 0.593
Avg Crit Del (sec/veh): 18.0
Avg Delay (sec/veh): 17.4
LOS: A

Change
Crit V/C: - 0.187
Avg Crit Del: - 8.0
Avg Del: - 4.7

Scenario #4: CY NP PM

Northbound/Southbound: Signal=Protect/Rights=Include
Eastbound/Westbound: Signal=Permit, Rights=Include

Approach					
Southbound Initial Vol:	50		1769***		80
Southbound Lanes:	1	0	3	0	1
Northbound Lanes:	1	0	2	1	0
Northbound Initial Vol:	205***		1552		170

Eastbound Initial Vol	Eastbound Lanes	Westbound Lanes	Westbound Initial Vol
30	1	1	80
	0	0	
200***	1	2	430
	1	0	
168	0	1	220***

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 14
Critical V/C: 0.889
Avg Crit Del (sec/veh): 32.1
Avg Delay (sec/veh): 26.1
LOS: D

Change
Crit V/C: + 0.296
Avg Crit Del: + 14.2
Avg Del: + 8.7

Completion Year No Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #13: Studebaker & Loynes

Scenario #1: Ex AM

Signal=Protect/Rights=Include
Initial Vol: 206 1164*** 0
Lanes: 1 0 2 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
230***	2		Vol Cnt Date:	n/a		0	0
			Cycle Time (sec):	100			
	0		Loss Time (sec):	15		0	
0	0		Critical V/C:	0.610		0	0
	0		Avg Crit Del (sec/veh):	11.5		0	
60	2		Avg Delay (sec/veh):	8.6		0	0
			LOS:	B			

Lanes: 1 0 2 0 0
Initial Vol: 47*** 1064 0
Signal=Protect/Rights=Include

Scenario #2: Ex PM

Signal=Protect/Rights=Include
Initial Vol: 542 1236 0***
Lanes: 1 0 2 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
265***	2		Vol Cnt Date:	n/a		0	0
			Cycle Time (sec):	100			
	0		Loss Time (sec):	15		0	
0	0		Critical V/C:	0.723		0	0
	0		Avg Crit Del (sec/veh):	9.6		0	
74	2		Avg Delay (sec/veh):	10.5		0	0
			LOS:	C			

Lanes: 1 0 2 0 0
Initial Vol: 105 1587*** 0
Signal=Protect/Rights=Include

Change
Crit V/C: + 0.113
Avg Crit Del: - 1.8
Avg Del: + 1.8

Scenario #3: CY NP AM

Signal=Protect/Rights=Include
Initial Vol: 230 1305*** 0
Lanes: 1 0 2 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
260***	2		Vol Cnt Date:	n/a		0	0
			Cycle Time (sec):	100			
	0		Loss Time (sec):	15		0	
0	0		Critical V/C:	0.671		0	0
	0		Avg Crit Del (sec/veh):	12.7		0	
70	2		Avg Delay (sec/veh):	9.4		0	0
			LOS:	B			

Lanes: 1 0 2 0 0
Initial Vol: 60*** 1193 0
Signal=Protect/Rights=Include

Change
Crit V/C: - 0.052
Avg Crit Del: + 3.0
Avg Del: - 1.1

Scenario #4: CY NP PM

Signal=Protect/Rights=Include
Initial Vol: 600 1497 0***
Lanes: 1 0 2 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
300***	2		Vol Cnt Date:	n/a		0	0
			Cycle Time (sec):	100			
	0		Loss Time (sec):	15		0	
0	0		Critical V/C:	0.821		0	0
	0		Avg Crit Del (sec/veh):	11.7		0	
90	2		Avg Delay (sec/veh):	12.2		0	0
			LOS:	D			

Lanes: 1 0 2 0 0
Initial Vol: 120 1867*** 0
Signal=Protect/Rights=Include

Change
Crit V/C: + 0.150
Avg Crit Del: - 1.0
Avg Del: + 2.8

Completion Year No Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #14: Naples & 2nd

Scenario #1: Ex AM

Northbound: Signal=Split/Rights=Include

Initial Vol:	0		0		0
Lanes:	0	0	0	0	0

Westbound: Signal=Split, Rights=Ignore

Initial Vol:	Lanes:
0	0
	0
1370***	2
	0
79	1

Eastbound: Signal=Split, Rights=Include

Lanes:	Initial Vol:
0	0
0	
0	0
0	
1	83***

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	15
Critical V/C:	0.654
Avg Crit Del (sec/veh):	8.3
Avg Delay (sec/veh):	9.4
LOS:	B

Lanes:	1	0	0	0	1
Initial Vol:	38***		0		75

Signal=Split/Rights=Overlap

Scenario #3: CY NP AM

Signal=Split/Rights=Include

Initial Vol:	0		0		0
Lanes:	0	0	0	0	0

Signal=Split, Rights=Ignore

Initial Vol:	Lanes:
0	0
	0
1524***	2
	0
90	1

Signal=Split, Rights=Include

Lanes:	Initial Vol:
0	0
0	
0	0
0	
1	100***

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	15
Critical V/C:	0.720
Avg Crit Del (sec/veh):	10.1
Avg Delay (sec/veh):	11.1
LOS:	C

Lanes:	1	0	0	0	1
Initial Vol:	50***		0		90

Signal=Split/Rights=Overlap

Change

Crit V/C:	- 0.020
Avg Crit Del:	+ 0.6
Avg Del:	+ 0.6

Scenario #2: Ex PM

Signal=Split/Rights=Include

Initial Vol:	0		0		0
Lanes:	0	0	0	0	0

Signal=Split, Rights=Ignore

Initial Vol:	Lanes:
0	0
	0
1620***	2
	0
59	1

Signal=Split, Rights=Include

Lanes:	Initial Vol:
0	0
0	
0	0
0	
1	96***

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	15
Critical V/C:	0.740
Avg Crit Del (sec/veh):	9.5
Avg Delay (sec/veh):	10.5
LOS:	C

Lanes:	1	0	0	0	1
Initial Vol:	38***		0		81

Signal=Split/Rights=Overlap

Change

Crit V/C:	+ 0.086
Avg Crit Del:	+ 1.1
Avg Del:	+ 1.0

Scenario #4: CY NP PM

Signal=Split/Rights=Include

Initial Vol:	0		0		0
Lanes:	0	0	0	0	0

Signal=Split, Rights=Ignore

Initial Vol:	Lanes:
0	0
	0
1836***	2
	0
70	1

Signal=Split, Rights=Include

Lanes:	Initial Vol:
0	0
0	
0	0
0	
1	110***

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	15
Critical V/C:	0.824
Avg Crit Del (sec/veh):	12.2
Avg Delay (sec/veh):	13.0
LOS:	D

Lanes:	1	0	0	0	1
Initial Vol:	50***		0		90

Signal=Split/Rights=Overlap

Change

Crit V/C:	+ 0.104
Avg Crit Del:	+ 2.1
Avg Del:	+ 1.9

Completion Year No Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #15: Marina & 2nd

Scenario #1: Ex AM

Signal=Split/Rights=Overlap

Initial Vol:	40		13		86***
Lanes:	1	0	0	1	1

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
30	1		Cycle Time (sec):	100		0	40
	0		Loss Time (sec):	18		1	
1512***	3		Critical V/C:	0.609		2	1301
	0		Avg Crit Del (sec/veh):	13.5		0	
362	1		Avg Delay (sec/veh):	11.3		1	49***
			LOS:	B			

Lanes:	1	1	1	0	1
Initial Vol:	193***		7		96

Signal=Split/Rights=Ignore

Scenario #2: Ex PM

Signal=Split/Rights=Overlap

Initial Vol:	88		27***		107
Lanes:	1	0	0	1	1

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
62***	1		Cycle Time (sec):	100		0	51
	0		Loss Time (sec):	18		1	
1644	3		Critical V/C:	0.772		2	1874***
	0		Avg Crit Del (sec/veh):	20.1		0	
476	1		Avg Delay (sec/veh):	17.2		1	73
			LOS:	C			

Lanes:	1	1	1	0	1
Initial Vol:	397***		42		90

Signal=Split/Rights=Ignore

Change
Crit V/C: + 0.164
Avg Crit Del: + 6.6
Avg Del: + 5.9

Scenario #3: CY NP AM

Signal=Split/Rights=Overlap

Initial Vol:	50		20		100***
Lanes:	1	0	0	1	1

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
40	1		Cycle Time (sec):	100		0	50
	0		Loss Time (sec):	18		1	
1681***	3		Critical V/C:	0.670		2	1442
	0		Avg Crit Del (sec/veh):	15.3		0	
413	1		Avg Delay (sec/veh):	12.8		1	68***
			LOS:	B			

Lanes:	1	1	1	0	1
Initial Vol:	222***		10		118

Signal=Split/Rights=Ignore

Change
Crit V/C: - 0.102
Avg Crit Del: - 4.8
Avg Del: - 4.5

Scenario #4: CY NP PM

Signal=Split/Rights=Overlap

Initial Vol:	100		30***		120
Lanes:	1	0	0	1	1

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
70***	1		Cycle Time (sec):	100		0	60
	0		Loss Time (sec):	18		1	
1825	3		Critical V/C:	0.848		2	2084***
	0		Avg Crit Del (sec/veh):	23.8		0	
561	1		Avg Delay (sec/veh):	22.3		1	167
			LOS:	D			

Lanes:	1	1	1	0	1
Initial Vol:	467***		50		218

Signal=Split/Rights=Ignore

Change
Crit V/C: + 0.178
Avg Crit Del: + 8.5
Avg Del: + 9.5

Completion Year No Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #17: Shopkeeper & 2nd

Scenario #1: Ex AM

Signal=Split/Rights=Include

Initial Vol:	1		2***		1
Lanes:	0	0	1!	0	0

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
7	1		Cycle Time (sec):	100		0	2
	0		Loss Time (sec):	14		1	
1487***	2		Critical V/C:	0.573		2	1288
	1		Avg Crit Del (sec/veh):	12.0		0	
42	0		Avg Delay (sec/veh):	7.9		1	122***
			LOS:	A			

Lanes:	0	1	0	0	1
Initial Vol:	55		2***		53

Signal=Split/Rights=Include

Scenario #2: Ex PM

Signal=Split/Rights=Include

Initial Vol:	1		0		1***
Lanes:	0	0	1!	0	0

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
22	1		Cycle Time (sec):	100		0	1
	0		Loss Time (sec):	14		1	
1719***	2		Critical V/C:	0.788		2	1726
	1		Avg Crit Del (sec/veh):	21.0		0	
61	0		Avg Delay (sec/veh):	16.0		1	237***
			LOS:	C			

Lanes:	0	1	0	0	1
Initial Vol:	147		3		204***

Signal=Split/Rights=Include

Change

Crit V/C:	+ 0.215
Avg Crit Del:	+ 9.1
Avg Del:	+ 8.1

Scenario #3: CY NP AM

Signal=Split/Rights=Include

Initial Vol:	10		10***		10
Lanes:	0	0	1!	0	0

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
10	1		Cycle Time (sec):	100		0	10
	0		Loss Time (sec):	14		1	
1663***	2		Critical V/C:	0.654		2	1448
	1		Avg Crit Del (sec/veh):	14.6		0	
50	0		Avg Delay (sec/veh):	10.4		1	141***
			LOS:	B			

Lanes:	0	1	0	0	1
Initial Vol:	70		10***		64

Signal=Split/Rights=Include

Change

Crit V/C:	- 0.134
Avg Crit Del:	- 6.4
Avg Del:	- 5.6

Scenario #4: CY NP PM

Signal=Split/Rights=Include

Initial Vol:	10		0		10***
Lanes:	0	0	1!	0	0

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
30	1		Cycle Time (sec):	100		0	10
	0		Loss Time (sec):	14		1	
2045***	2		Critical V/C:	0.909		2	2069
	1		Avg Crit Del (sec/veh):	28.2		0	
70	0		Avg Delay (sec/veh):	21.1		1	274***
			LOS:	E			

Lanes:	0	1	0	0	1
Initial Vol:	170		10		232***

Signal=Split/Rights=Include

Change

Crit V/C:	+ 0.256
Avg Crit Del:	+ 13.6
Avg Del:	+ 10.7

Completion Year No Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #18: Studebaker & 2nd

Scenario #1: Ex AM

Signal=Split/Rights=Overlap
Initial Vol: 796 0 341***
Lanes: 2 0 0 0 2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
897***	2					1	196
			Loss Time (sec):	15			
	0					0	
710	2		Critical V/C:	0.624		3	543***
	0		Avg Crit Del (sec/veh):	22.3		0	
0	0		Avg Delay (sec/veh):	14.5		0	0
			LOS:	B			

Lanes: 0 0 0 0 0
Initial Vol: 0 0 0
Signal=Split/Rights=Include

Scenario #2: Ex PM

Signal=Split/Rights=Overlap
Initial Vol: 1024 0 289***
Lanes: 2 0 0 0 2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
1194***	2					1	487***
			Loss Time (sec):	15			
	0					0	
747	2		Critical V/C:	0.803		3	935
	0		Avg Crit Del (sec/veh):	23.8		0	
0	0		Avg Delay (sec/veh):	18.0		0	0
			LOS:	D			

Lanes: 0 0 0 0 0
Initial Vol: 0 0 0
Signal=Split/Rights=Include

Change
Crit V/C: + 0.178
Avg Crit Del: + 1.6
Avg Del: + 3.4

Scenario #3: CY NP AM

Signal=Split/Rights=Overlap
Initial Vol: 905 0 380***
Lanes: 2 0 0 0 2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
1013***	2					1	220
			Loss Time (sec):	15			
	0					0	
794	2		Critical V/C:	0.684		3	614***
	0		Avg Crit Del (sec/veh):	23.2		0	
0	0		Avg Delay (sec/veh):	15.1		0	0
			LOS:	B			

Lanes: 0 0 0 0 0
Initial Vol: 0 0 0
Signal=Split/Rights=Include

Change
Crit V/C: - 0.118
Avg Crit Del: - 0.7
Avg Del: - 2.8

Scenario #4: CY NP PM

Signal=Split/Rights=Overlap
Initial Vol: 1267 0 320***
Lanes: 2 0 0 0 2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
1437***	2					1	540***
			Loss Time (sec):	15			
	0					0	
861	2		Critical V/C:	0.907		3	1076
	0		Avg Crit Del (sec/veh):	30.3		0	
0	0		Avg Delay (sec/veh):	21.6		0	0
			LOS:	E			

Lanes: 0 0 0 0 0
Initial Vol: 0 0 0
Signal=Split/Rights=Include

Change
Crit V/C: + 0.222
Avg Crit Del: + 7.1
Avg Del: + 6.5

Completion Year No Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #19: Seal Beach & 2nd/Westminster

Scenario #1: Ex AM

Signal=Protect/Rights=Include

Initial Vol:	343		858		314***
Lanes:	1	0	3	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Overlap			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
135***	2					0	97
			Loss Time (sec):	10			
	0					1	
676	3		Critical V/C:	0.582		1	600***
	0		Avg Crit Del (sec/veh):	23.8		0	
11	1		Avg Delay (sec/veh):	21.8		2	228
			LOS:	A			

Lanes:	1	0	2	1	0
Initial Vol:	21		498***		143

Signal=Protect/Rights=Include

Scenario #2: Ex PM

Signal=Protect/Rights=Include

Initial Vol:	245		814		247***
Lanes:	1	0	3	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Overlap			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
453***	2					0	228
			Loss Time (sec):	10			
	0					1	
867	3		Critical V/C:	0.865		1	773***
	0		Avg Crit Del (sec/veh):	32.5		0	
5	1		Avg Delay (sec/veh):	29.0		2	278
			LOS:	D			

Lanes:	1	0	2	1	0
Initial Vol:	63		914***		276

Signal=Protect/Rights=Include

Change

Crit V/C: + 0.283
Avg Crit Del: + 8.7
Avg Del: + 7.2

Scenario #3: CY NP AM

Signal=Protect/Rights=Include

Initial Vol:	380***		950		350
Lanes:	1	0	3	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Overlap			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
150***	2					0	110***
			Loss Time (sec):	10			
	0					1	
754	3		Critical V/C:	0.645		1	674
	0		Avg Crit Del (sec/veh):	23.6		0	
20	1		Avg Delay (sec/veh):	22.7		2	260
			LOS:	B			

Lanes:	1	0	2	1	0
Initial Vol:	30***		560		160

Signal=Protect/Rights=Include

Change

Crit V/C: - 0.220
Avg Crit Del: - 8.9
Avg Del: - 6.3

Scenario #4: CY NP PM

Signal=Protect/Rights=Include

Initial Vol:	280		910		280***
Lanes:	1	0	3	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Overlap			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
510***	2					0	260
			Loss Time (sec):	10			
	0					1	
991	3		Critical V/C:	0.969		1	896***
	0		Avg Crit Del (sec/veh):	45.2		0	
10	1		Avg Delay (sec/veh):	37.2		2	310
			LOS:	E			

Lanes:	1	0	2	1	0
Initial Vol:	70		1020***		310

Signal=Protect/Rights=Include

Change

Crit V/C: + 0.324
Avg Crit Del: + 21.6
Avg Del: + 14.5

Completion Year Plus Project PM Conditions

Long Beach SEADIP

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection		Ex PP AM				Ex PP PM				CY PP AM						CY PP PM			
		LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Crit V/C Change	Avg Crit Del (sec)	Avg Crit Del Change	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)
#4	Ximeno & 7th	E	29.7	0.905	31.8	E	33.3	0.957	36.9	E	46.5	0.999	+ 0.042	50.0	+ 13.1	F	58.9	1.068	74.8
#13	Studebaker & Loynes	B	10.5	0.691	11.1	D	12.9	0.817	17.6	C	11.5	0.741	- 0.076	12.0	- 5.6	E	17.5	0.922	23.9
#14	Naples & 2nd	B	9.5	0.662	8.4	C	11.1	0.787	10.2	C	11.2	0.728	- 0.059	10.1	- 0.0	D	14.6	0.872	13.9
#15	Marina & 2nd	B	13.8	0.655	17.9	D	22.1	0.852	29.1	C	15.1	0.716	- 0.135	19.7	- 9.4	E	31.7	0.979	46.2
#17	Shopkeeper & 2nd	C	13.2	0.738	16.4	F	31.4	1.002	46.2	D	16.0	0.812	- 0.190	20.0	- 26.1	F	67.1	1.130	109.3
#18	Studebaker & 2nd	C	14.8	0.738	22.7	D	21.2	0.883	28.7	C	15.9	0.798	- 0.085	24.5	- 4.2	E	33.2	0.996	44.7
#19	Seal Beach & 2nd/Westminster	A		0.585		E		0.901		B		0.643				F		1.005	

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #4: Ximeno & 7th

Scenario #1: Ex PP AM

North Approach: Signal=Permit/Rights=Include

Initial Vol:	156		135		68***
Lanes:	1	0	1	0	1

West Approach: Signal=Permit Rights=Include

Initial Vol:	Lanes:
66***	1
	0
1416	1
	1
7	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.905
Avg Crit Del (sec/veh):	31.8
Avg Delay (sec/veh):	29.7
LOS:	E

East Approach: Signal=Permit Rights=Include

Lanes:	Initial Vol:
0	50
1	
1	1320***
0	
1	43

South Approach:

Lanes:	1	0	0	1	0
Initial Vol:	23		282***		123

Signal=Permit/Rights=Include

Scenario #3: CY PP AM

North Approach: Signal=Permit/Rights=Include

Initial Vol:	180		150		80***
Lanes:	1	0	1	0	1

West Approach: Signal=Permit Rights=Include

Initial Vol:	Lanes:
80***	1
	0
1571	1
	1
10	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.999
Avg Crit Del (sec/veh):	50.0
Avg Delay (sec/veh):	46.5
LOS:	E

East Approach: Signal=Permit Rights=Include

Lanes:	Initial Vol:
0	60
1	
1	1450***
0	
1	50

South Approach:

Lanes:	1	0	0	1	0
Initial Vol:	30		320***		140

Signal=Permit/Rights=Include

Change

Crit V/C:	+ 0.042
Avg Crit Del:	+ 13.1
Avg Del:	+ 13.3

Scenario #2: Ex PP PM

North Approach: Signal=Permit/Rights=Include

Initial Vol:	95		369		48***
Lanes:	1	0	1	0	1

West Approach: Signal=Permit Rights=Include

Initial Vol:	Lanes:
70	1
	0
1564***	1
	1
26	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.957
Avg Crit Del (sec/veh):	36.9
Avg Delay (sec/veh):	33.3
LOS:	E

East Approach: Signal=Permit Rights=Include

Lanes:	Initial Vol:
0	35
1	
1	1409
0	
1	93***

South Approach:

Lanes:	1	0	0	1	0
Initial Vol:	24		284***		88

Signal=Permit/Rights=Include

Change

Crit V/C:	+ 0.052
Avg Crit Del:	+ 5.1
Avg Del:	+ 3.6

Scenario #4: CY PP PM

North Approach: Signal=Permit/Rights=Include

Initial Vol:	110		410		60***
Lanes:	1	0	1	0	1

West Approach: Signal=Permit Rights=Include

Initial Vol:	Lanes:
80	1
	0
1761***	1
	1
30	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	1.068
Avg Crit Del (sec/veh):	74.8
Avg Delay (sec/veh):	58.9
LOS:	F

East Approach: Signal=Permit Rights=Include

Lanes:	Initial Vol:
0	40
1	
1	1584
0	
1	110***

South Approach:

Lanes:	1	0	0	1	0
Initial Vol:	30		320***		100

Signal=Permit/Rights=Include

Change

Crit V/C:	+ 0.069
Avg Crit Del:	+ 24.8
Avg Del:	+ 12.4

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #13: Studebaker & Loynes

Scenario #1: Ex PP AM

Signal=Protect/Rights=Include

Initial Vol:	226		1235		0***
Lanes:	1	0	2	0	0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
336***	2		Cycle Time (sec):	100		0	0
			Loss Time (sec):	15			
	0					0	
0	0		Critical V/C:	0.691		0	0
	0		Avg Crit Del (sec/veh):	11.1		0	
76	2		Avg Delay (sec/veh):	10.5		0	0
			LOS:	B			

Lanes:	1	0	2	0	0
Initial Vol:	47		1419***		0

Signal=Protect/Rights=Include

Scenario #2: Ex PP PM

Signal=Protect/Rights=Include

Initial Vol:	680		1612***		0
Lanes:	1	0	2	0	0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
334***	2		Cycle Time (sec):	100		0	0
			Loss Time (sec):	15			
	0					0	
0	0		Critical V/C:	0.817		0	0
	0		Avg Crit Del (sec/veh):	17.6		0	
87	2		Avg Delay (sec/veh):	12.9		0	0
			LOS:	D			

Lanes:	1	0	2	0	0
Initial Vol:	105***		1830		0

Signal=Protect/Rights=Include

Change

Crit V/C:	+ 0.125
Avg Crit Del:	+ 6.4
Avg Del:	+ 2.4

Scenario #3: CY PP AM

Signal=Protect/Rights=Include

Initial Vol:	250		1375		0***
Lanes:	1	0	2	0	0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
366***	2		Cycle Time (sec):	100		0	0
			Loss Time (sec):	15			
	0					0	
0	0		Critical V/C:	0.741		0	0
	0		Avg Crit Del (sec/veh):	12.0		0	
86	2		Avg Delay (sec/veh):	11.5		0	0
			LOS:	C			

Lanes:	1	0	2	0	0
Initial Vol:	60		1549***		0

Signal=Protect/Rights=Include

Change

Crit V/C:	- 0.076
Avg Crit Del:	- 5.6
Avg Del:	- 1.3

Scenario #4: CY PP PM

Signal=Protect/Rights=Include

Initial Vol:	738		1886***		0
Lanes:	1	0	2	0	0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
369***	2		Cycle Time (sec):	100		0	0
			Loss Time (sec):	15			
	0					0	
0	0		Critical V/C:	0.922		0	0
	0		Avg Crit Del (sec/veh):	23.9		0	
103	2		Avg Delay (sec/veh):	17.5		0	0
			LOS:	E			

Lanes:	1	0	2	0	0
Initial Vol:	120***		2118		0

Signal=Protect/Rights=Include

Change

Crit V/C:	+ 0.181
Avg Crit Del:	+ 12.0
Avg Del:	+ 6.0

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #14: Naples & 2nd

Scenario #1: Ex PP AM

Northbound/top: Signal=Split/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 0 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Ignore			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
0	0		Cycle Time (sec):	100		0	0
	0		Loss Time (sec):	15		0	
1397***	2		Critical V/C:	0.662		0	8
	0		Avg Crit Del (sec/veh):	8.4		0	
79	1		Avg Delay (sec/veh):	9.5		1	83***
			LOS:	B			

Lanes: 1 0 0 0 1
Initial Vol: 38*** 0 75
Signal=Split/Rights=Overlap

Scenario #2: Ex PP PM

Signal=Split/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 0 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Ignore			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
0	0		Cycle Time (sec):	100		0	0
	0		Loss Time (sec):	15		0	
1771***	2		Critical V/C:	0.787		0	3
	0		Avg Crit Del (sec/veh):	10.2		0	
59	1		Avg Delay (sec/veh):	11.1		1	96***
			LOS:	C			

Lanes: 1 0 0 0 1
Initial Vol: 38*** 0 81
Signal=Split/Rights=Overlap

Change
Crit V/C: + 0.125
Avg Crit Del: + 1.8
Avg Del: + 1.7

Scenario #3: CY PP AM

Signal=Split/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 0 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Ignore			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
0	0		Cycle Time (sec):	100		0	0
	0		Loss Time (sec):	15		0	
1551***	2		Critical V/C:	0.728		0	7
	0		Avg Crit Del (sec/veh):	10.1		0	
90	1		Avg Delay (sec/veh):	11.2		1	100***
			LOS:	C			

Lanes: 1 0 0 0 1
Initial Vol: 50*** 0 90
Signal=Split/Rights=Overlap

Change
Crit V/C: - 0.059
Avg Crit Del: - 0.0
Avg Del: + 0.1

Scenario #4: CY PP PM

Signal=Split/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 0 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Ignore			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
0	0		Cycle Time (sec):	100		0	0
	0		Loss Time (sec):	15		0	
1991***	2		Critical V/C:	0.872		0	3
	0		Avg Crit Del (sec/veh):	13.9		0	
70	1		Avg Delay (sec/veh):	14.6		1	110***
			LOS:	D			

Lanes: 1 0 0 0 1
Initial Vol: 50*** 0 90
Signal=Split/Rights=Overlap

Change
Crit V/C: + 0.144
Avg Crit Del: + 3.7
Avg Del: + 3.5

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #15: Marina & 2nd

Scenario #1: Ex PP AM

Southbound: Signal=Split/Rights=Overlap
Initial Vol: 55 13*** 140
Lanes: 1 0 0 1 1

Eastbound: Signal=Protect Rights=Include
Initial Vol:	Lanes:
32	1
	0
1532***	3
	0
367	1

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 18
Critical V/C: 0.655
Avg Crit Del (sec/veh): 17.9
Avg Delay (sec/veh): 13.8
LOS: B

Westbound: Signal=Protect Rights=Include
Lanes:	Initial Vol:
0	45
1	
2	1391
0	
1	79***

Northbound:
Lanes: 1 1 1 0 1
Initial Vol: 225*** 7 204
Signal=Split/Rights=Ignore

Scenario #3: CY PP AM

Southbound: Signal=Split/Rights=Overlap
Initial Vol: 65 20*** 154
Lanes: 1 0 0 1 1

Eastbound: Signal=Protect Rights=Include
Initial Vol:	Lanes:
42	1
	0
1702***	3
	0
417	1

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 18
Critical V/C: 0.716
Avg Crit Del (sec/veh): 19.7
Avg Delay (sec/veh): 15.1
LOS: C

Westbound: Signal=Protect Rights=Include
Lanes:	Initial Vol:
0	55
1	
2	1532
0	
1	98***

Northbound:
Lanes: 1 1 1 0 1
Initial Vol: 253*** 10 227
Signal=Split/Rights=Ignore

Change
Crit V/C: - 0.135
Avg Crit Del: - 9.4
Avg Del: - 6.9

Scenario #2: Ex PP PM

Southbound: Signal=Split/Rights=Overlap
Initial Vol: 92 27*** 121
Lanes: 1 0 0 1 1

Eastbound: Signal=Protect Rights=Include
Initial Vol:	Lanes:
70	1
	0
1761***	3
	0
502	1

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 18
Critical V/C: 0.852
Avg Crit Del (sec/veh): 29.1
Avg Delay (sec/veh): 22.1
LOS: D

Westbound: Signal=Protect Rights=Include
Lanes:	Initial Vol:
0	69
1	
2	1934
0	
1	225***

Northbound:
Lanes: 1 1 1 0 1
Initial Vol: 425*** 42 185
Signal=Split/Rights=Ignore

Change
Crit V/C: + 0.197
Avg Crit Del: + 11.2
Avg Del: + 8.3

Scenario #4: CY PP PM

Southbound: Signal=Split/Rights=Overlap
Initial Vol: 104 30*** 134
Lanes: 1 0 0 1 1

Eastbound: Signal=Protect Rights=Include
Initial Vol:	Lanes:
78	1
	0
1955***	3
	0
577	1

Vol Cnt Date: n/a
Cycle Time (sec): 100
Loss Time (sec): 18
Critical V/C: 0.979
Avg Crit Del (sec/veh): 46.2
Avg Delay (sec/veh): 31.7
LOS: E

Westbound: Signal=Protect Rights=Include
Lanes:	Initial Vol:
0	78
1	
2	2145
0	
1	324***

Northbound:
Lanes: 1 1 1 0 1
Initial Vol: 495*** 50 319
Signal=Split/Rights=Ignore

Change
Crit V/C: + 0.262
Avg Crit Del: + 26.5
Avg Del: + 16.6

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #17: Shopkeeper & 2nd

Scenario #1: Ex PP AM

Signal=Split/Rights=Include
Initial Vol: 1 2*** 1
Lanes: 0 0 1! 0 0

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
7	1		Vol Cnt Date:	n/a		0	2
	0		Cycle Time (sec):	100		1	
1839***	2		Loss Time (sec):	14		2	1361
	1		Critical V/C:	0.738		0	
50	0		Avg Crit Del (sec/veh):	16.4		1	146***
			Avg Delay (sec/veh):	13.2			
			LOS:	C			

Lanes: 0 1 0 0 1
Initial Vol: 132 2 177***
Signal=Split/Rights=Include

Scenario #2: Ex PP PM

Signal=Split/Rights=Include
Initial Vol: 1 0 1***
Lanes: 0 0 1! 0 0

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
22	1		Vol Cnt Date:	n/a		0	1
	0		Cycle Time (sec):	100		1	
1950***	2		Loss Time (sec):	14		2	2095
	1		Critical V/C:	1.002		0	
111	0		Avg Crit Del (sec/veh):	46.2		1	395***
			Avg Delay (sec/veh):	31.4			
			LOS:	F			

Lanes: 0 1 0 0 1
Initial Vol: 203 3 295***
Signal=Split/Rights=Include

Change
Crit V/C: + 0.264
Avg Crit Del: + 29.8
Avg Del: + 18.2

Scenario #3: CY PP AM

Signal=Split/Rights=Include
Initial Vol: 10 10*** 10
Lanes: 0 0 1! 0 0

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
10	1		Vol Cnt Date:	n/a		0	10
	0		Cycle Time (sec):	100		1	
2016***	2		Loss Time (sec):	14		2	1521
	1		Critical V/C:	0.812		0	
58	0		Avg Crit Del (sec/veh):	20.0		1	166***
			Avg Delay (sec/veh):	16.0			
			LOS:	D			

Lanes: 0 1 0 0 1
Initial Vol: 147 10 188***
Signal=Split/Rights=Include

Change
Crit V/C: - 0.190
Avg Crit Del: - 26.1
Avg Del: - 15.4

Scenario #4: CY PP PM

Signal=Split/Rights=Include
Initial Vol: 10 0 10***
Lanes: 0 0 1! 0 0

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
30	1		Vol Cnt Date:	n/a		0	10
	0		Cycle Time (sec):	100		1	
2284***	2		Loss Time (sec):	14		2	2450
	1		Critical V/C:	1.130		0	
120	0		Avg Crit Del (sec/veh):	109.3		1	437***
			Avg Delay (sec/veh):	67.1			
			LOS:	F			

Lanes: 0 1 0 0 1
Initial Vol: 226 10 325***
Signal=Split/Rights=Include

Change
Crit V/C: + 0.317
Avg Crit Del: + 89.3
Avg Del: + 51.1

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #18: Studebaker & 2nd

Scenario #1: Ex PP AM

Signal=Split/Rights=Overlap

Initial Vol:	867		0		357***
Lanes:	2	0	0	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
1252***	2		Cycle Time (sec):	100		1	196
	0		Loss Time (sec):	15		0	
831	2		Critical V/C:	0.738		3	570***
	0		Avg Crit Del (sec/veh):	22.7		0	
0	0		Avg Delay (sec/veh):	14.8		0	0
			LOS:	C			

Lanes:	0	0	0	0	0
Initial Vol:	0		0		0

Signal=Split/Rights=Include

Scenario #3: CY PP AM

Signal=Split/Rights=Overlap

Initial Vol:	975		0		396***
Lanes:	2	0	0	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
1369***	2		Cycle Time (sec):	100		1	220
	0		Loss Time (sec):	15		0	
915	2		Critical V/C:	0.798		3	641***
	0		Avg Crit Del (sec/veh):	24.5		0	
0	0		Avg Delay (sec/veh):	15.9		0	0
			LOS:	C			

Lanes:	0	0	0	0	0
Initial Vol:	0		0		0

Signal=Split/Rights=Include

Change

Crit V/C:	- 0.085
Avg Crit Del:	- 4.2
Avg Del:	- 5.3

Scenario #2: Ex PP PM

Signal=Split/Rights=Overlap

Initial Vol:	1400		0		302***
Lanes:	2	0	0	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
1437***	2		Cycle Time (sec):	100		1	487
	0		Loss Time (sec):	15		0	
826	2		Critical V/C:	0.883		3	1086***
	0		Avg Crit Del (sec/veh):	28.7		0	
0	0		Avg Delay (sec/veh):	21.2		0	0
			LOS:	D			

Lanes:	0	0	0	0	0
Initial Vol:	0		0		0

Signal=Split/Rights=Include

Change

Crit V/C:	+ 0.145
Avg Crit Del:	+ 6.0
Avg Del:	+ 6.4

Scenario #4: CY PP PM

Signal=Split/Rights=Overlap

Initial Vol:	1656		0		333***
Lanes:	2	0	0	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
1688***	2		Cycle Time (sec):	100		1	540
	0		Loss Time (sec):	15		0	
942	2		Critical V/C:	0.996		3	1231***
	0		Avg Crit Del (sec/veh):	44.7		0	
0	0		Avg Delay (sec/veh):	33.2		0	0
			LOS:	E			

Lanes:	0	0	0	0	0
Initial Vol:	0		0		0

Signal=Split/Rights=Include

Change

Crit V/C:	+ 0.198
Avg Crit Del:	+ 20.2
Avg Del:	+ 17.3

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #19: Seal Beach & 2nd/Westminster

Scenario #1: Ex PP AM

North Approach: Signal=Protect/Rights=Include

Initial Vol:	343		858		314***
Lanes:	1	0	3	0	2

Westbound (left side) Initial Vol:	Lanes:	Signal=Protect Rights=Overlap		Eastbound (right side) Signal=Protect Rights=Include	Lanes:	Initial Vol:
135***	2	Vol Cnt Date:	n/a		0	97
		Cycle Time (sec):	100			
	0	Loss Time (sec):	10		1	
813	3	Critical V/C:	0.591		1	627***
	0	Avg Crit Del (sec/veh):	23.8		0	
11	1	Avg Delay (sec/veh):	21.8		2	228
		LOS:	A			

South Approach: Signal=Protect/Rights=Include

Lanes:	1	0	2	1	0
Initial Vol:	21		498***		143

Scenario #3: CY PP AM

North Approach: Signal=Protect/Rights=Include

Initial Vol:	380***		950		350
Lanes:	1	0	3	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Overlap		Signal=Protect Rights=Include	Lanes:	Initial Vol:
150***	2	Vol Cnt Date:	n/a		0	110
		Cycle Time (sec):	100			
	0	Loss Time (sec):	10		1	
891	3	Critical V/C:	0.653		1	701***
	0	Avg Crit Del (sec/veh):	21.6		0	
20	1	Avg Delay (sec/veh):	22.8		2	260
		LOS:	B			

South Approach: Signal=Protect/Rights=Include

Lanes:	1	0	2	1	0
Initial Vol:	30***		560		160

Change

Crit V/C:	- 0.259
Avg Crit Del:	- 14.6
Avg Del:	- 8.8

Scenario #2: Ex PP PM

North Approach: Signal=Protect/Rights=Include

Initial Vol:	245		814		247***
Lanes:	1	0	3	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Overlap		Signal=Protect Rights=Include	Lanes:	Initial Vol:
453***	2	Vol Cnt Date:	n/a		0	228
		Cycle Time (sec):	100			
	0	Loss Time (sec):	10		1	
958	3	Critical V/C:	0.912		1	924***
	0	Avg Crit Del (sec/veh):	36.3		0	
5	1	Avg Delay (sec/veh):	31.5		2	278
		LOS:	E			

South Approach: Signal=Protect/Rights=Include

Lanes:	1	0	2	1	0
Initial Vol:	63		914***		276

Change

Crit V/C:	+ 0.321
Avg Crit Del:	+ 12.5
Avg Del:	+ 9.7

Scenario #4: CY PP PM

North Approach: Signal=Protect/Rights=Include

Initial Vol:	280		910		280***
Lanes:	1	0	3	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Overlap		Signal=Protect Rights=Include	Lanes:	Initial Vol:
510***	2	Vol Cnt Date:	n/a		0	260
		Cycle Time (sec):	100			
	0	Loss Time (sec):	10		1	
1084	3	Critical V/C:	1.017		1	1051***
	0	Avg Crit Del (sec/veh):	57.3		0	
10	1	Avg Delay (sec/veh):	44.4		2	310
		LOS:	F			

South Approach: Signal=Protect/Rights=Include

Lanes:	1	0	2	1	0
Initial Vol:	70		1020***		310

Change

Crit V/C:	+ 0.364
Avg Crit Del:	+ 35.7
Avg Del:	+ 21.6

SYNCHRO REPORTS

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	171	547	664	74
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.98
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1301
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1301
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	188	601	730	81
RTOR Reduction (vph)	0	0	0	0	0	27
Lane Group Flow (vph)	0	0	188	601	730	54
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			15.0	55.9	36.7	36.7
Effective Green, g (s)			15.0	55.9	36.7	36.7
Actuated g/C Ratio			0.22	0.81	0.53	0.53
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			324	2417	1587	692
v/s Ratio Prot			c0.13	0.20	c0.24	
v/s Ratio Perm						0.04
v/c Ratio			0.58	0.25	0.46	0.08
Uniform Delay, d1			24.1	1.5	10.0	7.8
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			1.7	0.1	0.3	0.1
Delay (s)			25.8	1.6	10.3	7.9
Level of Service			C	A	B	A
Approach Delay (s)	0.0			7.4	10.0	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	68.9	Sum of lost time (s)	13.7
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	72	246	0	649	663	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	81	276	0	729	745	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.87	0.87	0.87			
vC, conflicting volume	1110	372	745			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	819	0	398			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	71	100			
cM capacity (veh/h)	272	940	1003			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	54	303	365	365	372	372
Volume Left	54	27	0	0	0	0
Volume Right	0	276	0	0	0	0
cSH	272	1031	1700	1700	1700	1700
Volume to Capacity	0.20	0.29	0.21	0.21	0.22	0.22
Queue Length 95th (ft)	18	31	0	0	0	0
Control Delay (s)	21.5	11.2	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	12.8		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	681	265	447	24	40	838
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	765	0	502	0	45	942
Adj No. of Lanes	2	1	2	0	1	2
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	786	402	1381	0	69	1690
Arrive On Green	0.30	0.00	0.15	0.00	0.05	0.57
Sat Flow, veh/h	2608	1333	3137	0	1494	3059
Grp Volume(v), veh/h	765	0	502	0	45	942
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490
Q Serve(g_s), s	24.7	0.0	12.8	0.0	2.5	17.0
Cycle Q Clear(g_c), s	24.7	0.0	12.8	0.0	2.5	17.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	786	402	1381	0	69	1690
V/C Ratio(X)	0.97	0.00	0.36	0.00	0.65	0.56
Avail Cap(c_a), veh/h	786	402	1381	0	265	1690
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.97	0.00	1.00	1.00
Uniform Delay (d), s/veh	29.4	0.0	24.8	0.0	39.9	11.6
Incr Delay (d2), s/veh	25.6	0.0	0.7	0.0	3.8	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.6	0.0	5.4	0.0	1.1	7.2
LnGrp Delay(d),s/veh	54.9	0.0	25.5	0.0	43.7	13.0
LnGrp LOS	D		C		D	B
Approach Vol, veh/h	765		502			987
Approach Delay, s/veh	54.9		25.5			14.4
Approach LOS	D		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.8	45.2		31.0		54.0		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	15.1	28.2		25.6		48.2		
Max Q Clear Time (g_c+I1), s	4.5	14.8		26.7		19.0		
Green Ext Time (p_c), s	0.0	10.4		0.0		19.1		

Intersection Summary		
HCM 2010 Ctrl Delay		30.6
HCM 2010 LOS		C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1832	175	0	1329	456	93	844	9	489	673	7
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	1889	172	0	1370	462	96	870	8	504	694	6
Adj No. of Lanes	0	3	0	0	2	1	1	3	0	2	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1943	176	0	1449	869	115	989	9	434	1397	12
Arrive On Green	0.00	0.49	0.49	0.00	0.97	0.97	0.03	0.07	0.07	0.17	0.32	0.32
Sat Flow, veh/h	0	4138	362	0	3059	1332	1494	4376	40	2608	4379	38
Grp Volume(v), veh/h	0	1347	714	0	1370	462	96	567	311	504	452	248
Grp Sat Flow(s),veh/h/ln	0	1427	1504	0	1490	1332	1494	1427	1561	1304	1427	1562
Q Serve(g_s), s	0.0	64.2	65.1	0.0	22.2	3.0	9.0	27.6	27.6	23.3	17.9	18.0
Cycle Q Clear(g_c), s	0.0	64.2	65.1	0.0	22.2	3.0	9.0	27.6	27.6	23.3	17.9	18.0
Prop In Lane	0.00		0.24	0.00		1.00	1.00		0.03	1.00		0.02
Lane Grp Cap(c), veh/h	0	1388	731	0	1449	869	115	645	353	434	911	498
V/C Ratio(X)	0.00	0.97	0.98	0.00	0.95	0.53	0.83	0.88	0.88	1.16	0.50	0.50
Avail Cap(c_a), veh/h	0	1388	731	0	1449	869	254	697	381	434	911	498
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.12	0.12	0.95	0.95	0.95	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	35.0	35.2	0.0	1.3	0.5	67.3	62.9	62.9	58.3	38.6	38.6
Incr Delay (d2), s/veh	0.0	3.1	6.0	0.0	2.4	0.3	6.8	11.5	19.0	95.2	0.5	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	25.8	28.2	0.0	5.0	0.4	3.9	11.9	13.8	14.1	7.2	7.9
LnGrp Delay(d),s/veh	0.0	38.1	41.2	0.0	3.7	0.8	74.1	74.4	81.9	153.5	39.1	39.5
LnGrp LOS		D	D		A	A	E	E	F	F	D	D
Approach Vol, veh/h		2061			1832			974			1204	
Approach Delay, s/veh		39.2			2.9			76.8			87.1	
Approach LOS		D			A			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		73.6	16.0	50.5		73.6	29.0	37.4
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 66	* 24	34.2		* 66	* 23	34.2
Max Q Clear Time (g_c+I1), s		67.1	11.0	20.0		24.2	25.3	29.6
Green Ext Time (p_c), s		0.0	0.1	9.1		40.2	0.0	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.8
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	242	1969	17	55	1708	206	0	447	189	183	305	150
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	257	2095	18	59	1817	207	0	476	0	195	324	127
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	274	2604	22	72	1773	201	0	542	169	231	741	575
Arrive On Green	0.37	1.00	1.00	0.06	0.60	0.60	0.00	0.04	0.00	0.09	0.25	0.25
Sat Flow, veh/h	1494	4379	38	1494	3903	442	0	4424	1333	2608	2980	1330
Grp Volume(v), veh/h	257	1365	748	59	1326	698	0	476	0	195	324	127
Grp Sat Flow(s),veh/h/ln	1494	1427	1562	1494	1427	1490	0	1427	1333	1304	1490	1330
Q Serve(g_s), s	23.2	0.0	0.0	5.5	63.6	63.6	0.0	15.5	0.0	10.3	12.8	0.0
Cycle Q Clear(g_c), s	23.2	0.0	0.0	5.5	63.6	63.6	0.0	15.5	0.0	10.3	12.8	0.0
Prop In Lane	1.00		0.02	1.00		0.30	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	274	1697	929	72	1297	677	0	542	169	231	741	575
V/C Ratio(X)	0.94	0.80	0.81	0.82	1.02	1.03	0.00	0.88	0.00	0.84	0.44	0.22
Avail Cap(c_a), veh/h	274	1697	929	195	1297	677	0	548	170	266	786	595
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.29	0.29	0.29	0.00	0.85	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.6	0.0	0.0	64.9	27.7	27.7	0.0	66.0	0.0	62.9	44.3	24.9
Incr Delay (d2), s/veh	6.4	0.4	0.7	3.2	19.7	27.0	0.0	13.1	0.0	18.4	0.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.1	0.2	2.3	28.3	30.9	0.0	6.8	0.0	4.3	5.3	4.9
LnGrp Delay(d),s/veh	50.0	0.4	0.7	68.1	47.4	54.8	0.0	79.1	0.0	81.3	44.8	25.1
LnGrp LOS	D	A	A	E	F	F		E		F	D	C
Approach Vol, veh/h		2370			2083			476			646	
Approach Delay, s/veh		5.9			50.5			79.1			51.9	
Approach LOS		A			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	88.6		39.9	31.1	69.0	17.1	22.8
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 18	69.6		36.9	24.3	* 64	* 14	17.9
Max Q Clear Time (g_c+I1), s	7.5	2.0		14.8	25.2	65.6	12.3	17.5
Green Ext Time (p_c), s	0.0	43.4		5.8	0.0	0.0	0.1	0.2

Intersection Summary	
HCM 2010 Ctrl Delay	34.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	75	2237	26	84	1857	429	57	70	100	64	21	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	78	2330	16	88	1934	428	59	73	14	44	53	2
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	2815	875	105	2346	505	92	97	176	89	103	86
Arrive On Green	0.12	1.00	1.00	0.14	1.00	1.00	0.06	0.06	0.06	0.07	0.07	0.07
Sat Flow, veh/h	1494	4282	1330	1494	3527	759	1494	1569	1333	1345	1569	1303
Grp Volume(v), veh/h	78	2330	16	88	1555	807	59	73	14	44	53	2
Grp Sat Flow(s),veh/h/ln	1494	1427	1330	1494	1427	1431	1494	1569	1333	1345	1569	1303
Q Serve(g_s), s	7.1	0.0	0.0	8.0	0.0	0.0	5.4	6.4	1.3	4.4	4.6	0.2
Cycle Q Clear(g_c), s	7.1	0.0	0.0	8.0	0.0	0.0	5.4	6.4	1.3	4.4	4.6	0.2
Prop In Lane	1.00		1.00	1.00		0.53	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	93	2815	875	105	1899	952	92	97	176	89	103	86
V/C Ratio(X)	0.84	0.83	0.02	0.84	0.82	0.85	0.64	0.75	0.08	0.50	0.51	0.02
Avail Cap(c_a), veh/h	142	2815	875	217	1899	952	159	167	235	316	369	306
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.45	0.45	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.6	0.0	0.0	59.4	0.0	0.0	64.2	64.6	53.3	63.1	63.2	61.2
Incr Delay (d2), s/veh	7.6	1.4	0.0	4.6	1.4	3.3	7.2	11.2	0.2	4.3	3.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.4	0.0	3.5	0.4	0.9	2.4	3.1	0.5	1.8	2.1	0.1
LnGrp Delay(d),s/veh	68.2	1.4	0.0	64.0	1.4	3.3	71.3	75.8	53.5	67.4	67.1	61.3
LnGrp LOS	E	A	A	E	A	A	E	E	D	E	E	E
Approach Vol, veh/h		2424			2450			146			99	
Approach Delay, s/veh		3.5			4.3			71.9			67.1	
Approach LOS		A			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.5	97.4		14.3	13.4	98.5		13.7
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	10.0	2.0		6.6	9.1	2.0		8.4
Green Ext Time (p_c), s	0.1	49.3		0.4	0.0	56.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.1
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	95	2274	2380	219	18	24
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1490	4282	4207		2452	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1490	4282	4207		2452	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	98	2344	2454	226	19	25
RTOR Reduction (vph)	0	0	4	0	24	0
Lane Group Flow (vph)	98	2344	2676	0	20	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	13.7	113.4	95.0		5.4	
Effective Green, g (s)	13.7	113.4	95.0		5.4	
Actuated g/C Ratio	0.10	0.81	0.68		0.04	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	145	3468	2854		94	
v/s Ratio Prot	0.07	c0.55	c0.64		c0.01	
v/s Ratio Perm						
v/c Ratio	0.68	0.68	0.94		0.21	
Uniform Delay, d1	61.0	5.6	19.9		65.2	
Progression Factor	1.25	0.95	1.00		1.00	
Incremental Delay, d2	4.8	0.5	7.5		0.5	
Delay (s)	80.8	5.8	27.4		65.7	
Level of Service	F	A	C		E	
Approach Delay (s)		8.9	27.4		65.7	
Approach LOS		A	C		E	

Intersection Summary			
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	84.1%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	714	33	24	813	231	80	311	44	226	136	14
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	61	752	35	25	856	243	84	327	46	238	143	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	333	2688	125	437	2744	854	198	394	176	303	353	150
Arrive On Green	0.64	0.64	0.64	0.64	0.64	0.64	0.13	0.13	0.13	0.11	0.11	0.00
Sat Flow, veh/h	511	4194	195	685	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	61	511	276	25	856	243	84	327	46	238	143	0
Grp Sat Flow(s),veh/h/ln	511	1427	1534	685	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	8.5	11.0	11.0	2.3	12.6	11.2	7.2	15.0	4.3	12.1	5.9	0.0
Cycle Q Clear(g_c), s	21.1	11.0	11.0	13.3	12.6	11.2	7.2	15.0	4.3	12.1	5.9	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	333	1830	983	437	2744	854	198	394	176	303	353	150
V/C Ratio(X)	0.18	0.28	0.28	0.06	0.31	0.28	0.43	0.83	0.26	0.79	0.40	0.00
Avail Cap(c_a), veh/h	333	1830	983	437	2744	854	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.84	0.84	0.84	0.95	0.95	0.95	1.00	1.00	1.00	0.90	0.90	0.00
Uniform Delay (d), s/veh	16.0	11.0	11.0	13.9	11.3	11.0	55.8	59.2	54.6	60.5	57.8	0.0
Incr Delay (d2), s/veh	1.0	0.3	0.6	0.2	0.3	0.8	1.5	8.2	0.8	4.2	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	4.4	4.8	0.5	5.0	4.3	3.1	6.6	1.6	4.7	2.6	0.0
LnGrp Delay(d),s/veh	17.0	11.3	11.6	14.2	11.6	11.8	57.4	67.4	55.4	64.7	58.5	0.0
LnGrp LOS	B	B	B	B	B	B	E	E	E	E	E	
Approach Vol, veh/h		848			1124			457			381	
Approach Delay, s/veh		11.8			11.7			64.3			62.4	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		95.5		20.9		95.5		23.6
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		15.3		14.1		23.1		17.0
Green Ext Time (p_c), s		22.8		1.7		20.8		1.6

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	17	1002	1020	89	70	74
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	18	1077	1097	73	75	0
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	750	3684	1342	417	150	77
Arrive On Green	0.50	0.86	0.63	0.63	0.06	0.00
Sat Flow, veh/h	1494	4424	4424	1329	2608	1333
Grp Volume(v), veh/h	18	1077	1097	73	75	0
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1329	1304	1333
Q Serve(g_s), s	0.8	6.1	25.5	3.0	3.6	0.0
Cycle Q Clear(g_c), s	0.8	6.1	25.5	3.0	3.6	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	750	3684	1342	417	150	77
V/C Ratio(X)	0.02	0.29	0.82	0.18	0.50	0.00
Avail Cap(c_a), veh/h	750	3684	2049	636	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.94	0.94	0.93	0.93	0.90	0.00
Uniform Delay (d), s/veh	16.3	1.7	21.4	17.2	59.5	0.0
Incr Delay (d2), s/veh	0.0	0.2	5.2	0.8	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.4	10.4	1.2	1.3	0.0
LnGrp Delay(d),s/veh	16.3	1.9	26.6	18.1	60.5	0.0
LnGrp LOS	B	A	C	B	E	
Approach Vol, veh/h		1095	1170		75	
Approach Delay, s/veh		2.1	26.1		60.5	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	71.1	46.5		12.4		117.6		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	15.1	* 62		37.1		82.2		
Max Q Clear Time (g_c+I1), s	2.8	27.5		5.6		8.1		
Green Ext Time (p_c), s	7.0	13.3		0.1		14.5		

Intersection Summary	
HCM 2010 Ctrl Delay	16.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	11	60	414	893	173	1351
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	12	0	460	0	192	1501
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	47	24	1931	864	217	2536
Arrive On Green	0.02	0.00	0.65	0.00	0.29	1.00
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	12	0	460	0	192	1501
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	0.4	0.0	5.5	0.0	10.4	0.0
Cycle Q Clear(g_c), s	0.4	0.0	5.5	0.0	10.4	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	47	24	1931	864	217	2536
V/C Ratio(X)	0.26	0.00	0.24	0.00	0.89	0.59
Avail Cap(c_a), veh/h	842	426	1931	864	248	2536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.39	0.00	0.62	0.62
Uniform Delay (d), s/veh	41.2	0.0	6.2	0.0	29.5	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.1	0.0	17.5	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	2.3	0.0	5.3	0.2
LnGrp Delay(d),s/veh	44.1	0.0	6.3	0.0	46.9	0.6
LnGrp LOS	D		A		D	A
Approach Vol, veh/h	12		460			1693
Approach Delay, s/veh	44.1		6.3			5.9
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	17.2	60.9		6.9		78.1		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	12.4	7.5		2.4		2.0		
Green Ext Time (p_c), s	0.0	18.3		0.0		35.5		

Intersection Summary			
HCM 2010 Ctrl Delay			6.2
HCM 2010 LOS			A

Notes
User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	161	106	92	110	40	48	1058	64	31	994	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	18	169	13	97	116	5	51	1114	64	33	1046	8
Adj No. of Lanes	1	2	0	1	2	1	1	3	0	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	478	36	195	508	226	566	2807	161	40	1365	424
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.38	0.68	0.68	0.03	0.32	0.32
Sat Flow, veh/h	1262	2806	214	1194	2980	1329	1494	4143	238	1494	4282	1331
Grp Volume(v), veh/h	18	89	93	97	116	5	51	767	411	33	1046	8
Grp Sat Flow(s),veh/h/ln	1262	1490	1530	1194	1490	1329	1494	1427	1526	1494	1427	1331
Q Serve(g_s), s	1.6	6.9	7.0	10.2	4.4	0.4	2.9	15.4	15.4	2.9	28.6	0.5
Cycle Q Clear(g_c), s	6.0	6.9	7.0	17.1	4.4	0.4	2.9	15.4	15.4	2.9	28.6	0.5
Prop In Lane	1.00		0.14	1.00		1.00	1.00		0.16	1.00		1.00
Lane Grp Cap(c), veh/h	228	254	261	195	508	226	566	1934	1034	40	1365	424
V/C Ratio(X)	0.08	0.35	0.36	0.50	0.23	0.02	0.09	0.40	0.40	0.82	0.77	0.02
Avail Cap(c_a), veh/h	376	429	440	335	857	382	566	1934	1034	197	1950	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.95	0.95	0.95	0.54	0.54	0.54	0.96	0.96	0.96
Uniform Delay (d), s/veh	49.1	47.6	47.6	55.2	46.5	44.9	26.0	9.2	9.3	63.0	39.9	30.3
Incr Delay (d2), s/veh	0.1	0.8	0.8	1.9	0.2	0.0	0.0	0.3	0.6	13.9	4.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	2.9	3.0	3.4	1.8	0.2	1.2	6.2	6.7	1.3	11.7	0.2
LnGrp Delay(d),s/veh	49.3	48.4	48.5	57.1	46.8	44.9	26.0	9.6	9.9	76.9	43.9	30.4
LnGrp LOS	D	D	D	E	D	D	C	A	A	E	D	C
Approach Vol, veh/h		200			218			1229			1087	
Approach Delay, s/veh		48.5			51.3			10.4			44.8	
Approach LOS		D			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.4	93.9		27.8	55.0	47.2		27.8
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	17.1	59.2		37.4	17.1	* 59		37.4
Max Q Clear Time (g_c+I1), s	4.9	17.4		9.0	4.9	30.6		19.1
Green Ext Time (p_c), s	0.0	13.6		2.2	7.2	10.8		2.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.1
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	231	1081	403	345	821	152	341	839	288	205	808	193
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	241	1126	185	359	855	121	355	874	255	214	842	165
Adj No. of Lanes	2	3	1	2	3	1	2	3	0	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	280	1210	342	319	1179	497	388	1218	354	255	1364	562
Arrive On Green	0.10	0.26	0.26	0.12	0.28	0.28	0.15	0.37	0.37	0.10	0.32	0.32
Sat Flow, veh/h	2689	4706	1330	2608	4282	1330	2608	3296	957	2608	4282	1331
Grp Volume(v), veh/h	241	1126	185	359	855	121	355	756	373	214	842	165
Grp Sat Flow(s),veh/h/ln	1345	1569	1330	1304	1427	1330	1304	1427	1398	1304	1427	1331
Q Serve(g_s), s	12.3	32.7	16.8	17.1	25.3	8.8	18.8	31.8	32.1	11.3	23.4	11.4
Cycle Q Clear(g_c), s	12.3	32.7	16.8	17.1	25.3	8.8	18.8	31.8	32.1	11.3	23.4	11.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.68	1.00		1.00
Lane Grp Cap(c), veh/h	280	1210	342	319	1179	497	388	1055	516	255	1364	562
V/C Ratio(X)	0.86	0.93	0.54	1.13	0.73	0.24	0.92	0.72	0.72	0.84	0.62	0.29
Avail Cap(c_a), veh/h	328	1247	353	319	1179	497	393	1055	516	393	1364	562
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.45	0.45	0.45	0.50	0.50	0.50	0.90	0.90	0.90	0.91	0.91	0.91
Uniform Delay (d), s/veh	61.7	50.8	44.9	61.5	45.9	30.3	58.7	37.9	37.9	62.1	40.5	26.7
Incr Delay (d2), s/veh	9.1	6.4	0.8	75.9	1.2	0.2	23.6	3.8	7.6	8.5	1.9	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	14.9	6.2	9.5	10.1	3.2	8.0	13.1	13.5	4.4	9.4	4.4
LnGrp Delay(d),s/veh	70.8	57.1	45.7	137.3	47.1	30.4	82.3	41.6	45.6	70.6	42.4	27.9
LnGrp LOS	E	E	D	F	D	C	F	D	D	E	D	C
Approach Vol, veh/h		1552			1335			1484			1221	
Approach Delay, s/veh		57.9			69.9			52.3			45.4	
Approach LOS		E			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.6	57.5	22.0	41.9	25.7	50.4	19.5	44.4
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	17.1	37.1	21.1	43.2	17.1	37.1
Max Q Clear Time (g_c+I1), s	13.3	34.1	19.1	34.7	20.8	25.4	14.3	27.3
Green Ext Time (p_c), s	0.4	8.0	0.0	1.3	0.0	14.5	0.2	8.4

Intersection Summary	
HCM 2010 Ctrl Delay	56.5
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	63	16	231	8	8	3	57	1385	23	10	1374	114
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	40	50	28	8	8	0	58	1413	16	10	1402	112
Adj No. of Lanes	1	1	1	0	1	0	1	3	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	92	107	107	23	23	0	71	3115	970	17	2061	922
Arrive On Green	0.07	0.07	0.07	0.03	0.03	0.00	0.05	0.73	0.73	0.01	0.69	0.69
Sat Flow, veh/h	1345	1569	1333	765	765	0	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	40	50	28	16	0	0	58	1413	16	10	1402	112
Grp Sat Flow(s),veh/h/ln	1345	1569	1333	1530	0	0	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	3.7	4.0	2.6	1.3	0.0	0.0	5.0	17.5	0.4	0.9	35.6	3.7
Cycle Q Clear(g_c), s	3.7	4.0	2.6	1.3	0.0	0.0	5.0	17.5	0.4	0.9	35.6	3.7
Prop In Lane	1.00		1.00	0.50		0.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	92	107	107	46	0	0	71	3115	970	17	2061	922
V/C Ratio(X)	0.44	0.47	0.26	0.34	0.00	0.00	0.82	0.45	0.02	0.57	0.68	0.12
Avail Cap(c_a), veh/h	197	229	210	412	0	0	172	3115	970	138	2061	922
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.82	0.82	0.82	0.58	0.58	0.58
Uniform Delay (d), s/veh	58.2	58.3	56.2	61.8	0.0	0.0	61.4	7.2	4.9	63.9	11.7	6.7
Incr Delay (d2), s/veh	1.2	1.2	0.5	3.2	0.0	0.0	7.0	0.4	0.0	6.3	1.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	1.8	1.0	0.6	0.0	0.0	2.2	6.9	0.2	0.4	14.7	1.4
LnGrp Delay(d),s/veh	59.4	59.5	56.7	65.0	0.0	0.0	68.4	7.6	4.9	70.2	12.7	6.9
LnGrp LOS	E	E	E	E			E	A	A	E	B	A
Approach Vol, veh/h		118			16			1487			1524	
Approach Delay, s/veh		58.8			65.0			9.9			12.7	
Approach LOS		E			E			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.5	100.7		8.9	11.2	96.0		13.9
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0
Max Q Clear Time (g_c+I1), s	2.9	19.5		3.3	7.0	37.6		6.0
Green Ext Time (p_c), s	0.0	21.8		0.0	0.0	2.3		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	13.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	186	1	49	2	0	1	14	1281	2	2	1545	63
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1667	1700	1700	1667	1700	1667	1667	1700	1667	1667	1700
Adj Flow Rate, veh/h	194	1	3	2	0	0	15	1334	2	2	1609	65
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	27	81	4	0	0	22	2698	4	4	2546	102
Arrive On Green	0.07	0.07	0.07	0.00	0.00	0.00	0.01	0.83	0.83	0.00	0.82	0.82
Sat Flow, veh/h	3079	368	1104	1587	0	0	1587	3244	5	1587	3103	125
Grp Volume(v), veh/h	194	0	4	2	0	0	15	651	685	2	818	856
Grp Sat Flow(s),veh/h/ln	1540	0	1472	1587	0	0	1587	1583	1666	1587	1583	1645
Q Serve(g_s), s	13.1	0.0	0.5	0.3	0.0	0.0	2.0	24.7	24.7	0.3	40.3	40.9
Cycle Q Clear(g_c), s	13.1	0.0	0.5	0.3	0.0	0.0	2.0	24.7	24.7	0.3	40.3	40.9
Prop In Lane	1.00		0.75	1.00		0.00	1.00		0.00	1.00		0.08
Lane Grp Cap(c), veh/h	226	0	108	4	0	0	22	1317	1385	4	1299	1349
V/C Ratio(X)	0.86	0.00	0.04	0.48	0.00	0.00	0.68	0.49	0.49	0.48	0.63	0.63
Avail Cap(c_a), veh/h	592	0	283	187	0	0	132	1317	1385	94	1299	1349
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.64	0.64	0.64
Uniform Delay (d), s/veh	96.2	0.0	90.4	104.6	0.0	0.0	103.1	5.1	5.1	104.6	7.0	7.1
Incr Delay (d2), s/veh	3.6	0.0	0.1	28.6	0.0	0.0	12.8	1.3	1.3	19.1	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	0.2	0.1	0.0	0.0	0.9	11.2	11.7	0.1	18.0	18.9
LnGrp Delay(d),s/veh	99.8	0.0	90.4	133.2	0.0	0.0	115.9	6.4	6.3	123.6	8.5	8.5
LnGrp LOS	F		F	F			F	A	A	F	A	A
Approach Vol, veh/h		198			2			1351			1676	
Approach Delay, s/veh		99.6			133.2			7.6			8.7	
Approach LOS		F			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	180.2		4.8	7.4	177.8		20.0
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	12.5	113.5		* 25	17.5	108.5		40.4
Max Q Clear Time (g_c+I1), s	2.3	26.7		2.3	4.0	42.9		15.1
Green Ext Time (p_c), s	0.0	77.2		0.0	0.0	59.9		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	13.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	239	1011	717	64
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.98
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1301
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1301
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	263	1111	788	70
RTOR Reduction (vph)	0	0	0	0	0	24
Lane Group Flow (vph)	0	0	263	1111	788	46
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			22.7	63.9	37.0	37.0
Effective Green, g (s)			22.7	63.9	37.0	37.0
Actuated g/C Ratio			0.29	0.83	0.48	0.48
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			439	2473	1431	625
v/s Ratio Prot			c0.18	0.37	c0.26	
v/s Ratio Perm						0.04
v/c Ratio			0.60	0.45	0.55	0.07
Uniform Delay, d1			23.3	1.8	14.1	10.8
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			1.5	0.2	0.6	0.1
Delay (s)			24.7	2.0	14.7	10.8
Level of Service			C	A	B	B
Approach Delay (s)	0.0			6.3	14.4	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	77.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	29	172	0	1231	704	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	187	0	1338	765	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.83	0.83	0.83			
vC, conflicting volume	1434	383	765			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1118	0	314			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	79	100			
cM capacity (veh/h)	167	902	1034			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	21	197	669	669	383	383
Volume Left	21	11	0	0	0	0
Volume Right	0	187	0	0	0	0
cSH	167	953	1700	1700	1700	1700
Volume to Capacity	0.13	0.21	0.39	0.39	0.23	0.23
Queue Length 95th (ft)	11	19	0	0	0	0
Control Delay (s)	29.6	11.0	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	12.8		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	50.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1043	315	868	51	44	946
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	1122	0	933	0	47	1017
Adj No. of Lanes	2	1	2	0	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	786	402	1377	0	71	1690
Arrive On Green	0.30	0.00	0.15	0.00	0.05	0.57
Sat Flow, veh/h	2608	1333	3137	0	1494	3059
Grp Volume(v), veh/h	1122	0	933	0	47	1017
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490
Q Serve(g_s), s	25.6	0.0	25.1	0.0	2.6	19.1
Cycle Q Clear(g_c), s	25.6	0.0	25.1	0.0	2.6	19.1
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	786	402	1377	0	71	1690
V/C Ratio(X)	1.43	0.00	0.68	0.00	0.66	0.60
Avail Cap(c_a), veh/h	786	402	1377	0	283	1690
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.77	0.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	30.0	0.0	39.8	12.1
Incr Delay (d2), s/veh	200.1	0.0	2.1	0.0	3.9	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	31.0	0.0	10.8	0.0	1.2	8.1
LnGrp Delay(d),s/veh	229.8	0.0	32.1	0.0	43.8	13.7
LnGrp LOS	F		C		D	B
Approach Vol, veh/h	1122		933			1064
Approach Delay, s/veh	229.8		32.1			15.0
Approach LOS	F		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.9	45.1		31.0		54.0		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	16.1	27.2		25.6		48.2		
Max Q Clear Time (g_c+I1), s	4.6	27.1		27.6		21.1		
Green Ext Time (p_c), s	0.0	0.0		0.0		22.7		

Intersection Summary			
HCM 2010 Ctrl Delay			97.4
HCM 2010 LOS			F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1558	169	0	1472	462	209	859	19	576	1098	14
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	1574	162	0	1487	459	211	868	18	582	1109	13
Adj No. of Lanes	0	3	0	0	2	1	1	3	0	2	3	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1817	187	0	1372	845	227	1056	22	453	1177	14
Arrive On Green	0.00	0.46	0.46	0.00	0.92	0.92	0.30	0.49	0.49	0.17	0.27	0.27
Sat Flow, veh/h	0	4087	406	0	3059	1332	1494	4318	89	2608	4363	51
Grp Volume(v), veh/h	0	1138	598	0	1487	459	211	574	312	582	726	396
Grp Sat Flow(s),veh/h/ln	0	1427	1496	0	1490	1332	1494	1427	1553	1304	1427	1559
Q Serve(g_s), s	0.0	50.1	50.2	0.0	64.5	8.3	19.2	24.0	24.1	24.3	34.8	34.9
Cycle Q Clear(g_c), s	0.0	50.1	50.2	0.0	64.5	8.3	19.2	24.0	24.1	24.3	34.8	34.9
Prop In Lane	0.00		0.27	0.00		1.00	1.00		0.06	1.00		0.03
Lane Grp Cap(c), veh/h	0	1315	689	0	1372	845	227	698	380	453	770	421
V/C Ratio(X)	0.00	0.87	0.87	0.00	1.08	0.54	0.93	0.82	0.82	1.29	0.94	0.94
Avail Cap(c_a), veh/h	0	1315	689	0	1372	845	265	759	413	453	770	421
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.32	0.32	0.90	0.90	0.90	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	33.9	33.9	0.0	5.5	1.6	48.0	33.2	33.2	57.8	50.1	50.1
Incr Delay (d2), s/veh	0.0	0.8	1.5	0.0	42.4	0.8	30.3	6.3	11.1	144.4	19.8	29.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	19.9	21.0	0.0	30.2	2.7	9.8	10.0	11.4	17.8	15.8	18.5
LnGrp Delay(d),s/veh	0.0	34.7	35.4	0.0	47.9	2.4	78.3	39.5	44.3	202.2	69.9	79.9
LnGrp LOS		C	D		F	A	E	D	D	F	E	E
Approach Vol, veh/h		1736			1946			1097			1704	
Approach Delay, s/veh		34.9			37.2			48.3			117.4	
Approach LOS		C			D			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		70.0	26.5	43.6		70.0	30.0	40.0
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 62	* 25	37.2		* 62	* 24	37.2
Max Q Clear Time (g_c+I1), s		52.2	21.2	36.9		66.5	26.3	26.1
Green Ext Time (p_c), s		9.2	0.1	0.3		0.0	0.0	8.1

Intersection Summary		
HCM 2010 Ctrl Delay		59.6
HCM 2010 LOS		E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	179	1923	23	58	1594	171	0	517	153	304	579	329
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	183	1962	22	59	1627	165	0	528	0	310	591	305
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	269	2462	28	72	1685	171	0	486	151	346	834	613
Arrive On Green	0.36	1.00	1.00	0.10	0.85	0.85	0.00	0.04	0.00	0.13	0.28	0.28
Sat Flow, veh/h	1494	4366	49	1494	3952	400	0	4424	1333	2608	2980	1330
Grp Volume(v), veh/h	183	1283	701	59	1175	617	0	528	0	310	591	305
Grp Sat Flow(s),veh/h/ln	1494	1427	1560	1494	1427	1497	0	1427	1333	1304	1490	1330
Q Serve(g_s), s	14.5	0.0	0.0	5.4	47.9	48.5	0.0	15.9	0.0	16.4	24.9	0.0
Cycle Q Clear(g_c), s	14.5	0.0	0.0	5.4	47.9	48.5	0.0	15.9	0.0	16.4	24.9	0.0
Prop In Lane	1.00		0.03	1.00		0.27	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	269	1610	880	72	1217	638	0	486	151	346	834	613
V/C Ratio(X)	0.68	0.80	0.80	0.82	0.96	0.97	0.00	1.09	0.00	0.90	0.71	0.50
Avail Cap(c_a), veh/h	269	1610	880	153	1256	659	0	486	151	378	871	629
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.60	0.60	0.60	0.00	0.85	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.3	0.0	0.0	62.7	9.4	9.5	0.0	67.4	0.0	59.8	45.3	26.5
Incr Delay (d2), s/veh	0.5	0.4	0.7	6.5	13.3	20.8	0.0	63.0	0.0	21.5	2.6	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.1	0.2	2.4	19.5	22.2	0.0	9.1	0.0	6.9	10.6	11.9
LnGrp Delay(d),s/veh	41.9	0.4	0.7	69.3	22.8	30.3	0.0	130.4	0.0	81.3	47.9	27.1
LnGrp LOS	D	A	A	E	C	C		F		F	D	C
Approach Vol, veh/h		2167			1851			528			1206	
Approach Delay, s/veh		4.0			26.8			130.4			51.2	
Approach LOS		A			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.4	84.3		44.3	30.7	65.1	23.3	21.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 14	69.6		40.9	22.3	* 62	* 20	15.9
Max Q Clear Time (g_c+I1), s	7.4	2.0		26.9	16.5	50.5	18.4	17.9
Green Ext Time (p_c), s	0.0	39.0		7.2	0.4	9.2	0.2	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.8
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	2233	64	183	1728	41	44	8	136	402	57	67
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	24	2326	27	191	1800	42	46	8	95	461	0	13
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	2	0	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	1918	595	207	2413	56	113	118	285	519	0	255
Arrive On Green	0.05	0.90	0.90	0.28	1.00	1.00	0.08	0.08	0.08	0.19	0.00	0.19
Sat Flow, veh/h	1494	4282	1329	1494	4305	100	1494	1569	1333	2689	0	1323
Grp Volume(v), veh/h	24	2326	27	191	1193	649	46	8	95	461	0	13
Grp Sat Flow(s),veh/h/ln	1494	1427	1329	1494	1427	1550	1494	1569	1333	1345	0	1323
Q Serve(g_s), s	2.2	62.7	0.3	17.4	0.0	0.0	4.1	0.7	8.4	23.4	0.0	1.1
Cycle Q Clear(g_c), s	2.2	62.7	0.3	17.4	0.0	0.0	4.1	0.7	8.4	23.4	0.0	1.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	1918	595	207	1600	869	113	118	285	519	0	255
V/C Ratio(X)	0.62	1.21	0.05	0.92	0.75	0.75	0.41	0.07	0.33	0.89	0.00	0.05
Avail Cap(c_a), veh/h	142	1918	595	217	1600	869	159	167	327	632	0	311
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.42	0.42	0.42	0.70	0.70	0.70	0.96	0.96	0.96	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.7	7.3	4.0	49.9	0.0	0.0	61.7	60.1	46.6	55.0	0.0	46.0
Incr Delay (d2), s/veh	3.1	97.9	0.1	30.8	2.3	4.1	2.3	0.2	0.7	12.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	39.0	0.1	8.9	0.5	1.0	1.8	0.3	3.2	9.6	0.0	0.4
LnGrp Delay(d),s/veh	68.8	105.2	4.1	80.7	2.3	4.1	64.0	60.4	47.2	67.7	0.0	46.1
LnGrp LOS	E	F	A	F	A	A	E	E	D	E		D
Approach Vol, veh/h		2377			2033			149			474	
Approach Delay, s/veh		103.6			10.2			53.1			67.1	
Approach LOS		F			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	24.1	68.1		32.1	8.3	83.9		15.7
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	19.4	64.7		25.4	4.2	2.0		10.4
Green Ext Time (p_c), s	0.0	0.0		1.1	0.0	55.6		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	61.0
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	42	2717	1916	32	128	50
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.96	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1490	4282	4268		2533	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1490	4282	4268		2533	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	43	2772	1955	33	131	51
RTOR Reduction (vph)	0	0	1	0	33	0
Lane Group Flow (vph)	43	2772	1987	0	149	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	7.6	106.1	93.8		12.7	
Effective Green, g (s)	7.6	106.1	93.8		12.7	
Actuated g/C Ratio	0.05	0.76	0.67		0.09	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	80	3245	2859		229	
v/s Ratio Prot	0.03	c0.65	0.47		c0.06	
v/s Ratio Perm						
v/c Ratio	0.54	0.85	0.70		0.65	
Uniform Delay, d1	64.5	11.6	14.3		61.5	
Progression Factor	1.03	1.55	1.00		1.00	
Incremental Delay, d2	0.3	0.3	1.4		5.2	
Delay (s)	67.1	18.4	15.7		66.7	
Level of Service	E	B	B		E	
Approach Delay (s)		19.1	15.7		66.7	
Approach LOS		B	B		E	

Intersection Summary			
HCM 2000 Control Delay	19.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1138	57	86	1039	303	54	258	65	364	251	15
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	81	1173	56	89	1071	168	56	266	7	375	259	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	2512	120	252	2568	799	166	331	148	471	549	233
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.11	0.11	0.11	0.18	0.18	0.00
Sat Flow, veh/h	447	4188	200	452	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	81	799	430	89	1071	168	56	266	7	375	259	0
Grp Sat Flow(s),veh/h/ln	447	1427	1533	452	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	16.5	21.8	21.8	19.1	18.7	8.1	4.8	12.2	0.7	18.7	10.4	0.0
Cycle Q Clear(g_c), s	35.2	21.8	21.8	40.9	18.7	8.1	4.8	12.2	0.7	18.7	10.4	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	260	1712	919	252	2568	799	166	331	148	471	549	233
V/C Ratio(X)	0.31	0.47	0.47	0.35	0.42	0.21	0.34	0.80	0.05	0.80	0.47	0.00
Avail Cap(c_a), veh/h	260	1712	919	252	2568	799	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.22	0.22	0.22	0.89	0.89	0.89	1.00	1.00	1.00	0.71	0.71	0.00
Uniform Delay (d), s/veh	24.4	15.6	15.6	27.0	15.0	12.8	57.5	60.8	55.6	55.4	51.9	0.0
Incr Delay (d2), s/veh	0.7	0.2	0.4	3.4	0.4	0.5	1.2	4.9	0.1	2.9	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	8.6	9.3	2.6	7.4	3.1	2.1	5.2	0.2	7.2	4.5	0.0
LnGrp Delay(d),s/veh	25.0	15.8	15.9	30.4	15.4	13.4	58.7	65.6	55.8	58.3	52.5	0.0
LnGrp LOS	C	B	B	C	B	B	E	E	E	E	D	
Approach Vol, veh/h		1310			1328			329			634	
Approach Delay, s/veh		16.4			16.1			64.2			55.9	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.8		29.6		89.8		20.6
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		42.9		20.7		37.2		14.2
Green Ext Time (p_c), s		16.0		3.3		20.4		1.3

Intersection Summary	
HCM 2010 Ctrl Delay	27.6
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	54	1495	1345	43	124	89
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	57	1574	1416	33	131	5
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	646	3646	1604	498	173	88
Arrive On Green	0.43	0.85	0.75	0.75	0.07	0.07
Sat Flow, veh/h	1494	4424	4424	1330	2608	1333
Grp Volume(v), veh/h	57	1574	1416	33	131	5
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1330	1304	1333
Q Serve(g_s), s	2.9	11.2	31.8	0.9	6.4	0.5
Cycle Q Clear(g_c), s	2.9	11.2	31.8	0.9	6.4	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	646	3646	1604	498	173	88
V/C Ratio(X)	0.09	0.43	0.88	0.07	0.76	0.06
Avail Cap(c_a), veh/h	646	3646	1950	606	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.82	0.82	0.72	0.72	0.64	0.64
Uniform Delay (d), s/veh	21.8	2.3	14.2	10.3	59.7	56.9
Incr Delay (d2), s/veh	0.0	0.3	5.5	0.2	2.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.5	12.9	0.3	2.4	0.2
LnGrp Delay(d),s/veh	21.8	2.6	19.7	10.5	61.7	57.0
LnGrp LOS	C	A	B	B	E	E
Approach Vol, veh/h		1631	1449		136	
Approach Delay, s/veh		3.2	19.5		61.5	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	62.0	54.5		13.5		116.5		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	18.1	* 59		37.1		82.2		
Max Q Clear Time (g_c+I1), s	4.9	33.8		8.4		13.2		
Green Ext Time (p_c), s	10.0	14.9		0.3		27.4		

Intersection Summary	
HCM 2010 Ctrl Delay	13.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	64	853	991	214	1766
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	21	0	907	0	228	1879
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	74	38	1839	823	248	2505
Arrive On Green	0.03	0.00	0.62	0.00	0.33	1.00
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	21	0	907	0	228	1879
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	0.7	0.0	14.2	0.0	12.5	0.0
Cycle Q Clear(g_c), s	0.7	0.0	14.2	0.0	12.5	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	74	38	1839	823	248	2505
V/C Ratio(X)	0.28	0.00	0.49	0.00	0.92	0.75
Avail Cap(c_a), veh/h	842	426	1839	823	248	2505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.09	0.09
Uniform Delay (d), s/veh	40.5	0.0	9.0	0.0	27.9	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.1	0.0	5.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	5.8	0.0	5.4	0.1
LnGrp Delay(d),s/veh	42.6	0.0	9.0	0.0	33.4	0.2
LnGrp LOS	D		A		C	A
Approach Vol, veh/h	21		907			2107
Approach Delay, s/veh	42.6		9.0			3.8
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	19.0	58.3		7.7		77.3		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	14.5	16.2		2.7		2.0		
Green Ext Time (p_c), s	0.0	11.8		0.0		42.9		

Intersection Summary	
HCM 2010 Ctrl Delay	5.6
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	179	132	198	386	68	171	1312	147	64	1498	41
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	24	186	35	206	402	18	178	1367	145	67	1560	17
Adj No. of Lanes	1	2	0	1	2	1	1	3	0	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	672	124	295	798	356	323	2171	230	82	1644	511
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.22	0.55	0.55	0.05	0.38	0.38
Sat Flow, veh/h	962	2512	464	1154	2980	1330	1494	3932	417	1494	4282	1331
Grp Volume(v), veh/h	24	109	112	206	402	18	178	992	520	67	1560	17
Grp Sat Flow(s),veh/h/ln	962	1490	1486	1154	1490	1330	1494	1427	1494	1494	1427	1331
Q Serve(g_s), s	2.8	7.5	7.8	22.4	14.8	1.3	13.8	31.0	31.0	5.8	45.9	1.0
Cycle Q Clear(g_c), s	17.7	7.5	7.8	30.2	14.8	1.3	13.8	31.0	31.0	5.8	45.9	1.0
Prop In Lane	1.00		0.31	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	203	399	398	295	798	356	323	1576	825	82	1644	511
V/C Ratio(X)	0.12	0.27	0.28	0.70	0.50	0.05	0.55	0.63	0.63	0.82	0.95	0.03
Avail Cap(c_a), veh/h	230	440	439	327	880	393	323	1576	825	288	1654	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.69	0.69	0.69	0.23	0.23	0.23	0.89	0.89	0.89
Uniform Delay (d), s/veh	47.8	37.6	37.7	49.6	40.3	35.3	45.3	20.0	20.0	60.8	38.8	25.0
Incr Delay (d2), s/veh	0.3	0.4	0.4	4.0	0.3	0.0	0.3	0.5	0.9	6.5	11.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	3.1	3.2	7.5	6.2	0.5	5.7	12.2	12.9	2.5	19.9	0.4
LnGrp Delay(d),s/veh	48.0	38.0	38.1	53.6	40.6	35.4	45.6	20.4	20.9	67.3	50.8	25.1
LnGrp LOS	D	D	D	D	D	D	D	C	C	E	D	C
Approach Vol, veh/h		245			626			1690			1644	
Approach Delay, s/veh		39.0			44.8			23.2			51.2	
Approach LOS		D			D			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	12.0	77.6		40.4	33.9	55.7		40.4
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	25.1	50.2		38.4	25.1	* 50		38.4
Max Q Clear Time (g_c+I1), s	7.8	33.0		19.7	15.8	47.9		32.2
Green Ext Time (p_c), s	0.1	11.6		4.7	0.7	2.0		2.6

Intersection Summary	
HCM 2010 Ctrl Delay	38.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	360	1225	366	368	1179	326	408	957	351	287	1103	414
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	364	1237	160	372	1191	293	412	967	309	290	1114	383
Adj No. of Lanes	2	3	1	2	3	1	2	3	0	2	3	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1247	353	319	1135	521	393	1071	342	329	1321	573
Arrive On Green	0.12	0.26	0.26	0.12	0.26	0.26	0.15	0.33	0.33	0.13	0.31	0.31
Sat Flow, veh/h	2689	4706	1330	2608	4282	1330	2608	3215	1026	2608	4282	1331
Grp Volume(v), veh/h	364	1237	160	372	1191	293	412	859	417	290	1114	383
Grp Sat Flow(s),veh/h/ln	1345	1569	1330	1304	1427	1330	1304	1427	1385	1304	1427	1331
Q Serve(g_s), s	17.1	36.7	14.1	17.1	37.1	24.1	21.1	40.1	40.3	15.3	34.0	32.2
Cycle Q Clear(g_c), s	17.1	36.7	14.1	17.1	37.1	24.1	21.1	40.1	40.3	15.3	34.0	32.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.74	1.00		1.00
Lane Grp Cap(c), veh/h	328	1247	353	319	1135	521	393	951	462	329	1321	573
V/C Ratio(X)	1.11	0.99	0.45	1.17	1.05	0.56	1.05	0.90	0.90	0.88	0.84	0.67
Avail Cap(c_a), veh/h	328	1247	353	319	1135	521	393	951	462	393	1321	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.27	0.27	0.27	0.09	0.09	0.09	0.76	0.76	0.76	0.37	0.37	0.37
Uniform Delay (d), s/veh	61.4	51.3	43.0	61.5	51.5	33.3	59.5	44.5	44.5	60.1	45.2	31.9
Incr Delay (d2), s/veh	60.6	11.3	0.3	78.8	25.0	0.1	52.8	10.7	19.4	7.7	2.6	2.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	17.2	5.2	9.6	17.2	8.8	10.5	17.3	17.9	5.9	13.7	12.1
LnGrp Delay(d),s/veh	122.1	62.6	43.3	140.3	76.4	33.4	112.3	55.3	63.9	67.8	47.8	34.1
LnGrp LOS	F	E	D	F	F	C	F	E	E	E	D	C
Approach Vol, veh/h		1761			1856			1688			1787	
Approach Delay, s/veh		73.1			82.4			71.3			48.1	
Approach LOS		E			F			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.6	52.4	22.0	43.0	26.0	49.0	22.0	43.0
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	17.1	37.1	21.1	43.2	17.1	37.1
Max Q Clear Time (g_c+I1), s	17.3	42.3	19.1	38.7	23.1	36.0	19.1	39.1
Green Ext Time (p_c), s	0.4	0.9	0.0	0.0	0.0	6.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	68.8
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	169	15	289	66	34	11	120	1499	30	9	1460	141
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	189	0	55	69	36	9	126	1578	18	9	1537	67
Adj No. of Lanes	2	0	1	0	1	0	1	3	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	233	0	130	84	44	11	146	2777	865	16	1674	749
Arrive On Green	0.09	0.00	0.09	0.09	0.09	0.09	0.10	0.65	0.65	0.01	0.56	0.56
Sat Flow, veh/h	2689	0	1333	909	474	119	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	189	0	55	114	0	0	126	1578	18	9	1537	67
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1502	0	0	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	9.0	0.0	5.0	9.7	0.0	0.0	10.8	26.7	0.6	0.8	60.7	3.0
Cycle Q Clear(g_c), s	9.0	0.0	5.0	9.7	0.0	0.0	10.8	26.7	0.6	0.8	60.7	3.0
Prop In Lane	1.00		1.00	0.61		0.08	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	0	130	138	0	0	146	2777	865	16	1674	749
V/C Ratio(X)	0.81	0.00	0.42	0.83	0.00	0.00	0.86	0.57	0.02	0.56	0.92	0.09
Avail Cap(c_a), veh/h	393	0	209	404	0	0	172	2777	865	138	1674	749
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.70	0.70	0.70	0.36	0.36	0.36
Uniform Delay (d), s/veh	58.3	0.0	55.3	58.0	0.0	0.0	57.8	12.7	8.1	64.0	25.8	13.2
Incr Delay (d2), s/veh	2.6	0.0	0.8	8.9	0.0	0.0	20.6	0.6	0.0	4.1	3.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	1.9	4.4	0.0	0.0	5.3	10.5	0.2	0.3	25.7	1.1
LnGrp Delay(d),s/veh	60.9	0.0	56.1	66.9	0.0	0.0	78.4	13.3	8.2	68.1	29.7	13.2
LnGrp LOS	E		E	E			E	B	A	E	C	B
Approach Vol, veh/h		244			114			1722			1613	
Approach Delay, s/veh		59.8			66.9			18.0			29.3	
Approach LOS		E			E			B			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	6.4	90.4		17.0	17.7	79.1		16.2				
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0				
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0				
Max Q Clear Time (g_c+I1), s	2.8	28.7		11.7	12.8	62.7		11.0				
Green Ext Time (p_c), s	0.0	13.8		0.5	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			27.2									
HCM 2010 LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	153	0	43	1	0	0	60	1516	0	3	1707	100
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1667	1700	1700	1667	1700	1667	1667	1700	1667	1667	1700
Adj Flow Rate, veh/h	163	0	2	1	0	0	64	1613	0	3	1816	104
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	216	0	99	2	0	0	79	2452	0	6	2218	126
Arrive On Green	0.07	0.00	0.07	0.00	0.00	0.00	0.05	0.77	0.00	0.00	0.73	0.73
Sat Flow, veh/h	3079	0	1417	1587	0	0	1587	3250	0	1587	3047	173
Grp Volume(v), veh/h	163	0	2	1	0	0	64	1613	0	3	936	984
Grp Sat Flow(s),veh/h/ln	1540	0	1417	1587	0	0	1587	1583	0	1587	1583	1636
Q Serve(g_s), s	6.5	0.0	0.2	0.1	0.0	0.0	5.0	29.3	0.0	0.2	49.1	51.3
Cycle Q Clear(g_c), s	6.5	0.0	0.2	0.1	0.0	0.0	5.0	29.3	0.0	0.2	49.1	51.3
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.11
Lane Grp Cap(c), veh/h	216	0	99	2	0	0	79	2452	0	6	1153	1191
V/C Ratio(X)	0.76	0.00	0.02	0.46	0.00	0.00	0.81	0.66	0.00	0.48	0.81	0.83
Avail Cap(c_a), veh/h	749	0	345	315	0	0	197	2452	0	133	1153	1191
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.14	0.14	0.14
Uniform Delay (d), s/veh	57.1	0.0	54.1	62.4	0.0	0.0	58.8	6.5	0.0	62.1	11.3	11.6
Incr Delay (d2), s/veh	2.0	0.0	0.0	47.7	0.0	0.0	7.0	1.4	0.0	2.8	0.9	1.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.1	0.1	0.0	0.0	2.3	13.0	0.0	0.1	21.3	23.0
LnGrp Delay(d),s/veh	59.1	0.0	54.2	110.1	0.0	0.0	65.7	7.9	0.0	65.0	12.2	12.6
LnGrp LOS	E		D	F			E	A		E	B	B
Approach Vol, veh/h		165			1			1677			1923	
Approach Delay, s/veh		59.1			110.1			10.1			12.5	
Approach LOS		E			F			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.0	102.3		4.4	10.8	96.5		13.3
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	10.5	40.5		* 25	15.5	35.5		30.4
Max Q Clear Time (g_c+I1), s	2.2	31.3		2.1	7.0	53.3		8.5
Green Ext Time (p_c), s	0.0	9.2		0.0	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	13.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	308	547	664	74
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1300
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1300
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	338	601	730	81
RTOR Reduction (vph)	0	0	0	0	0	36
Lane Group Flow (vph)	0	0	338	601	730	45
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			36.6	75.2	34.4	34.4
Effective Green, g (s)			36.6	75.2	34.4	34.4
Actuated g/C Ratio			0.41	0.84	0.39	0.39
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			612	2517	1151	502
v/s Ratio Prot			c0.23	0.20	c0.24	
v/s Ratio Perm						0.03
v/c Ratio			0.55	0.24	0.63	0.09
Uniform Delay, d1			20.0	1.3	22.2	17.4
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.6	0.1	1.3	0.1
Delay (s)			20.6	1.4	23.5	17.5
Level of Service			C	A	C	B
Approach Delay (s)	0.0			8.3	22.9	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	72	273	0	786	663	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	81	307	0	883	745	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1187	372	745			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	774	0	232			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	65	100			
cM capacity (veh/h)	273	884	1086			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	54	334	442	442	372	372
Volume Left	54	27	0	0	0	0
Volume Right	0	307	0	0	0	0
cSH	273	961	1700	1700	1700	1700
Volume to Capacity	0.20	0.35	0.26	0.26	0.22	0.22
Queue Length 95th (ft)	18	39	0	0	0	0
Control Delay (s)	21.4	11.9	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	13.2		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Volume (veh/h)	746	265	584	24	41	864		
Number	7	14	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569		
Adj Flow Rate, veh/h	838	0	656	0	46	971		
Adj No. of Lanes	2	1	2	0	1	2		
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89		
Percent Heavy Veh, %	2	2	2	2	2	2		
Cap, veh/h	786	402	1379	0	70	1690		
Arrive On Green	0.30	0.00	0.15	0.00	0.05	0.57		
Sat Flow, veh/h	2608	1333	3137	0	1494	3059		
Grp Volume(v), veh/h	838	0	656	0	46	971		
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490		
Q Serve(g_s), s	25.6	0.0	17.1	0.0	2.6	17.8		
Cycle Q Clear(g_c), s	25.6	0.0	17.1	0.0	2.6	17.8		
Prop In Lane	1.00	1.00		0.00	1.00			
Lane Grp Cap(c), veh/h	786	402	1379	0	70	1690		
V/C Ratio(X)	1.07	0.00	0.48	0.00	0.66	0.57		
Avail Cap(c_a), veh/h	786	402	1379	0	265	1690		
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00		
Upstream Filter(I)	1.00	0.00	0.94	0.00	1.00	1.00		
Uniform Delay (d), s/veh	29.7	0.0	26.6	0.0	39.8	11.8		
Incr Delay (d2), s/veh	51.4	0.0	1.1	0.0	3.9	1.4		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	14.8	0.0	7.3	0.0	1.1	7.6		
LnGrp Delay(d),s/veh	81.1	0.0	27.7	0.0	43.7	13.2		
LnGrp LOS	F		C		D	B		
Approach Vol, veh/h	838		656			1017		
Approach Delay, s/veh	81.1		27.7			14.6		
Approach LOS	F		C			B		
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.9	45.1		31.0		54.0		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	15.1	28.2		25.6		48.2		
Max Q Clear Time (g_c+I1), s	4.6	19.1		27.6		19.8		
Green Ext Time (p_c), s	0.0	7.9		0.0		20.7		
Intersection Summary								
HCM 2010 Ctrl Delay			40.2					
HCM 2010 LOS			D					

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1832	201	0	1329	456	230	981	9	489	699	7
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	1889	199	0	1370	462	237	1011	8	504	721	6
Adj No. of Lanes	0	3	0	0	2	1	1	3	0	2	3	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1844	193	0	1396	845	254	1069	8	434	1068	9
Arrive On Green	0.00	0.47	0.47	0.00	0.94	0.94	0.17	0.24	0.24	0.17	0.24	0.24
Sat Flow, veh/h	0	4079	412	0	3059	1332	1494	4383	35	2608	4381	36
Grp Volume(v), veh/h	0	1366	722	0	1370	462	237	658	361	504	470	257
Grp Sat Flow(s),veh/h/ln	0	1427	1495	0	1490	1332	1494	1427	1562	1304	1427	1562
Q Serve(g_s), s	0.0	65.6	65.6	0.0	50.7	6.9	21.9	31.7	31.8	23.3	20.8	20.9
Cycle Q Clear(g_c), s	0.0	65.6	65.6	0.0	50.7	6.9	21.9	31.7	31.8	23.3	20.8	20.9
Prop In Lane	0.00		0.28	0.00		1.00	1.00		0.02	1.00		0.02
Lane Grp Cap(c), veh/h	0	1337	700	0	1396	845	254	696	381	434	696	381
V/C Ratio(X)	0.00	1.02	1.03	0.00	0.98	0.55	0.93	0.95	0.95	1.16	0.67	0.68
Avail Cap(c_a), veh/h	0	1337	700	0	1396	845	254	697	382	434	697	382
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.09	0.09	0.89	0.89	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	37.2	37.2	0.0	4.0	1.3	57.3	52.0	52.0	58.3	47.9	47.9
Incr Delay (d2), s/veh	0.0	13.9	19.5	0.0	4.1	0.2	35.6	20.2	30.2	95.2	2.7	4.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	28.4	30.8	0.0	17.1	1.9	11.5	14.5	16.9	14.1	8.5	9.5
LnGrp Delay(d),s/veh	0.0	51.1	56.7	0.0	8.1	1.5	92.9	72.2	82.2	153.5	50.6	52.8
LnGrp LOS		F	F		A	A	F	E	F	F	D	D
Approach Vol, veh/h		2088			1832			1256			1231	
Approach Delay, s/veh		53.1			6.5			79.0			93.2	
Approach LOS		D			A			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		71.1	29.0	39.9		71.1	29.0	39.9
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 66	* 24	34.2		* 66	* 23	34.2
Max Q Clear Time (g_c+I1), s		67.6	23.9	22.9		52.7	25.3	33.8
Green Ext Time (p_c), s		0.0	0.0	8.2		12.7	0.0	0.4

Intersection Summary	
HCM 2010 Ctrl Delay	52.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	242	1970	17	56	1708	206	0	551	205	183	325	150
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	257	2096	18	60	1817	207	0	586	0	195	346	127
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	272	2595	22	73	1773	201	0	548	170	231	745	575
Arrive On Green	0.36	1.00	1.00	0.07	0.60	0.60	0.00	0.04	0.00	0.09	0.25	0.25
Sat Flow, veh/h	1494	4379	38	1494	3903	442	0	4424	1333	2608	2980	1330
Grp Volume(v), veh/h	257	1366	748	60	1326	698	0	586	0	195	346	127
Grp Sat Flow(s),veh/h/ln	1494	1427	1562	1494	1427	1490	0	1427	1333	1304	1490	1330
Q Serve(g_s), s	23.3	0.0	0.0	5.6	63.6	63.6	0.0	17.9	0.0	10.3	13.8	0.0
Cycle Q Clear(g_c), s	23.3	0.0	0.0	5.6	63.6	63.6	0.0	17.9	0.0	10.3	13.8	0.0
Prop In Lane	1.00		0.02	1.00		0.30	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	272	1692	925	73	1297	677	0	548	170	231	745	575
V/C Ratio(X)	0.94	0.81	0.81	0.82	1.02	1.03	0.00	1.07	0.00	0.84	0.46	0.22
Avail Cap(c_a), veh/h	272	1692	925	195	1297	677	0	548	170	266	786	593
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.29	0.29	0.29	0.00	0.82	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	43.8	0.0	0.0	64.8	27.7	27.7	0.0	67.0	0.0	62.9	44.5	24.9
Incr Delay (d2), s/veh	7.1	0.4	0.7	3.1	19.7	27.0	0.0	55.2	0.0	18.4	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.1	0.1	0.2	2.4	28.3	30.9	0.0	9.9	0.0	4.3	5.7	4.9
LnGrp Delay(d),s/veh	50.9	0.4	0.7	67.9	47.4	54.7	0.0	122.3	0.0	81.3	45.0	25.1
LnGrp LOS	D	A	A	E	F	F		F		F	D	C
Approach Vol, veh/h		2371			2084			586			668	
Approach Delay, s/veh		6.0			50.4			122.3			51.8	
Approach LOS		A			D			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.6	88.3		40.1	30.9	69.0	17.1	23.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 18	69.6		36.9	24.3	* 64	* 14	17.9
Max Q Clear Time (g_c+I1), s	7.6	2.0		15.8	25.3	65.6	12.3	19.9
Green Ext Time (p_c), s	0.0	43.4		6.7	0.0	0.0	0.1	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	39.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	75	2254	26	92	1858	429	57	70	133	64	21	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	78	2348	16	96	1935	428	59	73	49	44	53	2
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	2788	866	113	2343	504	93	98	184	89	103	86
Arrive On Green	0.12	1.00	1.00	0.15	1.00	1.00	0.06	0.06	0.06	0.07	0.07	0.07
Sat Flow, veh/h	1494	4282	1330	1494	3527	759	1494	1569	1333	1345	1569	1303
Grp Volume(v), veh/h	78	2348	16	96	1556	807	59	73	49	44	53	2
Grp Sat Flow(s),veh/h/ln	1494	1427	1330	1494	1427	1431	1494	1569	1333	1345	1569	1303
Q Serve(g_s), s	7.1	0.0	0.0	8.8	0.0	0.0	5.4	6.4	4.6	4.4	4.6	0.2
Cycle Q Clear(g_c), s	7.1	0.0	0.0	8.8	0.0	0.0	5.4	6.4	4.6	4.4	4.6	0.2
Prop In Lane	1.00		1.00	1.00		0.53	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	93	2788	866	113	1897	951	93	98	184	89	103	86
V/C Ratio(X)	0.84	0.84	0.02	0.85	0.82	0.85	0.63	0.75	0.27	0.50	0.51	0.02
Avail Cap(c_a), veh/h	142	2788	866	217	1897	951	159	167	243	316	369	306
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.43	0.43	0.43	0.27	0.27	0.27	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	60.6	0.0	0.0	58.6	0.0	0.0	64.1	64.5	54.0	63.1	63.2	61.2
Incr Delay (d2), s/veh	7.4	1.5	0.0	3.7	1.2	2.8	6.9	10.7	0.8	4.3	3.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.1	0.4	0.0	3.7	0.3	0.7	2.4	3.1	1.7	1.8	2.1	0.1
LnGrp Delay(d),s/veh	67.9	1.5	0.0	62.3	1.2	2.8	71.0	75.2	54.8	67.4	67.1	61.3
LnGrp LOS	E	A	A	E	A	A	E	E	D	E	E	E
Approach Vol, veh/h		2442			2459			181			99	
Approach Delay, s/veh		3.6			4.1			68.3			67.1	
Approach LOS		A			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	15.3	96.5		14.3	13.4	98.4		13.8
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	10.8	2.0		6.6	9.1	2.0		8.4
Green Ext Time (p_c), s	0.1	49.3		0.4	0.0	56.2		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	7.3
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	128	2291	2383	219	18	31
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1490	4282	4208		2436	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1490	4282	4208		2436	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	132	2362	2457	226	19	32
RTOR Reduction (vph)	0	0	4	0	31	0
Lane Group Flow (vph)	132	2362	2679	0	20	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	16.8	113.4	91.9		5.4	
Effective Green, g (s)	16.8	113.4	91.9		5.4	
Actuated g/C Ratio	0.12	0.81	0.66		0.04	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	178	3468	2762		93	
v/s Ratio Prot	0.09	c0.55	c0.64		c0.01	
v/s Ratio Perm						
v/c Ratio	0.74	0.68	0.97		0.22	
Uniform Delay, d1	59.5	5.6	22.7		65.3	
Progression Factor	1.29	0.96	1.00		1.00	
Incremental Delay, d2	6.7	0.5	11.4		0.5	
Delay (s)	83.3	5.9	34.1		65.8	
Level of Service	F	A	C		E	
Approach Delay (s)		10.0	34.1		65.8	
Approach LOS		B	C		E	

Intersection Summary			
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	766	34	25	1077	330	89	332	51	246	138	14
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	61	806	36	26	1134	347	94	349	54	259	145	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	2629	117	401	2679	833	208	416	186	325	379	161
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.14	0.14	0.14	0.12	0.12	0.00
Sat Flow, veh/h	355	4203	187	651	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	61	547	295	26	1134	347	94	349	54	259	145	0
Grp Sat Flow(s),veh/h/ln	355	1427	1535	651	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	14.8	12.4	12.5	2.7	18.9	18.5	8.1	16.0	5.1	13.1	6.0	0.0
Cycle Q Clear(g_c), s	33.7	12.4	12.5	15.2	18.9	18.5	8.1	16.0	5.1	13.1	6.0	0.0
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	1786	960	401	2679	833	208	416	186	325	379	161
V/C Ratio(X)	0.27	0.31	0.31	0.06	0.42	0.42	0.45	0.84	0.29	0.80	0.38	0.00
Avail Cap(c_a), veh/h	226	1786	960	401	2679	833	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.67	0.67	0.67	0.95	0.95	0.95	1.00	1.00	1.00	0.89	0.89	0.00
Uniform Delay (d), s/veh	21.9	12.1	12.2	15.7	13.4	13.3	55.3	58.7	54.0	59.9	56.7	0.0
Incr Delay (d2), s/veh	2.0	0.3	0.6	0.3	0.5	1.5	1.6	9.4	0.9	4.2	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	4.9	5.4	0.5	7.6	7.1	3.4	7.1	1.9	5.1	2.6	0.0
LnGrp Delay(d),s/veh	23.9	12.4	12.7	16.0	13.8	14.7	56.9	68.1	54.9	64.1	57.3	0.0
LnGrp LOS	C	B	B	B	B	B	E	E	D	E	E	
Approach Vol, veh/h		903			1507			497			404	
Approach Delay, s/veh		13.3			14.1			64.6			61.7	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		93.4		22.0		93.4		24.6
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		20.9		15.1		35.7		18.0
Green Ext Time (p_c), s		27.6		1.8		19.7		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	17	1002	1020	89	70	74
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	18	1077	1097	73	75	0
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	750	3684	1342	417	150	77
Arrive On Green	0.50	0.86	0.63	0.63	0.06	0.00
Sat Flow, veh/h	1494	4424	4424	1329	2608	1333
Grp Volume(v), veh/h	18	1077	1097	73	75	0
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1329	1304	1333
Q Serve(g_s), s	0.8	6.1	25.5	3.0	3.6	0.0
Cycle Q Clear(g_c), s	0.8	6.1	25.5	3.0	3.6	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	750	3684	1342	417	150	77
V/C Ratio(X)	0.02	0.29	0.82	0.18	0.50	0.00
Avail Cap(c_a), veh/h	750	3684	2049	636	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.77	0.77	0.88	0.00
Uniform Delay (d), s/veh	16.3	1.7	21.4	17.2	59.5	0.0
Incr Delay (d2), s/veh	0.0	0.2	4.4	0.7	1.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.4	10.3	1.2	1.3	0.0
LnGrp Delay(d),s/veh	16.3	1.9	25.8	17.9	60.5	0.0
LnGrp LOS	B	A	C	B	E	
Approach Vol, veh/h		1095	1170		75	
Approach Delay, s/veh		2.1	25.3		60.5	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	71.1	46.5		12.4		117.6		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	15.1	* 62		37.1		82.2		
Max Q Clear Time (g_c+I1), s	2.8	27.5		5.6		8.1		
Green Ext Time (p_c), s	7.0	13.3		0.1		14.5		

Intersection Summary	
HCM 2010 Ctrl Delay	15.6
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	11	65	546	1223	173	1442
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	12	0	607	0	192	1602
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	47	24	1931	864	217	2536
Arrive On Green	0.02	0.00	0.65	0.00	0.29	1.00
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	12	0	607	0	192	1602
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	0.4	0.0	7.7	0.0	10.4	0.0
Cycle Q Clear(g_c), s	0.4	0.0	7.7	0.0	10.4	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	47	24	1931	864	217	2536
V/C Ratio(X)	0.26	0.00	0.31	0.00	0.89	0.63
Avail Cap(c_a), veh/h	842	426	1931	864	248	2536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.55	0.55
Uniform Delay (d), s/veh	41.2	0.0	6.6	0.0	29.5	0.0
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.0	15.8	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	3.1	0.0	5.2	0.2
LnGrp Delay(d),s/veh	44.1	0.0	6.7	0.0	45.3	0.7
LnGrp LOS	D		A		D	A
Approach Vol, veh/h	12		607			1794
Approach Delay, s/veh	44.1		6.7			5.4
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	17.2	60.9		6.9		78.1		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	12.4	9.7		2.4		2.0		
Green Ext Time (p_c), s	0.0	17.2		0.0		38.6		

Intersection Summary		
HCM 2010 Ctrl Delay		5.9
HCM 2010 LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	162	127	112	110	43	114	1452	138	38	1072	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	18	171	35	118	116	8	120	1528	142	40	1128	8
Adj No. of Lanes	1	2	0	1	2	1	1	3	0	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	261	484	97	213	583	260	497	2579	239	48	1454	452
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.33	0.65	0.65	0.03	0.34	0.34
Sat Flow, veh/h	1259	2474	496	1169	2980	1329	1494	3987	370	1494	4282	1331
Grp Volume(v), veh/h	18	102	104	118	116	8	120	1094	576	40	1128	8
Grp Sat Flow(s),veh/h/ln	1259	1490	1479	1169	1490	1329	1494	1427	1503	1494	1427	1331
Q Serve(g_s), s	1.6	7.6	7.9	12.6	4.2	0.6	7.6	28.5	28.6	3.5	30.7	0.5
Cycle Q Clear(g_c), s	5.8	7.6	7.9	20.6	4.2	0.6	7.6	28.5	28.6	3.5	30.7	0.5
Prop In Lane	1.00		0.33	1.00		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	261	292	290	213	583	260	497	1846	972	48	1454	452
V/C Ratio(X)	0.07	0.35	0.36	0.55	0.20	0.03	0.24	0.59	0.59	0.83	0.78	0.02
Avail Cap(c_a), veh/h	377	429	426	320	857	382	497	1846	972	197	1950	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	0.09	0.09	0.09	0.96	0.96	0.96
Uniform Delay (d), s/veh	46.2	45.1	45.2	54.1	43.7	42.3	31.5	13.2	13.2	62.6	38.5	28.5
Incr Delay (d2), s/veh	0.1	0.7	0.8	2.1	0.2	0.0	0.0	0.1	0.2	12.2	4.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.2	3.3	4.2	1.8	0.2	3.1	11.1	11.8	1.6	12.7	0.2
LnGrp Delay(d),s/veh	46.3	45.8	46.0	56.3	43.9	42.3	31.5	13.3	13.4	74.8	42.5	28.6
LnGrp LOS	D	D	D	E	D	D	C	B	B	E	D	C
Approach Vol, veh/h		224			242			1790			1176	
Approach Delay, s/veh		45.9			49.9			14.5			43.5	
Approach LOS		D			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.1	89.9		31.0	49.0	49.9		31.0
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	17.1	59.2		37.4	17.1	* 59		37.4
Max Q Clear Time (g_c+I1), s	5.5	30.6		9.9	9.6	32.7		22.6
Green Ext Time (p_c), s	0.0	18.1		2.5	6.2	11.4		2.1

Intersection Summary	
HCM 2010 Ctrl Delay	29.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	344	1242	437	389	848	231	390	996	413	266	883	248
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	358	1294	220	405	883	204	406	1038	385	277	920	222
Adj No. of Lanes	2	3	1	2	3	1	2	3	0	2	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1247	353	319	1135	514	393	1040	386	317	1321	573
Arrive On Green	0.12	0.26	0.26	0.12	0.26	0.26	0.15	0.34	0.34	0.12	0.31	0.31
Sat Flow, veh/h	2689	4706	1330	2608	4282	1330	2608	3078	1142	2608	4282	1331
Grp Volume(v), veh/h	358	1294	220	405	883	204	406	963	460	277	920	222
Grp Sat Flow(s),veh/h/ln	1345	1569	1330	1304	1427	1330	1304	1427	1365	1304	1427	1331
Q Serve(g_s), s	17.1	37.1	20.4	17.1	26.7	15.6	21.1	47.2	47.2	14.6	26.5	16.0
Cycle Q Clear(g_c), s	17.1	37.1	20.4	17.1	26.7	15.6	21.1	47.2	47.2	14.6	26.5	16.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.84	1.00		1.00
Lane Grp Cap(c), veh/h	328	1247	353	319	1135	514	393	965	461	317	1321	573
V/C Ratio(X)	1.09	1.04	0.62	1.27	0.78	0.40	1.03	1.00	1.00	0.87	0.70	0.39
Avail Cap(c_a), veh/h	328	1247	353	319	1135	514	393	965	461	393	1321	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.47	0.47	0.42	0.42	0.42	0.66	0.66	0.66	0.80	0.80	0.80
Uniform Delay (d), s/veh	61.4	51.4	45.3	61.5	47.6	31.1	59.5	46.3	46.3	60.5	42.6	27.2
Incr Delay (d2), s/veh	61.0	28.1	1.7	132.2	1.5	0.3	45.7	23.1	33.7	13.7	2.4	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	19.3	7.7	12.0	10.7	5.8	10.1	21.7	22.1	5.9	10.8	6.1
LnGrp Delay(d),s/veh	122.5	79.6	47.0	193.7	49.2	31.4	105.1	69.4	80.0	74.1	45.1	28.8
LnGrp LOS	F	F	D	F	D	C	F	E	E	E	D	C
Approach Vol, veh/h		1872			1492			1829			1419	
Approach Delay, s/veh		84.0			86.0			80.0			48.2	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.9	53.1	22.0	43.0	26.0	49.0	22.0	43.0
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	17.1	37.1	21.1	43.2	17.1	37.1
Max Q Clear Time (g_c+I1), s	16.6	49.2	19.1	39.1	23.1	28.5	19.1	28.7
Green Ext Time (p_c), s	0.4	0.0	0.0	0.0	0.0	13.3	0.0	7.6

Intersection Summary	
HCM 2010 Ctrl Delay	75.6
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	171	16	251	36	8	63	62	1402	28	20	1463	145
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	185	0	48	37	8	61	63	1431	22	20	1493	144
Adj No. of Lanes	2	0	1	1	1	0	1	3	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	0	140	101	11	81	77	2849	887	30	1888	845
Arrive On Green	0.08	0.00	0.08	0.07	0.07	0.07	0.05	0.67	0.67	0.02	0.63	0.63
Sat Flow, veh/h	2689	0	1333	1494	157	1200	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	185	0	48	37	0	69	63	1431	22	20	1493	144
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1494	0	1357	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	8.8	0.0	4.3	3.1	0.0	6.5	5.4	21.8	0.7	1.7	47.8	5.8
Cycle Q Clear(g_c), s	8.8	0.0	4.3	3.1	0.0	6.5	5.4	21.8	0.7	1.7	47.8	5.8
Prop In Lane	1.00		1.00	1.00		0.88	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	0	140	101	0	92	77	2849	887	30	1888	845
V/C Ratio(X)	0.81	0.00	0.34	0.37	0.00	0.75	0.82	0.50	0.02	0.68	0.79	0.17
Avail Cap(c_a), veh/h	393	0	221	402	0	365	172	2849	887	138	1888	845
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.78	0.78	0.78	0.42	0.42	0.42
Uniform Delay (d), s/veh	58.4	0.0	54.0	57.9	0.0	59.5	61.1	10.9	7.4	63.3	17.5	9.8
Incr Delay (d2), s/veh	2.6	0.0	0.5	1.6	0.0	8.8	6.2	0.5	0.0	4.2	1.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.6	1.3	0.0	2.7	2.4	8.6	0.3	0.8	19.9	2.2
LnGrp Delay(d),s/veh	61.1	0.0	54.6	59.6	0.0	68.3	67.2	11.4	7.4	67.5	19.0	10.0
LnGrp LOS	E		D	E		E	E	B	A	E	B	A
Approach Vol, veh/h		233			106			1516			1657	
Approach Delay, s/veh		59.7			65.2			13.7			18.8	
Approach LOS		E			E			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	7.6	92.6		13.8	11.7	88.5		16.0				
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0				
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0				
Max Q Clear Time (g_c+I1), s	3.7	23.8		8.5	7.4	49.8		10.8				
Green Ext Time (p_c), s	0.0	18.2		0.4	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			20.7									
HCM 2010 LOS			C									

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	186	1	49	2	0	1	14	1308	2	2	1682	63
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1600	1600	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	194	1	3	2	0	0	15	1362	2	2	1752	65
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	29	88	4	0	0	21	2505	4	4	2372	88
Arrive On Green	0.08	0.08	0.08	0.00	0.00	0.00	0.01	0.82	0.82	0.00	0.81	0.81
Sat Flow, veh/h	2608	346	1039	1494	0	0	1494	3054	4	1494	2931	108
Grp Volume(v), veh/h	194	0	4	2	0	0	15	665	699	2	887	930
Grp Sat Flow(s),veh/h/ln	1304	0	1385	1494	0	0	1494	1490	1568	1494	1490	1550
Q Serve(g_s), s	15.4	0.0	0.6	0.3	0.0	0.0	2.1	30.4	30.4	0.3	58.8	60.2
Cycle Q Clear(g_c), s	15.4	0.0	0.6	0.3	0.0	0.0	2.1	30.4	30.4	0.3	58.8	60.2
Prop In Lane	1.00		0.75	1.00		0.00	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	221	0	117	4	0	0	21	1223	1286	4	1206	1254
V/C Ratio(X)	0.88	0.00	0.03	0.51	0.00	0.00	0.72	0.54	0.54	0.51	0.74	0.74
Avail Cap(c_a), veh/h	502	0	267	176	0	0	124	1223	1286	89	1206	1254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	95.0	0.0	88.2	104.6	0.0	0.0	103.1	6.1	6.1	104.6	9.4	9.6
Incr Delay (d2), s/veh	4.3	0.0	0.0	33.4	0.0	0.0	16.1	1.7	1.7	3.4	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	0.2	0.2	0.0	0.0	1.0	13.0	13.6	0.1	24.0	25.5
LnGrp Delay(d),s/veh	99.4	0.0	88.3	138.0	0.0	0.0	119.2	7.8	7.8	108.0	9.8	9.9
LnGrp LOS	F		F	F			F	A	A	F	A	A
Approach Vol, veh/h		198			2			1379			1819	
Approach Delay, s/veh		99.1			138.0			9.0			10.0	
Approach LOS		F			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	177.8		4.8	7.4	175.4		22.4
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	12.5	113.5		* 25	17.5	108.5		40.4
Max Q Clear Time (g_c+I1), s	2.3	32.4		2.3	4.1	62.2		17.4
Green Ext Time (p_c), s	0.0	75.3		0.0	0.0	44.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	330	1011	717	64
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1300
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1300
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	363	1111	788	70
RTOR Reduction (vph)	0	0	0	0	0	28
Lane Group Flow (vph)	0	0	363	1111	788	42
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			38.7	78.0	35.1	35.1
Effective Green, g (s)			38.7	78.0	35.1	35.1
Actuated g/C Ratio			0.42	0.85	0.38	0.38
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			628	2532	1139	497
v/s Ratio Prot			c0.24	0.37	c0.26	
v/s Ratio Perm						0.03
v/c Ratio			0.58	0.44	0.69	0.08
Uniform Delay, d1			20.3	1.7	23.8	18.1
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.8	0.2	2.0	0.1
Delay (s)			21.1	1.8	25.8	18.2
Level of Service			C	A	C	B
Approach Delay (s)	0.0			6.6	25.2	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	91.8	Sum of lost time (s)	13.7
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	29	323	0	1322	704	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	351	0	1437	765	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.79	0.79	0.79			
vC, conflicting volume	1484	383	765			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1089	0	184			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	59	100			
cM capacity (veh/h)	166	861	1102			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	21	362	718	718	383	383
Volume Left	21	11	0	0	0	0
Volume Right	0	351	0	0	0	0
cSH	166	886	1700	1700	1700	1700
Volume to Capacity	0.13	0.41	0.42	0.42	0.23	0.23
Queue Length 95th (ft)	11	50	0	0	0	0
Control Delay (s)	29.7	12.5	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	13.4		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1411	315	959	51	48	1093
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	1517	0	1031	0	52	1175
Adj No. of Lanes	2	1	2	0	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	786	402	1369	0	75	1690
Arrive On Green	0.30	0.00	0.15	0.00	0.05	0.57
Sat Flow, veh/h	2608	1333	3137	0	1494	3059
Grp Volume(v), veh/h	1517	0	1031	0	52	1175
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490
Q Serve(g_s), s	25.6	0.0	28.2	0.0	2.9	24.0
Cycle Q Clear(g_c), s	25.6	0.0	28.2	0.0	2.9	24.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	786	402	1369	0	75	1690
V/C Ratio(X)	1.93	0.00	0.75	0.00	0.70	0.70
Avail Cap(c_a), veh/h	786	402	1369	0	283	1690
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.70	0.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	31.4	0.0	39.7	13.2
Incr Delay (d2), s/veh	423.7	0.0	2.8	0.0	4.3	2.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	55.4	0.0	12.2	0.0	1.3	10.4
LnGrp Delay(d),s/veh	453.4	0.0	34.2	0.0	44.1	15.5
LnGrp LOS	F		C		D	B
Approach Vol, veh/h	1517		1031			1227
Approach Delay, s/veh	453.4		34.2			16.7
Approach LOS	F		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.1	44.9		31.0		54.0		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	16.1	27.2		25.6		48.2		
Max Q Clear Time (g_c+I1), s	4.9	30.2		27.6		26.0		
Green Ext Time (p_c), s	0.0	0.0		0.0		20.2		

Intersection Summary		
HCM 2010 Ctrl Delay		197.0
HCM 2010 LOS		F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1559	319	0	1472	462	301	951	19	577	1248	14
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	1575	313	0	1487	459	304	961	18	583	1261	13
Adj No. of Lanes	0	3	0	0	2	1	1	3	0	2	3	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1576	312	0	1309	816	265	1150	22	453	1161	12
Arrive On Green	0.00	0.44	0.44	0.00	0.88	0.88	0.35	0.53	0.53	0.17	0.27	0.27
Sat Flow, veh/h	0	3729	709	0	3059	1332	1494	4328	81	2608	4370	45
Grp Volume(v), veh/h	0	1251	637	0	1487	459	304	634	345	583	824	450
Grp Sat Flow(s),veh/h/ln	0	1427	1442	0	1490	1332	1494	1427	1554	1304	1427	1561
Q Serve(g_s), s	0.0	61.3	61.5	0.0	61.5	13.0	24.8	26.2	26.2	24.3	37.2	37.2
Cycle Q Clear(g_c), s	0.0	61.3	61.5	0.0	61.5	13.0	24.8	26.2	26.2	24.3	37.2	37.2
Prop In Lane	0.00		0.49	0.00		1.00	1.00		0.05	1.00		0.03
Lane Grp Cap(c), veh/h	0	1254	634	0	1309	816	265	759	413	453	759	415
V/C Ratio(X)	0.00	1.00	1.00	0.00	1.14	0.56	1.15	0.84	0.84	1.29	1.09	1.09
Avail Cap(c_a), veh/h	0	1254	634	0	1309	816	265	759	413	453	759	415
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.32	0.32	0.81	0.81	0.81	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	39.2	39.3	0.0	8.5	2.8	45.2	30.2	30.2	57.8	51.4	51.4
Incr Delay (d2), s/veh	0.0	7.1	11.9	0.0	64.6	0.9	96.5	6.8	11.8	145.3	58.5	69.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	25.2	26.6	0.0	34.3	4.2	17.2	10.9	12.5	17.9	20.8	24.0
LnGrp Delay(d),s/veh	0.0	46.3	51.1	0.0	73.1	3.7	141.7	37.0	42.0	203.2	109.9	120.7
LnGrp LOS		D	F		F	A	F	D	D	F	F	F
Approach Vol, veh/h		1888			1946			1283			1857	
Approach Delay, s/veh		47.9			56.7			63.1			141.8	
Approach LOS		D			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		67.0	30.0	43.0		67.0	30.0	43.0
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 62	* 25	37.2		* 62	* 24	37.2
Max Q Clear Time (g_c+I1), s		63.5	26.8	39.2		63.5	26.3	28.2
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	7.8

Intersection Summary	
HCM 2010 Ctrl Delay	78.2
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	179	1925	23	69	1594	171	0	586	159	305	692	329
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	183	1964	22	70	1627	165	0	598	0	311	706	305
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	269	2423	27	84	1685	171	0	486	151	347	835	613
Arrive On Green	0.36	1.00	1.00	0.11	0.85	0.85	0.00	0.04	0.00	0.13	0.28	0.28
Sat Flow, veh/h	1494	4366	49	1494	3952	400	0	4424	1333	2608	2980	1330
Grp Volume(v), veh/h	183	1284	702	70	1175	617	0	598	0	311	706	305
Grp Sat Flow(s),veh/h/ln	1494	1427	1560	1494	1427	1497	0	1427	1333	1304	1490	1330
Q Serve(g_s), s	14.5	0.0	0.0	6.4	47.9	48.5	0.0	15.9	0.0	16.4	31.3	0.0
Cycle Q Clear(g_c), s	14.5	0.0	0.0	6.4	47.9	48.5	0.0	15.9	0.0	16.4	31.3	0.0
Prop In Lane	1.00		0.03	1.00		0.27	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	269	1584	866	84	1217	638	0	486	151	347	835	613
V/C Ratio(X)	0.68	0.81	0.81	0.83	0.96	0.97	0.00	1.23	0.00	0.90	0.85	0.50
Avail Cap(c_a), veh/h	269	1584	866	153	1256	659	0	486	151	378	871	629
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.60	0.60	0.60	0.00	0.80	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.4	0.0	0.0	61.4	9.4	9.5	0.0	67.4	0.0	59.8	47.5	26.5
Incr Delay (d2), s/veh	0.5	0.4	0.8	5.8	13.2	20.7	0.0	117.3	0.0	21.7	7.5	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.0	0.1	0.2	2.8	19.5	22.2	0.0	11.6	0.0	7.0	13.7	11.9
LnGrp Delay(d),s/veh	41.9	0.4	0.8	67.2	22.7	30.2	0.0	184.6	0.0	81.4	55.1	27.1
LnGrp LOS	D	A	A	E	C	C		F		F	E	C
Approach Vol, veh/h		2169			1862			598			1322	
Approach Delay, s/veh		4.1			26.8			184.6			54.8	
Approach LOS		A			C			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	83.1		44.3	30.6	65.1	23.3	21.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 14	69.6		40.9	22.3	* 62	* 20	15.9
Max Q Clear Time (g_c+I1), s	8.4	2.0		33.3	16.5	50.5	18.4	17.9
Green Ext Time (p_c), s	0.0	39.1		5.2	0.9	9.2	0.2	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	40.6
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	2241	65	223	1739	41	44	8	159	402	57	67
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	24	2334	28	232	1811	42	46	8	119	461	0	13
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	2	0	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	1829	567	217	2351	54	134	141	313	519	0	255
Arrive On Green	0.05	0.85	0.85	0.29	1.00	1.00	0.09	0.09	0.09	0.19	0.00	0.19
Sat Flow, veh/h	1494	4282	1329	1494	4306	100	1494	1569	1333	2689	0	1323
Grp Volume(v), veh/h	24	2334	28	232	1200	653	46	8	119	461	0	13
Grp Sat Flow(s),veh/h/ln	1494	1427	1329	1494	1427	1550	1494	1569	1333	1345	0	1323
Q Serve(g_s), s	2.2	59.8	0.4	20.3	0.0	0.0	4.0	0.7	10.5	23.4	0.0	1.1
Cycle Q Clear(g_c), s	2.2	59.8	0.4	20.3	0.0	0.0	4.0	0.7	10.5	23.4	0.0	1.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	1829	567	217	1559	847	134	141	313	519	0	255
V/C Ratio(X)	0.62	1.28	0.05	1.07	0.77	0.77	0.34	0.06	0.38	0.89	0.00	0.05
Avail Cap(c_a), veh/h	142	1829	567	217	1559	847	159	167	335	632	0	311
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.41	0.41	0.41	0.68	0.68	0.68	0.96	0.96	0.96	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.7	10.2	5.9	49.7	0.0	0.0	59.8	58.3	45.0	55.0	0.0	46.0
Incr Delay (d2), s/veh	3.0	126.1	0.1	70.7	2.6	4.7	1.4	0.2	0.7	12.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	43.0	0.2	12.6	0.6	1.1	1.7	0.3	3.9	9.6	0.0	0.4
LnGrp Delay(d),s/veh	68.7	136.3	6.0	120.4	2.6	4.7	61.2	58.4	45.7	67.7	0.0	46.1
LnGrp LOS	E	F	A	F	A	A	E	E	D	E		D
Approach Vol, veh/h		2386			2085			173			474	
Approach Delay, s/veh		134.1			16.4			50.4			67.1	
Approach LOS		F			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	65.2		32.1	8.3	81.8		17.7
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	22.3	61.8		25.4	4.2	2.0		12.5
Green Ext Time (p_c), s	0.0	0.0		1.1	0.0	55.6		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	77.1
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	65	2725	1930	32	128	87
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1490	4282	4268		2498	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1490	4282	4268		2498	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	66	2781	1969	33	131	89
RTOR Reduction (vph)	0	0	1	0	81	0
Lane Group Flow (vph)	66	2781	2001	0	139	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	9.5	106.7	92.5		12.1	
Effective Green, g (s)	9.5	106.7	92.5		12.1	
Actuated g/C Ratio	0.07	0.76	0.66		0.09	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	101	3263	2819		215	
v/s Ratio Prot	0.04	c0.65	0.47		c0.06	
v/s Ratio Perm						
v/c Ratio	0.65	0.85	0.71		0.65	
Uniform Delay, d1	63.6	11.3	15.2		61.9	
Progression Factor	1.03	1.71	1.00		1.00	
Incremental Delay, d2	1.1	0.3	1.5		5.1	
Delay (s)	66.9	19.6	16.7		66.9	
Level of Service	E	B	B		E	
Approach Delay (s)		20.7	16.7		66.9	
Approach LOS		C	B		E	

Intersection Summary			
HCM 2000 Control Delay	21.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1432	63	92	1219	371	56	264	67	474	265	16
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	81	1476	62	95	1257	238	58	272	9	489	273	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	2353	99	159	2391	744	169	337	151	576	673	286
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.11	0.11	0.11	0.21	0.21	0.00
Sat Flow, veh/h	350	4215	177	336	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	81	1000	538	95	1257	238	58	272	9	489	273	0
Grp Sat Flow(s),veh/h/ln	350	1427	1537	336	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	26.3	33.3	33.3	37.5	25.7	13.5	5.0	12.5	0.8	24.4	10.5	0.0
Cycle Q Clear(g_c), s	52.0	33.3	33.3	70.8	25.7	13.5	5.0	12.5	0.8	24.4	10.5	0.0
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	1594	858	159	2391	744	169	337	151	576	673	286
V/C Ratio(X)	0.44	0.63	0.63	0.60	0.53	0.32	0.34	0.81	0.06	0.85	0.41	0.00
Avail Cap(c_a), veh/h	183	1594	858	159	2391	744	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.89	0.89	0.89	1.00	1.00	1.00	0.53	0.53	0.00
Uniform Delay (d), s/veh	35.6	21.0	21.0	45.1	19.3	16.6	57.3	60.6	55.4	52.8	47.3	0.0
Incr Delay (d2), s/veh	0.7	0.2	0.3	13.9	0.7	1.0	1.3	5.2	0.2	4.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.6	13.1	14.1	4.1	10.3	5.2	2.1	5.4	0.3	9.5	4.6	0.0
LnGrp Delay(d),s/veh	36.3	21.2	21.3	59.0	20.1	17.6	58.5	65.8	55.6	57.3	47.6	0.0
LnGrp LOS	D	C	C	E	C	B	E	E	E	E	D	
Approach Vol, veh/h		1619			1590			339			762	
Approach Delay, s/veh		22.0			22.0			64.3			53.8	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		84.0		35.1		84.0		20.9
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		72.8		26.4		54.0		14.5
Green Ext Time (p_c), s		0.0		3.3		7.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	31.0
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	54	1495	1345	43	124	89
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	57	1574	1416	33	131	5
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	646	3646	1604	498	173	88
Arrive On Green	0.43	0.85	0.75	0.75	0.07	0.07
Sat Flow, veh/h	1494	4424	4424	1330	2608	1333
Grp Volume(v), veh/h	57	1574	1416	33	131	5
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1330	1304	1333
Q Serve(g_s), s	2.9	11.2	31.8	0.9	6.4	0.5
Cycle Q Clear(g_c), s	2.9	11.2	31.8	0.9	6.4	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	646	3646	1604	498	173	88
V/C Ratio(X)	0.09	0.43	0.88	0.07	0.76	0.06
Avail Cap(c_a), veh/h	646	3646	1950	606	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.63	0.63	0.29	0.29	0.63	0.63
Uniform Delay (d), s/veh	21.8	2.3	14.2	10.3	59.7	56.9
Incr Delay (d2), s/veh	0.0	0.2	2.3	0.1	2.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	4.5	12.4	0.3	2.4	0.2
LnGrp Delay(d),s/veh	21.8	2.5	16.5	10.4	61.7	57.0
LnGrp LOS	C	A	B	B	E	E
Approach Vol, veh/h		1631	1449		136	
Approach Delay, s/veh		3.2	16.4		61.5	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	62.0	54.5		13.5		116.5		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	18.1	* 59		37.1		82.2		
Max Q Clear Time (g_c+I1), s	4.9	33.8		8.4		13.2		
Green Ext Time (p_c), s	10.0	14.9		0.3		27.4		

Intersection Summary		
HCM 2010 Ctrl Delay		11.6
HCM 2010 LOS		B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Volume (veh/h)	20	66	942	1214	214	2281		
Number	7	14	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569		
Adj Flow Rate, veh/h	21	0	1002	0	228	2427		
Adj No. of Lanes	2	1	2	1	1	2		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	74	38	1839	823	248	2505		
Arrive On Green	0.03	0.00	0.62	0.00	0.33	1.00		
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059		
Grp Volume(v), veh/h	21	0	1002	0	228	2427		
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490		
Q Serve(g_s), s	0.7	0.0	16.5	0.0	12.5	0.0		
Cycle Q Clear(g_c), s	0.7	0.0	16.5	0.0	12.5	0.0		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	74	38	1839	823	248	2505		
V/C Ratio(X)	0.28	0.00	0.54	0.00	0.92	0.97		
Avail Cap(c_a), veh/h	842	426	1839	823	248	2505		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00		
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.09	0.09		
Uniform Delay (d), s/veh	40.5	0.0	9.4	0.0	27.9	0.0		
Incr Delay (d2), s/veh	2.1	0.0	0.1	0.0	5.6	1.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.3	0.0	6.7	0.0	5.4	0.6		
LnGrp Delay(d),s/veh	42.6	0.0	9.5	0.0	33.4	1.8		
LnGrp LOS	D		A		C	A		
Approach Vol, veh/h	21		1002			2655		
Approach Delay, s/veh	42.6		9.5			4.5		
Approach LOS	D		A			A		
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	19.0	58.3		7.7		77.3		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	14.5	18.5		2.7		2.0		
Green Ext Time (p_c), s	0.0	9.7		0.0		44.7		
Intersection Summary								
HCM 2010 Ctrl Delay			6.1					
HCM 2010 LOS			A					

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	178	206	338	385	70	219	1587	202	118	1892	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	23	185	112	352	401	20	228	1653	202	123	1971	16
Adj No. of Lanes	1	2	0	1	2	1	1	3	0	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	234	538	310	283	880	393	278	1869	228	144	1654	514
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.19	0.48	0.48	0.10	0.39	0.39
Sat Flow, veh/h	961	1821	1050	1077	2980	1331	1494	3868	471	1494	4282	1331
Grp Volume(v), veh/h	23	150	147	352	401	20	228	1219	636	123	1971	16
Grp Sat Flow(s),veh/h/ln	961	1490	1381	1077	1490	1331	1494	1427	1485	1494	1427	1331
Q Serve(g_s), s	2.6	10.2	10.9	27.5	14.2	1.4	19.1	50.1	50.4	10.5	50.2	1.0
Cycle Q Clear(g_c), s	16.8	10.2	10.9	38.4	14.2	1.4	19.1	50.1	50.4	10.5	50.2	1.0
Prop In Lane	1.00		0.76	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	234	440	408	283	880	393	278	1379	717	144	1654	514
V/C Ratio(X)	0.10	0.34	0.36	1.24	0.46	0.05	0.82	0.88	0.89	0.86	1.19	0.03
Avail Cap(c_a), veh/h	234	440	408	283	880	393	288	1379	717	288	1654	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.59	0.59	0.59	0.09	0.09	0.09	0.89	0.89	0.89
Uniform Delay (d), s/veh	44.1	35.9	36.1	54.0	37.3	32.8	50.8	30.3	30.4	57.9	39.9	24.8
Incr Delay (d2), s/veh	0.2	0.5	0.5	126.6	0.2	0.0	1.6	0.9	1.7	5.0	92.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	4.3	4.2	20.1	5.9	0.5	8.0	19.8	21.0	4.5	33.8	0.4
LnGrp Delay(d),s/veh	44.3	36.3	36.7	180.5	37.5	32.8	52.4	31.2	32.1	62.8	131.9	24.9
LnGrp LOS	D	D	D	F	D	C	D	C	C	E	F	C
Approach Vol, veh/h		320			773			2083			2110	
Approach Delay, s/veh		37.1			102.5			33.8			127.1	
Approach LOS		D			F			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.4	68.6		44.0	30.0	56.0		44.0
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	25.1	50.2		38.4	25.1	* 50		38.4
Max Q Clear Time (g_c+I1), s	12.5	52.4		18.8	21.1	52.2		40.4
Green Ext Time (p_c), s	0.1	0.0		6.2	0.4	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	81.3
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	466	1322	433	566	1299	434	452	1126	464	381	1309	536
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	471	1335	227	572	1312	402	457	1137	423	385	1322	506
Adj No. of Lanes	2	3	1	2	3	1	2	3	0	2	3	1
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1247	353	319	1135	553	393	949	353	393	1321	573
Arrive On Green	0.12	0.26	0.26	0.12	0.26	0.26	0.15	0.31	0.31	0.15	0.31	0.31
Sat Flow, veh/h	2689	4706	1330	2608	4282	1330	2608	3076	1144	2608	4282	1331
Grp Volume(v), veh/h	471	1335	227	572	1312	402	457	1055	505	385	1322	506
Grp Sat Flow(s),veh/h/ln	1345	1569	1330	1304	1427	1330	1304	1427	1364	1304	1427	1331
Q Serve(g_s), s	17.1	37.1	21.2	17.1	37.1	35.4	21.1	43.2	43.2	20.6	43.2	43.2
Cycle Q Clear(g_c), s	17.1	37.1	21.2	17.1	37.1	35.4	21.1	43.2	43.2	20.6	43.2	43.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.84	1.00		1.00
Lane Grp Cap(c), veh/h	328	1247	353	319	1135	553	393	881	421	393	1321	573
V/C Ratio(X)	1.43	1.07	0.64	1.80	1.16	0.73	1.16	1.20	1.20	0.98	1.00	0.88
Avail Cap(c_a), veh/h	328	1247	353	319	1135	553	393	881	421	393	1321	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.16	0.16	0.16	0.09	0.09	0.09	0.49	0.49	0.49	0.09	0.09	0.09
Uniform Delay (d), s/veh	61.4	51.4	45.6	61.5	51.5	34.2	59.5	48.4	48.4	59.2	48.4	36.6
Incr Delay (d2), s/veh	198.2	35.0	0.7	359.1	71.3	0.5	86.8	94.8	100.8	9.4	7.5	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.4	20.1	7.8	22.0	22.1	13.0	12.3	28.6	28.0	7.9	17.9	18.3
LnGrp Delay(d),s/veh	259.7	86.4	46.3	420.5	122.7	34.7	146.2	143.2	149.2	68.6	55.9	38.6
LnGrp LOS	F	F	D	F	F	C	F	F	F	E	F	D
Approach Vol, veh/h		2033			2286			2017			2213	
Approach Delay, s/veh		122.1			181.8			145.4			54.2	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	49.0	22.0	43.0	26.0	49.0	22.0	43.0
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	17.1	37.1	21.1	43.2	17.1	37.1
Max Q Clear Time (g_c+I1), s	22.6	45.2	19.1	39.1	23.1	45.2	19.1	39.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	126.0
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	264	15	306	86	34	55	146	1594	61	76	1514	300
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	289	0	73	91	36	55	154	1678	50	80	1594	235
Adj No. of Lanes	2	0	1	1	1	0	1	3	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	331	0	250	124	46	71	172	2430	757	97	1540	689
Arrive On Green	0.12	0.00	0.12	0.08	0.08	0.08	0.12	0.57	0.57	0.06	0.52	0.52
Sat Flow, veh/h	2689	0	1333	1494	561	857	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	289	0	73	91	0	91	154	1678	50	80	1594	235
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1494	0	1417	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	13.7	0.0	6.1	7.7	0.0	8.2	13.2	36.2	2.2	6.9	67.2	13.4
Cycle Q Clear(g_c), s	13.7	0.0	6.1	7.7	0.0	8.2	13.2	36.2	2.2	6.9	67.2	13.4
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	331	0	250	124	0	117	172	2430	757	97	1540	689
V/C Ratio(X)	0.87	0.00	0.29	0.74	0.00	0.78	0.89	0.69	0.07	0.83	1.04	0.34
Avail Cap(c_a), veh/h	393	0	281	402	0	382	172	2430	757	138	1540	689
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.53	0.53	0.53	0.09	0.09	0.09
Uniform Delay (d), s/veh	56.0	0.0	45.4	58.2	0.0	58.4	56.7	20.0	12.6	60.1	31.4	18.4
Incr Delay (d2), s/veh	15.3	0.0	0.2	6.2	0.0	7.9	24.8	0.9	0.1	1.8	18.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.8	0.0	2.3	3.4	0.0	3.5	6.7	14.3	0.8	2.9	31.5	5.0
LnGrp Delay(d),s/veh	71.3	0.0	45.6	64.4	0.0	66.4	81.5	20.9	12.7	61.9	49.9	18.6
LnGrp LOS	E		D	E		E	F	C	B	E	F	B
Approach Vol, veh/h		362			182			1882			1909	
Approach Delay, s/veh		66.1			65.4			25.6			46.5	
Approach LOS		E			E			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.4	79.9		15.8	20.0	73.3		21.0
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0
Max Q Clear Time (g_c+I1), s	8.9	38.2		10.2	15.2	69.2		15.7
Green Ext Time (p_c), s	0.0	4.6		0.6	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	39.9
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	153	0	43	1	0	0	60	1667	0	3	1799	100
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1600	1600	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	163	0	2	1	0	0	64	1773	0	3	1914	104
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	0	106	2	0	0	78	2280	0	6	2061	111
Arrive On Green	0.08	0.00	0.08	0.00	0.00	0.00	0.05	0.76	0.00	0.00	0.72	0.72
Sat Flow, veh/h	2608	0	1333	1494	0	0	1494	3059	0	1494	2877	155
Grp Volume(v), veh/h	163	0	2	1	0	0	64	1773	0	3	983	1035
Grp Sat Flow(s),veh/h/ln	1304	0	1333	1494	0	0	1494	1490	0	1494	1490	1541
Q Serve(g_s), s	7.7	0.0	0.2	0.1	0.0	0.0	5.3	43.1	0.0	0.3	68.7	72.4
Cycle Q Clear(g_c), s	7.7	0.0	0.2	0.1	0.0	0.0	5.3	43.1	0.0	0.3	68.7	72.4
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.10
Lane Grp Cap(c), veh/h	207	0	106	2	0	0	78	2280	0	6	1068	1105
V/C Ratio(X)	0.79	0.00	0.02	0.49	0.00	0.00	0.82	0.78	0.00	0.51	0.92	0.94
Avail Cap(c_a), veh/h	634	0	324	296	0	0	185	2280	0	125	1068	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	56.5	0.0	53.1	62.4	0.0	0.0	58.6	8.5	0.0	62.1	14.8	15.3
Incr Delay (d2), s/veh	2.5	0.0	0.0	55.0	0.0	0.0	7.6	2.7	0.0	2.2	1.7	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.1	0.1	0.0	0.0	2.4	18.3	0.0	0.1	28.4	30.8
LnGrp Delay(d),s/veh	59.0	0.0	53.1	117.3	0.0	0.0	66.3	11.2	0.0	64.4	16.4	17.3
LnGrp LOS	E		D	F			E	B		E	B	B
Approach Vol, veh/h		165			1			1837			2021	
Approach Delay, s/veh		59.0			117.3			13.1			17.0	
Approach LOS		E			F			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.0	101.1		4.4	11.0	95.1		14.5
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	10.5	40.5		* 25	15.5	35.5		30.4
Max Q Clear Time (g_c+I1), s	2.3	45.1		2.1	7.3	74.4		9.7
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	17.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	194	610	740	90
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.98
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1301
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1301
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	204	642	779	95
RTOR Reduction (vph)	0	0	0	0	0	30
Lane Group Flow (vph)	0	0	204	642	779	65
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			16.6	58.2	37.4	37.4
Effective Green, g (s)			16.6	58.2	37.4	37.4
Actuated g/C Ratio			0.23	0.82	0.53	0.53
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			347	2439	1567	684
v/s Ratio Prot			c0.14	0.22	c0.26	
v/s Ratio Perm						0.05
v/c Ratio			0.59	0.26	0.50	0.10
Uniform Delay, d1			24.2	1.5	10.8	8.4
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			1.6	0.1	0.3	0.1
Delay (s)			25.9	1.6	11.2	8.5
Level of Service			C	A	B	A
Approach Delay (s)	0.0			7.4	10.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	9.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	71.1	Sum of lost time (s)	13.7
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	80	284	0	724	740	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	84	299	0	762	779	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.85	0.85	0.85			
vC, conflicting volume	1160	389	779			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	833	0	385			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	68	68	100			
cM capacity (veh/h)	261	921	994			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	56	327	381	381	389	389
Volume Left	56	28	0	0	0	0
Volume Right	0	299	0	0	0	0
cSH	261	1007	1700	1700	1700	1700
Volume to Capacity	0.22	0.32	0.22	0.22	0.23	0.23
Queue Length 95th (ft)	20	35	0	0	0	0
Control Delay (s)	22.6	11.6	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	13.2		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	771	300	504	30	50	934
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	812	0	531	0	53	983
Adj No. of Lanes	2	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	786	402	1368	0	75	1690
Arrive On Green	0.30	0.00	0.15	0.00	0.05	0.57
Sat Flow, veh/h	2608	1333	3137	0	1494	3059
Grp Volume(v), veh/h	812	0	531	0	53	983
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490
Q Serve(g_s), s	25.6	0.0	13.7	0.0	3.0	18.1
Cycle Q Clear(g_c), s	25.6	0.0	13.7	0.0	3.0	18.1
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	786	402	1368	0	75	1690
V/C Ratio(X)	1.03	0.00	0.39	0.00	0.70	0.58
Avail Cap(c_a), veh/h	786	402	1368	0	265	1690
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.96	0.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	25.3	0.0	39.7	11.9
Incr Delay (d2), s/veh	41.1	0.0	0.8	0.0	4.4	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.6	0.0	5.8	0.0	1.3	7.7
LnGrp Delay(d),s/veh	70.8	0.0	26.1	0.0	44.2	13.4
LnGrp LOS	F		C		D	B
Approach Vol, veh/h	812		531			1036
Approach Delay, s/veh	70.8		26.1			14.9
Approach LOS	E		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.2	44.8		31.0		54.0		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	15.1	28.2		25.6		48.2		
Max Q Clear Time (g_c+I1), s	5.0	15.7		27.6		20.1		
Green Ext Time (p_c), s	0.0	10.1		0.0		19.4		

Intersection Summary	
HCM 2010 Ctrl Delay	36.5
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2030	204	0	1470	510	114	944	10	550	754	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	2137	207	0	1547	529	120	994	10	579	794	10
Adj No. of Lanes	0	3	0	0	2	1	1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1867	179	0	1400	847	141	1060	11	434	1387	17
Arrive On Green	0.00	0.47	0.47	0.00	0.94	0.94	0.03	0.08	0.08	0.17	0.32	0.32
Sat Flow, veh/h	0	4116	381	0	3059	1332	1494	4372	44	2608	4359	55
Grp Volume(v), veh/h	0	1528	816	0	1547	529	120	649	355	579	520	284
Grp Sat Flow(s),veh/h/ln	0	1427	1501	0	1490	1332	1494	1427	1561	1304	1427	1559
Q Serve(g_s), s	0.0	65.8	65.8	0.0	65.8	11.2	11.2	31.7	31.7	23.3	21.2	21.3
Cycle Q Clear(g_c), s	0.0	65.8	65.8	0.0	65.8	11.2	11.2	31.7	31.7	23.3	21.2	21.3
Prop In Lane	0.00		0.25	0.00		1.00	1.00		0.03	1.00		0.04
Lane Grp Cap(c), veh/h	0	1341	705	0	1400	847	141	692	378	434	909	496
V/C Ratio(X)	0.00	1.14	1.16	0.00	1.10	0.62	0.85	0.94	0.94	1.33	0.57	0.57
Avail Cap(c_a), veh/h	0	1341	705	0	1400	847	254	697	381	434	909	496
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	0.33	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.09	0.09	0.93	0.93	0.93	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	37.1	37.1	0.0	4.2	1.3	66.9	63.4	63.4	58.3	39.8	39.8
Incr Delay (d2), s/veh	0.0	63.6	72.6	0.0	48.4	0.3	6.3	19.3	29.3	165.2	1.0	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	37.7	41.4	0.0	30.4	3.0	4.9	14.4	16.8	18.3	8.5	9.4
LnGrp Delay(d),s/veh	0.0	100.8	109.7	0.0	52.7	1.6	73.1	82.7	92.7	223.6	40.7	41.6
LnGrp LOS		F	F		F	A	E	F	F	F	D	D
Approach Vol, veh/h		2344			2076			1124			1383	
Approach Delay, s/veh		103.9			39.7			84.8			117.5	
Approach LOS		F			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		71.3	18.4	50.4		71.3	29.0	39.7
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 66	* 24	34.2		* 66	* 23	34.2
Max Q Clear Time (g_c+I1), s		67.8	13.2	23.3		67.8	25.3	33.7
Green Ext Time (p_c), s		0.0	0.1	8.2		0.0	0.0	0.3

Intersection Summary			
HCM 2010 Ctrl Delay			84.2
HCM 2010 LOS			F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	270	2180	20	70	1890	230	0	504	210	210	344	170
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	284	2295	21	74	1989	230	0	531	0	221	362	146
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	302	2632	24	89	1771	203	0	548	170	256	773	614
Arrive On Green	0.40	1.00	1.00	0.08	0.60	0.60	0.00	0.04	0.00	0.10	0.26	0.26
Sat Flow, veh/h	1494	4376	40	1494	3898	446	0	4424	1333	2608	2980	1330
Grp Volume(v), veh/h	284	1496	820	74	1451	768	0	531	0	221	362	146
Grp Sat Flow(s),veh/h/ln	1494	1427	1562	1494	1427	1489	0	1427	1333	1304	1490	1330
Q Serve(g_s), s	25.6	0.0	0.0	6.8	63.6	63.6	0.0	17.3	0.0	11.7	14.3	0.0
Cycle Q Clear(g_c), s	25.6	0.0	0.0	6.8	63.6	63.6	0.0	17.3	0.0	11.7	14.3	0.0
Prop In Lane	1.00		0.03	1.00		0.30	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	1717	939	89	1297	677	0	548	170	256	773	614
V/C Ratio(X)	0.94	0.87	0.87	0.83	1.12	1.13	0.00	0.97	0.00	0.86	0.47	0.24
Avail Cap(c_a), veh/h	302	1717	939	195	1297	677	0	548	170	266	786	620
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	0.00	0.82	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	0.0	0.0	63.7	27.7	27.7	0.0	66.8	0.0	62.2	43.7	22.8
Incr Delay (d2), s/veh	6.2	0.6	1.2	0.8	54.7	62.5	0.0	27.5	0.0	23.2	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.2	0.3	2.8	34.6	37.6	0.0	8.3	0.0	5.0	5.9	5.7
LnGrp Delay(d),s/veh	47.1	0.6	1.2	64.6	82.4	90.3	0.0	94.3	0.0	85.4	44.2	23.0
LnGrp LOS	D	A	A	E	F	F		F		F	D	C
Approach Vol, veh/h		2600			2293			531			729	
Approach Delay, s/veh		5.9			84.5			94.3			52.4	
Approach LOS		A			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	89.7		41.4	33.8	69.0	18.4	23.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 18	69.6		36.9	24.3	* 64	* 14	17.9
Max Q Clear Time (g_c+I1), s	8.8	2.0		16.3	27.6	65.6	13.7	19.3
Green Ext Time (p_c), s	0.0	49.3		6.5	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	48.3
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	2480	30	100	2060	480	70	80	120	80	30	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	95	2611	20	105	2168	486	74	84	35	58	68	8
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	2691	836	122	2246	480	103	109	202	101	118	99
Arrive On Green	0.15	1.00	1.00	0.16	1.00	1.00	0.07	0.07	0.07	0.08	0.08	0.08
Sat Flow, veh/h	1494	4282	1330	1494	3532	755	1494	1569	1333	1345	1569	1307
Grp Volume(v), veh/h	95	2611	20	105	1732	922	74	84	35	58	68	8
Grp Sat Flow(s),veh/h/ln	1494	1427	1330	1494	1427	1432	1494	1569	1333	1345	1569	1307
Q Serve(g_s), s	8.7	0.0	0.0	9.6	0.0	88.4	6.8	7.4	3.2	5.8	5.9	0.8
Cycle Q Clear(g_c), s	8.7	0.0	0.0	9.6	0.0	88.4	6.8	7.4	3.2	5.8	5.9	0.8
Prop In Lane	1.00		1.00	1.00		0.53	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	2691	836	122	1815	910	103	109	202	101	118	99
V/C Ratio(X)	0.85	0.97	0.02	0.86	0.95	1.01	0.72	0.77	0.17	0.57	0.57	0.08
Avail Cap(c_a), veh/h	142	2691	836	217	1815	910	159	167	251	316	369	307
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.26	0.26	0.26	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.8	0.0	0.0	57.7	0.0	0.0	63.8	64.1	51.8	62.5	62.6	60.2
Incr Delay (d2), s/veh	8.6	4.3	0.0	1.3	1.7	12.4	8.8	11.2	0.4	5.0	4.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.9	1.1	0.0	4.0	0.4	3.1	3.1	3.5	1.2	2.3	2.7	0.3
LnGrp Delay(d),s/veh	67.4	4.3	0.0	59.0	1.7	12.4	72.6	75.3	52.2	67.5	66.9	60.6
LnGrp LOS	E	A	A	E	A	F	E	E	D	E	E	E
Approach Vol, veh/h		2726			2759			193			134	
Approach Delay, s/veh		6.4			7.5			70.1			66.8	
Approach LOS		A			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.2	93.4		15.7	15.1	94.4		14.8
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	11.6	2.0		7.9	10.7	90.4		9.4
Green Ext Time (p_c), s	0.1	49.4		0.5	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	10.4
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	110	2520	2640	250	20	30
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1490	4282	4206		2442	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1490	4282	4206		2442	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	116	2653	2779	263	21	32
RTOR Reduction (vph)	0	0	4	0	31	0
Lane Group Flow (vph)	116	2653	3038	0	22	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	15.3	113.4	93.4		5.4	
Effective Green, g (s)	15.3	113.4	93.4		5.4	
Actuated g/C Ratio	0.11	0.81	0.67		0.04	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	162	3468	2806		94	
v/s Ratio Prot	0.08	c0.62	c0.72		c0.01	
v/s Ratio Perm						
v/c Ratio	0.72	0.76	1.08		0.24	
Uniform Delay, d1	60.3	6.6	23.3		65.3	
Progression Factor	1.25	1.21	1.00		1.00	
Incremental Delay, d2	1.2	0.2	44.2		0.6	
Delay (s)	76.4	8.2	67.5		65.9	
Level of Service	E	A	E		E	
Approach Delay (s)		11.0	67.5		65.9	
Approach LOS		B	E		E	

Intersection Summary			
HCM 2000 Control Delay	40.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	798	40	30	907	264	90	350	50	254	160	20
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	74	840	42	32	955	278	95	368	53	267	168	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	279	2573	128	377	2637	820	217	433	194	335	391	166
Arrive On Green	0.62	0.62	0.62	0.62	0.62	0.62	0.15	0.15	0.15	0.12	0.12	0.00
Sat Flow, veh/h	450	4178	208	627	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	74	573	309	32	955	278	95	368	53	267	168	0
Grp Sat Flow(s),veh/h/ln	450	1427	1532	627	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	13.6	13.5	13.6	3.6	15.4	14.2	8.1	16.9	5.0	13.5	6.9	0.0
Cycle Q Clear(g_c), s	29.1	13.5	13.6	17.2	15.4	14.2	8.1	16.9	5.0	13.5	6.9	0.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	279	1758	943	377	2637	820	217	433	194	335	391	166
V/C Ratio(X)	0.27	0.33	0.33	0.08	0.36	0.34	0.44	0.85	0.27	0.80	0.43	0.00
Avail Cap(c_a), veh/h	279	1758	943	377	2637	820	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	0.94	0.94	0.94	1.00	1.00	1.00	0.87	0.87	0.00
Uniform Delay (d), s/veh	20.5	12.9	12.9	17.1	13.3	13.1	54.6	58.3	53.3	59.5	56.7	0.0
Incr Delay (d2), s/veh	1.7	0.4	0.7	0.4	0.4	1.1	1.4	10.7	0.8	3.9	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	5.4	5.9	0.7	6.1	5.4	3.4	7.6	1.9	5.2	3.0	0.0
LnGrp Delay(d),s/veh	22.2	13.3	13.6	17.5	13.7	14.1	56.1	69.1	54.0	63.5	57.3	0.0
LnGrp LOS	C	B	B	B	B	B	E	E	D	E	E	
Approach Vol, veh/h		956			1265			516			435	
Approach Delay, s/veh		14.1			13.9			65.1			61.1	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		92.0		22.6		92.0		25.4
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		19.2		15.5		31.1		18.9
Green Ext Time (p_c), s		25.8		1.9		20.8		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	28.7
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	20	1110	1130	100	80	90
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	21	1168	1189	83	84	17
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	716	3673	1430	444	156	80
Arrive On Green	0.48	0.86	0.67	0.67	0.06	0.06
Sat Flow, veh/h	1494	4424	4424	1329	2608	1333
Grp Volume(v), veh/h	21	1168	1189	83	84	17
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1329	1304	1333
Q Serve(g_s), s	1.0	6.9	27.0	3.1	4.1	1.6
Cycle Q Clear(g_c), s	1.0	6.9	27.0	3.1	4.1	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	716	3673	1430	444	156	80
V/C Ratio(X)	0.03	0.32	0.83	0.19	0.54	0.21
Avail Cap(c_a), veh/h	716	3673	2049	636	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.92	0.92	0.88	0.88	0.87	0.87
Uniform Delay (d), s/veh	17.9	1.8	18.9	14.9	59.4	58.2
Incr Delay (d2), s/veh	0.0	0.2	5.1	0.8	1.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.8	11.0	1.2	1.5	0.6
LnGrp Delay(d),s/veh	17.9	2.0	23.9	15.7	60.5	58.7
LnGrp LOS	B	A	C	B	E	E
Approach Vol, veh/h		1189	1272		101	
Approach Delay, s/veh		2.3	23.4		60.2	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	68.1	49.2		12.7		117.3		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	15.1	* 62		37.1		82.2		
Max Q Clear Time (g_c+I1), s	3.0	29.0		6.1		8.9		
Green Ext Time (p_c), s	7.4	14.5		0.2		16.5		

Intersection Summary		
HCM 2010 Ctrl Delay		15.1
HCM 2010 LOS		B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	70	464	999	200	1515
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	21	0	488	0	211	1595
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	74	38	1864	834	235	2505
Arrive On Green	0.03	0.00	0.63	0.00	0.32	1.00
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	21	0	488	0	211	1595
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	0.7	0.0	6.2	0.0	11.5	0.0
Cycle Q Clear(g_c), s	0.7	0.0	6.2	0.0	11.5	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	74	38	1864	834	235	2505
V/C Ratio(X)	0.28	0.00	0.26	0.00	0.90	0.64
Avail Cap(c_a), veh/h	842	426	1864	834	248	2505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.29	0.00	0.58	0.58
Uniform Delay (d), s/veh	40.5	0.0	7.1	0.0	28.5	0.0
Incr Delay (d2), s/veh	2.1	0.0	0.1	0.0	19.7	0.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	2.5	0.0	5.9	0.3
LnGrp Delay(d),s/veh	42.6	0.0	7.2	0.0	48.2	0.7
LnGrp LOS	D		A		D	A
Approach Vol, veh/h	21		488			1806
Approach Delay, s/veh	42.6		7.2			6.3
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	18.3	59.0		7.7		77.3		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	13.5	8.2		2.7		2.0		
Green Ext Time (p_c), s	0.0	18.1		0.0		37.3		

Intersection Summary	
HCM 2010 Ctrl Delay	6.8
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	180	122	110	130	50	62	1191	80	40	1113	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	21	189	29	116	137	16	65	1254	81	42	1172	16
Adj No. of Lanes	1	2	0	1	2	1	1	3	0	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	252	517	78	212	594	265	475	2637	170	51	1501	466
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.32	0.64	0.64	0.03	0.35	0.35
Sat Flow, veh/h	1226	2596	392	1156	2980	1329	1494	4111	265	1494	4282	1331
Grp Volume(v), veh/h	21	107	111	116	137	16	65	871	464	42	1172	16
Grp Sat Flow(s),veh/h/ln	1226	1490	1498	1156	1490	1329	1494	1427	1521	1494	1427	1331
Q Serve(g_s), s	1.9	8.1	8.3	12.5	5.0	1.3	4.0	20.5	20.5	3.6	31.8	1.0
Cycle Q Clear(g_c), s	6.9	8.1	8.3	20.9	5.0	1.3	4.0	20.5	20.5	3.6	31.8	1.0
Prop In Lane	1.00		0.26	1.00		1.00	1.00		0.17	1.00		1.00
Lane Grp Cap(c), veh/h	252	297	298	212	594	265	475	1832	976	51	1501	466
V/C Ratio(X)	0.08	0.36	0.37	0.55	0.23	0.06	0.14	0.48	0.48	0.83	0.78	0.03
Avail Cap(c_a), veh/h	361	429	431	314	857	382	475	1832	976	197	1950	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	0.36	0.36	0.36	0.95	0.95	0.95
Uniform Delay (d), s/veh	46.6	44.9	45.0	54.0	43.7	42.2	31.6	12.0	12.0	62.4	37.8	27.8
Incr Delay (d2), s/veh	0.1	0.7	0.8	2.1	0.2	0.1	0.0	0.3	0.6	11.4	3.9	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.4	3.5	4.1	2.1	0.5	1.7	8.1	8.7	1.7	13.0	0.4
LnGrp Delay(d),s/veh	46.7	45.7	45.8	56.1	43.9	42.3	31.6	12.3	12.6	73.8	41.7	27.9
LnGrp LOS	D	D	D	E	D	D	C	B	B	E	D	C
Approach Vol, veh/h		239			269			1400			1230	
Approach Delay, s/veh		45.8			49.1			13.3			42.6	
Approach LOS		D			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.3	89.2		31.5	47.2	51.4		31.5
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	17.1	59.2		37.4	17.1	* 59		37.4
Max Q Clear Time (g_c+I1), s	5.6	22.5		10.3	6.0	33.8		22.9
Green Ext Time (p_c), s	0.0	15.6		2.7	7.4	11.7		2.3

Intersection Summary		
HCM 2010 Ctrl Delay		30.3
HCM 2010 LOS		C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	264	1205	451	406	912	170	382	939	328	230	908	226
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	278	1268	237	427	960	141	402	988	300	242	956	201
Adj No. of Lanes	2	3	1	2	3	1	2	3	0	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	314	1247	353	319	1158	504	393	1144	347	283	1321	566
Arrive On Green	0.12	0.26	0.26	0.12	0.27	0.27	0.15	0.35	0.35	0.11	0.31	0.31
Sat Flow, veh/h	2689	4706	1330	2608	4282	1330	2608	3259	988	2608	4282	1331
Grp Volume(v), veh/h	278	1268	237	427	960	141	402	865	423	242	956	201
Grp Sat Flow(s),veh/h/ln	1345	1569	1330	1304	1427	1330	1304	1427	1392	1304	1427	1331
Q Serve(g_s), s	14.3	37.1	22.3	17.1	29.5	10.3	21.1	39.5	39.6	12.8	27.8	14.3
Cycle Q Clear(g_c), s	14.3	37.1	22.3	17.1	29.5	10.3	21.1	39.5	39.6	12.8	27.8	14.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.71	1.00		1.00
Lane Grp Cap(c), veh/h	314	1247	353	319	1158	504	393	1002	489	283	1321	566
V/C Ratio(X)	0.89	1.02	0.67	1.34	0.83	0.28	1.02	0.86	0.87	0.86	0.72	0.35
Avail Cap(c_a), veh/h	328	1247	353	319	1158	504	393	1002	489	393	1321	566
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.21	0.21	0.21	0.32	0.32	0.32	0.82	0.82	0.82	0.85	0.85	0.85
Uniform Delay (d), s/veh	60.9	51.4	46.0	61.5	48.0	30.2	59.5	42.3	42.3	61.3	43.1	27.2
Incr Delay (d2), s/veh	6.4	16.2	1.1	160.0	1.8	0.1	47.0	8.3	15.5	11.0	3.0	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.6	17.9	8.3	13.2	11.8	3.8	10.2	16.8	17.4	5.0	11.3	5.5
LnGrp Delay(d),s/veh	67.3	67.7	47.2	221.4	49.8	30.3	106.5	50.6	57.8	72.3	46.1	28.7
LnGrp LOS	E	F	D	F	D	C	F	D	E	E	D	C
Approach Vol, veh/h		1783			1528			1690			1399	
Approach Delay, s/veh		64.9			96.0			65.7			48.1	
Approach LOS		E			F			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.1	54.9	22.0	43.0	26.0	49.0	21.2	43.8
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	17.1	37.1	21.1	43.2	17.1	37.1
Max Q Clear Time (g_c+I1), s	14.8	41.6	19.1	39.1	23.1	29.8	16.3	31.5
Green Ext Time (p_c), s	0.4	1.5	0.0	0.0	0.0	12.0	0.1	5.2

Intersection Summary	
HCM 2010 Ctrl Delay	68.8
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	20	261	11	10	10	72	1553	34	20	1524	130
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	48	58	60	12	11	8	76	1635	29	21	1604	133
Adj No. of Lanes	1	1	1	0	1	0	1	3	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	93	108	119	27	24	18	92	3004	935	31	1968	880
Arrive On Green	0.07	0.07	0.07	0.05	0.05	0.05	0.06	0.70	0.70	0.02	0.66	0.66
Sat Flow, veh/h	1345	1569	1333	570	523	380	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	48	58	60	31	0	0	76	1635	29	21	1604	133
Grp Sat Flow(s),veh/h/ln	1345	1569	1333	1473	0	0	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	4.5	4.6	5.6	2.7	0.0	0.0	6.5	24.0	0.9	1.8	51.5	4.9
Cycle Q Clear(g_c), s	4.5	4.6	5.6	2.7	0.0	0.0	6.5	24.0	0.9	1.8	51.5	4.9
Prop In Lane	1.00		1.00	0.39		0.26	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	93	108	119	69	0	0	92	3004	935	31	1968	880
V/C Ratio(X)	0.52	0.54	0.50	0.45	0.00	0.00	0.82	0.54	0.03	0.69	0.82	0.15
Avail Cap(c_a), veh/h	197	229	222	397	0	0	172	3004	935	138	1968	880
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	0.00	0.73	0.73	0.73	0.35	0.35	0.35
Uniform Delay (d), s/veh	58.4	58.5	56.4	60.3	0.0	0.0	60.3	9.4	5.9	63.3	16.2	8.3
Incr Delay (d2), s/veh	1.7	1.5	1.2	3.4	0.0	0.0	5.0	0.5	0.0	3.6	1.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.1	2.1	1.2	0.0	0.0	2.8	9.5	0.3	0.8	21.3	1.8
LnGrp Delay(d),s/veh	60.1	60.0	57.6	63.8	0.0	0.0	65.3	9.9	6.0	66.8	17.6	8.5
LnGrp LOS	E	E	E	E			E	A	A	E	B	A
Approach Vol, veh/h		166			31			1740			1758	
Approach Delay, s/veh		59.2			63.8			12.2			17.5	
Approach LOS		E			E			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.7	97.3		11.1	13.0	91.9		14.0
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0
Max Q Clear Time (g_c+I1), s	3.8	26.0		4.7	8.5	53.5		7.6
Green Ext Time (p_c), s	0.0	16.5		0.1	0.0	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	17.3
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	224	10	62	10	0	10	21	1424	10	10	1712	75
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1667	1700	1700	1667	1700	1667	1667	1700	1667	1667	1700
Adj Flow Rate, veh/h	236	11	17	11	0	10	22	1499	11	11	1802	78
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	270	52	80	13	0	12	27	2561	19	18	2440	105
Arrive On Green	0.09	0.09	0.09	0.02	0.00	0.02	0.02	0.79	0.79	0.01	0.79	0.79
Sat Flow, veh/h	3079	591	914	786	0	715	1587	3222	24	1587	3093	133
Grp Volume(v), veh/h	236	0	28	21	0	0	22	736	774	11	917	963
Grp Sat Flow(s),veh/h/ln	1540	0	1505	1501	0	0	1587	1583	1662	1587	1583	1643
Q Serve(g_s), s	15.9	0.0	3.6	2.9	0.0	0.0	2.9	37.5	37.5	1.4	61.0	62.9
Cycle Q Clear(g_c), s	15.9	0.0	3.6	2.9	0.0	0.0	2.9	37.5	37.5	1.4	61.0	62.9
Prop In Lane	1.00		0.61	0.52		0.48	1.00		0.01	1.00		0.08
Lane Grp Cap(c), veh/h	270	0	132	25	0	0	27	1258	1321	18	1249	1296
V/C Ratio(X)	0.87	0.00	0.21	0.83	0.00	0.00	0.81	0.59	0.59	0.61	0.73	0.74
Avail Cap(c_a), veh/h	592	0	290	177	0	0	132	1258	1321	94	1249	1296
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.46	0.46	0.46
Uniform Delay (d), s/veh	94.6	0.0	89.0	102.9	0.0	0.0	102.8	8.3	8.3	103.4	11.1	11.3
Incr Delay (d2), s/veh	3.5	0.0	0.3	21.9	0.0	0.0	18.1	2.0	1.9	5.7	1.8	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.0	1.5	1.4	0.0	0.0	1.4	16.9	17.7	0.7	27.1	28.8
LnGrp Delay(d),s/veh	98.1	0.0	89.3	124.9	0.0	0.0	121.0	10.3	10.2	109.1	12.9	13.2
LnGrp LOS	F		F	F			F	B	B	F	B	B
Approach Vol, veh/h		264			21			1532			1891	
Approach Delay, s/veh		97.2			124.9			11.8			13.6	
Approach LOS		F			F			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	172.4		7.7	8.1	171.1		23.0
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	12.5	113.5		* 25	17.5	108.5		40.4
Max Q Clear Time (g_c+I1), s	3.4	39.5		4.9	4.9	64.9		17.9
Green Ext Time (p_c), s	0.0	70.7		0.0	0.0	42.5		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	301	1120	800	80
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1300
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1300
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	317	1179	842	84
RTOR Reduction (vph)	0	0	0	0	0	31
Lane Group Flow (vph)	0	0	317	1179	842	53
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			35.8	76.8	36.8	36.8
Effective Green, g (s)			35.8	76.8	36.8	36.8
Actuated g/C Ratio			0.40	0.85	0.41	0.41
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			590	2531	1213	529
v/s Ratio Prot			c0.21	0.40	c0.28	
v/s Ratio Perm						0.04
v/c Ratio			0.54	0.47	0.69	0.10
Uniform Delay, d1			20.9	1.7	22.1	16.6
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.5	0.2	1.9	0.1
Delay (s)			21.4	1.9	24.0	16.7
Level of Service			C	A	C	B
Approach Delay (s)	0.0			6.0	23.4	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	12.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	90.4	Sum of lost time (s)	13.7
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	40	236	0	1401	780	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	42	248	0	1475	821	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.78	0.78	0.78			
vC, conflicting volume	1558	411	821			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1155	0	212			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	72	71	100			
cM capacity (veh/h)	149	847	1060			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	28	262	737	737	411	411
Volume Left	28	14	0	0	0	0
Volume Right	0	248	0	0	0	0
cSH	149	895	1700	1700	1700	1700
Volume to Capacity	0.19	0.29	0.43	0.43	0.24	0.24
Queue Length 95th (ft)	17	31	0	0	0	0
Control Delay (s)	34.8	12.1	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	14.3		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	56.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1251	350	1001	60	50	1086
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	1317	0	1054	0	53	1143
Adj No. of Lanes	2	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	786	402	1368	0	75	1690
Arrive On Green	0.30	0.00	0.15	0.00	0.05	0.57
Sat Flow, veh/h	2608	1333	3137	0	1494	3059
Grp Volume(v), veh/h	1317	0	1054	0	53	1143
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490
Q Serve(g_s), s	25.6	0.0	28.9	0.0	3.0	22.9
Cycle Q Clear(g_c), s	25.6	0.0	28.9	0.0	3.0	22.9
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	786	402	1368	0	75	1690
V/C Ratio(X)	1.68	0.00	0.77	0.00	0.70	0.68
Avail Cap(c_a), veh/h	786	402	1368	0	283	1690
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.61	0.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	31.8	0.0	39.7	12.9
Incr Delay (d2), s/veh	310.0	0.0	2.6	0.0	4.4	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	43.0	0.0	12.4	0.0	1.3	9.9
LnGrp Delay(d),s/veh	339.7	0.0	34.4	0.0	44.2	15.1
LnGrp LOS	F		C		D	B
Approach Vol, veh/h	1317		1054			1196
Approach Delay, s/veh	339.7		34.4			16.4
Approach LOS	F		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.2	44.8		31.0		54.0		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	16.1	27.2		25.6		48.2		
Max Q Clear Time (g_c+I1), s	5.0	30.9		27.6		24.9		
Green Ext Time (p_c), s	0.0	0.0		0.0		21.0		

Intersection Summary	
HCM 2010 Ctrl Delay	141.1
HCM 2010 LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1730	226	0	1630	520	271	991	30	640	1256	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	1821	229	0	1716	539	285	1043	31	674	1322	20
Adj No. of Lanes	0	3	0	0	2	1	1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1694	212	0	1309	816	265	1136	34	453	1155	17
Arrive On Green	0.00	0.44	0.44	0.00	0.88	0.88	0.35	0.53	0.53	0.17	0.27	0.27
Sat Flow, veh/h	0	3997	482	0	3059	1332	1494	4274	127	2608	4346	66
Grp Volume(v), veh/h	0	1345	705	0	1716	539	285	696	378	674	868	474
Grp Sat Flow(s),veh/h/ln	0	1427	1483	0	1490	1332	1494	1427	1546	1304	1427	1557
Q Serve(g_s), s	0.0	61.5	61.5	0.0	61.5	25.0	24.8	31.3	31.3	24.3	37.2	37.2
Cycle Q Clear(g_c), s	0.0	61.5	61.5	0.0	61.5	25.0	24.8	31.3	31.3	24.3	37.2	37.2
Prop In Lane	0.00		0.32	0.00		1.00	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	0	1254	651	0	1309	816	265	759	411	453	759	414
V/C Ratio(X)	0.00	1.07	1.08	0.00	1.31	0.66	1.08	0.92	0.92	1.49	1.14	1.14
Avail Cap(c_a), veh/h	0	1254	651	0	1309	816	265	759	411	453	759	414
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.09	0.09	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	39.3	39.3	0.0	8.5	3.3	45.2	31.4	31.4	57.8	51.4	51.4
Incr Delay (d2), s/veh	0.0	34.4	40.0	0.0	140.3	0.4	71.5	13.7	21.9	231.4	80.4	90.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	30.2	32.4	0.0	48.1	7.8	15.4	13.6	15.7	23.3	23.1	26.3
LnGrp Delay(d),s/veh	0.0	73.7	79.3	0.0	148.8	3.7	116.7	45.1	53.3	289.3	131.8	141.5
LnGrp LOS		F	F		F	A	F	D	D	F	F	F
Approach Vol, veh/h		2050			2255			1359			2016	
Approach Delay, s/veh		75.6			114.1			62.4			186.7	
Approach LOS		E			F			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		67.0	30.0	43.0		67.0	30.0	43.0
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 62	* 25	37.2		* 62	* 24	37.2
Max Q Clear Time (g_c+I1), s		63.5	26.8	39.2		63.5	26.3	33.3
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	3.6

Intersection Summary	
HCM 2010 Ctrl Delay	113.7
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	200	2130	30	70	1770	190	0	611	170	340	686	370
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	211	2242	31	74	1863	191	0	643	0	358	722	357
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	230	2350	32	89	1738	177	0	486	151	378	871	594
Arrive On Green	0.31	1.00	1.00	0.12	0.88	0.88	0.00	0.04	0.00	0.14	0.29	0.29
Sat Flow, veh/h	1494	4353	60	1494	3949	403	0	4424	1333	2608	2980	1331
Grp Volume(v), veh/h	211	1469	804	74	1344	710	0	643	0	358	722	357
Grp Sat Flow(s),veh/h/ln	1494	1427	1558	1494	1427	1497	0	1427	1333	1304	1490	1331
Q Serve(g_s), s	19.1	0.0	0.0	6.8	61.6	61.6	0.0	15.9	0.0	19.0	31.7	6.8
Cycle Q Clear(g_c), s	19.1	0.0	0.0	6.8	61.6	61.6	0.0	15.9	0.0	19.0	31.7	6.8
Prop In Lane	1.00		0.04	1.00		0.27	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	1541	841	89	1256	659	0	486	151	378	871	594
V/C Ratio(X)	0.92	0.95	0.96	0.83	1.07	1.08	0.00	1.32	0.00	0.95	0.83	0.60
Avail Cap(c_a), veh/h	238	1541	841	153	1256	659	0	486	151	378	871	594
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.40	0.40	0.40	0.00	0.76	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	0.0	61.0	8.4	8.4	0.0	67.4	0.0	59.3	46.3	29.3
Incr Delay (d2), s/veh	5.3	2.0	3.5	3.8	38.6	46.5	0.0	155.7	0.0	32.6	6.8	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.4	0.8	2.9	28.4	31.2	0.0	13.3	0.0	8.6	13.9	15.9
LnGrp Delay(d),s/veh	52.8	2.0	3.5	64.8	47.0	54.9	0.0	223.1	0.0	91.9	53.1	31.0
LnGrp LOS	D	A	A	E	F	F		F		F	D	C
Approach Vol, veh/h		2484			2128			643			1437	
Approach Delay, s/veh		6.8			50.3			223.1			57.3	
Approach LOS		A			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	81.0		46.0	27.0	67.0	25.0	21.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 14	69.6		40.9	22.3	* 62	* 20	15.9
Max Q Clear Time (g_c+I1), s	8.8	2.0		33.7	21.1	63.6	21.0	17.9
Green Ext Time (p_c), s	0.0	47.8		5.2	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	2470	80	210	1920	50	50	10	160	450	70	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	32	2600	44	221	2021	52	53	11	121	527	0	26
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	1734	538	217	2230	57	136	143	315	575	0	283
Arrive On Green	0.06	0.81	0.81	0.29	1.00	1.00	0.09	0.09	0.09	0.21	0.00	0.21
Sat Flow, veh/h	1494	4282	1328	1494	4293	110	1494	1569	1333	2689	0	1324
Grp Volume(v), veh/h	32	2600	44	221	1343	730	53	11	121	527	0	26
Grp Sat Flow(s),veh/h/ln	1494	1427	1328	1494	1427	1549	1494	1569	1333	1345	0	1324
Q Serve(g_s), s	2.9	56.7	0.9	20.3	0.0	0.0	4.7	0.9	10.7	26.8	0.0	2.2
Cycle Q Clear(g_c), s	2.9	56.7	0.9	20.3	0.0	0.0	4.7	0.9	10.7	26.8	0.0	2.2
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	46	1734	538	217	1483	804	136	143	315	575	0	283
V/C Ratio(X)	0.70	1.50	0.08	1.02	0.91	0.91	0.39	0.08	0.38	0.92	0.00	0.09
Avail Cap(c_a), veh/h	142	1734	538	217	1483	804	159	167	335	632	0	311
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.18	0.18	0.18	0.54	0.54	0.54	0.95	0.95	0.95	1.00	0.00	1.00
Uniform Delay (d), s/veh	65.1	13.3	8.0	49.7	0.0	0.0	59.9	58.2	44.9	53.8	0.0	44.1
Incr Delay (d2), s/veh	1.6	225.2	0.1	50.0	5.5	9.6	1.7	0.2	0.7	17.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	57.0	0.3	11.3	1.1	2.1	2.0	0.4	4.0	11.3	0.0	0.8
LnGrp Delay(d),s/veh	66.7	238.6	8.1	99.9	5.5	9.6	61.6	58.4	45.6	71.2	0.0	44.3
LnGrp LOS	E	F	A	F	A	A	E	E	D	E		D
Approach Vol, veh/h		2676			2294			185			553	
Approach Delay, s/veh		232.7			15.9			51.0			70.0	
Approach LOS		F			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	62.1		35.0	9.0	78.1		17.9
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	22.3	58.7		28.8	4.9	2.0		12.7
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	56.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	123.9
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	50	3010	2120	40	150	60
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.96	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1490	4282	4266		2531	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1490	4282	4266		2531	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	53	3168	2232	42	158	63
RTOR Reduction (vph)	0	0	1	0	34	0
Lane Group Flow (vph)	53	3168	2273	0	187	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	8.4	104.1	91.0		14.7	
Effective Green, g (s)	8.4	104.1	91.0		14.7	
Actuated g/C Ratio	0.06	0.74	0.65		0.10	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	89	3183	2772		265	
v/s Ratio Prot	0.04	c0.74	0.53		c0.07	
v/s Ratio Perm						
v/c Ratio	0.60	1.00	0.82		0.71	
Uniform Delay, d1	64.1	17.7	18.4		60.6	
Progression Factor	1.06	1.91	1.00		1.00	
Incremental Delay, d2	0.7	3.8	2.9		7.0	
Delay (s)	68.4	37.7	21.2		67.5	
Level of Service	E	D	C		E	
Approach Delay (s)		38.2	21.2		67.5	
Approach LOS		D	C		E	

Intersection Summary			
HCM 2000 Control Delay	32.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	85.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	1332	70	100	1211	371	60	290	80	446	280	20
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	95	1402	71	105	1275	244	63	305	23	469	295	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	176	2307	117	168	2367	736	186	371	166	561	654	278
Arrive On Green	0.55	0.55	0.55	0.55	0.55	0.55	0.12	0.12	0.12	0.21	0.21	0.00
Sat Flow, veh/h	342	4175	211	358	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	95	959	514	105	1275	244	63	305	23	469	295	0
Grp Sat Flow(s),veh/h/ln	342	1427	1531	358	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	34.3	31.7	31.7	39.2	26.5	14.0	5.4	14.0	2.2	23.4	11.5	0.0
Cycle Q Clear(g_c), s	60.8	31.7	31.7	70.8	26.5	14.0	5.4	14.0	2.2	23.4	11.5	0.0
Prop In Lane	1.00		0.14	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	176	1578	846	168	2367	736	186	371	166	561	654	278
V/C Ratio(X)	0.54	0.61	0.61	0.62	0.54	0.33	0.34	0.82	0.14	0.84	0.45	0.00
Avail Cap(c_a), veh/h	176	1578	846	168	2367	736	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.86	0.86	0.86	1.00	1.00	1.00	0.48	0.48	0.00
Uniform Delay (d), s/veh	39.3	21.1	21.1	44.9	19.9	17.1	56.0	59.8	54.6	53.1	48.4	0.0
Incr Delay (d2), s/veh	1.1	0.2	0.3	14.0	0.8	1.0	1.1	7.1	0.4	3.5	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	12.4	13.4	4.5	10.6	5.4	2.3	6.1	0.8	8.9	5.0	0.0
LnGrp Delay(d),s/veh	40.4	21.2	21.4	59.0	20.7	18.2	57.1	66.9	55.0	56.7	48.7	0.0
LnGrp LOS	D	C	C	E	C	B	E	E	E	E	D	
Approach Vol, veh/h		1568			1624			391			764	
Approach Delay, s/veh		22.5			22.8			64.6			53.6	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		83.2		34.3		83.2		22.5
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		72.8		25.4		62.8		16.0
Green Ext Time (p_c), s		0.0		3.5		0.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	31.8
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	60	1660	1490	50	140	100
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	63	1747	1568	41	147	16
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	596	3618	1717	533	190	97
Arrive On Green	0.40	0.84	0.80	0.80	0.07	0.07
Sat Flow, veh/h	1494	4424	4424	1330	2608	1333
Grp Volume(v), veh/h	63	1747	1568	41	147	16
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1330	1304	1333
Q Serve(g_s), s	3.4	13.9	35.2	0.8	7.2	1.5
Cycle Q Clear(g_c), s	3.4	13.9	35.2	0.8	7.2	1.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	596	3618	1717	533	190	97
V/C Ratio(X)	0.11	0.48	0.91	0.08	0.77	0.16
Avail Cap(c_a), veh/h	596	3618	1950	606	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.66	0.66	0.44	0.44	0.58	0.58
Uniform Delay (d), s/veh	24.5	2.6	11.2	7.8	59.2	56.5
Incr Delay (d2), s/veh	0.0	0.3	4.4	0.1	1.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	5.4	13.8	0.3	2.6	0.5
LnGrp Delay(d),s/veh	24.5	3.0	15.5	7.9	61.0	56.8
LnGrp LOS	C	A	B	A	E	E
Approach Vol, veh/h		1810	1609		163	
Approach Delay, s/veh		3.7	15.3		60.6	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	57.7	57.9		14.4		115.6		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	18.1	* 59		37.1		82.2		
Max Q Clear Time (g_c+I1), s	5.4	37.2		9.2		15.9		
Green Ext Time (p_c), s	10.3	14.9		0.3		32.4		

Intersection Summary			
HCM 2010 Ctrl Delay			11.5
HCM 2010 LOS			B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	30	80	981	1176	240	2087
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	32	0	1033	0	253	2197
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	101	51	1810	810	248	2476
Arrive On Green	0.04	0.00	0.61	0.00	0.33	1.00
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	32	0	1033	0	253	2197
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	1.0	0.0	17.7	0.0	14.1	0.0
Cycle Q Clear(g_c), s	1.0	0.0	17.7	0.0	14.1	0.0
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	101	51	1810	810	248	2476
V/C Ratio(X)	0.32	0.00	0.57	0.00	1.02	0.89
Avail Cap(c_a), veh/h	842	426	1810	810	248	2476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.09	0.09
Uniform Delay (d), s/veh	39.9	0.0	10.0	0.0	28.4	0.0
Incr Delay (d2), s/veh	1.8	0.0	0.1	0.0	22.7	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.1	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	7.2	0.0	7.3	0.2
LnGrp Delay(d),s/veh	41.6	0.0	10.2	0.0	51.2	0.5
LnGrp LOS	D		B		F	A
Approach Vol, veh/h	32		1033			2450
Approach Delay, s/veh	41.6		10.2			5.7
Approach LOS	D		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	19.0	57.4		8.6		76.4		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	16.1	19.7		3.0		2.0		
Green Ext Time (p_c), s	0.0	8.5		0.1		44.4		

Intersection Summary	
HCM 2010 Ctrl Delay	7.4
HCM 2010 LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	200	168	220	430	80	205	1552	170	80	1769	50
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	32	211	73	232	453	30	216	1634	171	84	1862	27
Adj No. of Lanes	1	2	0	1	2	1	1	3	0	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	647	217	293	880	393	278	2014	210	102	1654	514
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.19	0.51	0.51	0.07	0.39	0.39
Sat Flow, veh/h	908	2191	736	1089	2980	1331	1494	3939	411	1494	4282	1331
Grp Volume(v), veh/h	32	142	142	232	453	30	216	1183	622	84	1862	27
Grp Sat Flow(s),veh/h/ln	908	1490	1437	1089	1490	1331	1494	1427	1495	1494	1427	1331
Q Serve(g_s), s	3.9	9.6	10.1	27.5	16.4	2.1	17.9	45.0	45.2	7.2	50.2	1.7
Cycle Q Clear(g_c), s	20.4	9.6	10.1	37.6	16.4	2.1	17.9	45.0	45.2	7.2	50.2	1.7
Prop In Lane	1.00		0.51	1.00		1.00	1.00		0.28	1.00		1.00
Lane Grp Cap(c), veh/h	209	440	424	293	880	393	278	1459	764	102	1654	514
V/C Ratio(X)	0.15	0.32	0.34	0.79	0.51	0.08	0.78	0.81	0.81	0.83	1.13	0.05
Avail Cap(c_a), veh/h	209	440	424	293	880	393	288	1459	764	288	1654	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.63	0.63	0.63	0.09	0.09	0.09	0.86	0.86	0.86
Uniform Delay (d), s/veh	46.5	35.7	35.8	50.5	38.1	33.0	50.3	26.5	26.6	59.8	39.9	25.0
Incr Delay (d2), s/veh	0.3	0.4	0.5	9.1	0.3	0.1	1.1	0.5	0.9	5.4	64.1	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	4.0	4.1	9.0	6.8	0.8	7.5	17.7	18.8	3.1	29.6	0.6
LnGrp Delay(d),s/veh	46.9	36.1	36.3	59.6	38.4	33.1	51.4	27.0	27.5	65.2	104.0	25.2
LnGrp LOS	D	D	D	E	D	C	D	C	C	E	F	C
Approach Vol, veh/h		316			715			2021			1973	
Approach Delay, s/veh		37.3			45.0			29.8			101.2	
Approach LOS		D			D			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.7	72.3		44.0	30.0	56.0		44.0
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	25.1	50.2		38.4	25.1	* 50		38.4
Max Q Clear Time (g_c+I1), s	9.2	47.2		22.4	19.9	52.2		39.6
Green Ext Time (p_c), s	0.1	2.7		5.4	0.5	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	60.5
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	452	1426	415	552	1327	370	464	1115	459	320	1287	520
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	476	1501	218	581	1397	351	488	1174	435	337	1355	510
Adj No. of Lanes	2	3	1	2	3	1	2	3	0	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1247	353	319	1135	543	393	975	361	372	1321	573
Arrive On Green	0.12	0.26	0.26	0.12	0.26	0.26	0.15	0.32	0.32	0.14	0.31	0.31
Sat Flow, veh/h	2689	4706	1330	2608	4282	1330	2608	3080	1140	2608	4282	1331
Grp Volume(v), veh/h	476	1501	218	581	1397	351	488	1088	521	337	1355	510
Grp Sat Flow(s),veh/h/ln	1345	1569	1330	1304	1427	1330	1304	1427	1365	1304	1427	1331
Q Serve(g_s), s	17.1	37.1	20.2	17.1	37.1	29.7	21.1	44.3	44.3	17.8	43.2	43.2
Cycle Q Clear(g_c), s	17.1	37.1	20.2	17.1	37.1	29.7	21.1	44.3	44.3	17.8	43.2	43.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.84	1.00		1.00
Lane Grp Cap(c), veh/h	328	1247	353	319	1135	543	393	904	432	372	1321	573
V/C Ratio(X)	1.45	1.20	0.62	1.82	1.23	0.65	1.24	1.20	1.21	0.91	1.03	0.89
Avail Cap(c_a), veh/h	328	1247	353	319	1135	543	393	904	432	393	1321	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	0.62	0.62	0.62	0.09	0.09	0.09
Uniform Delay (d), s/veh	61.4	51.4	45.2	61.5	51.5	33.4	59.5	47.8	47.8	59.1	48.4	36.8
Incr Delay (d2), s/veh	203.7	92.4	0.3	371.7	104.7	0.3	121.6	98.5	105.7	3.0	15.2	2.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.6	26.7	7.4	22.6	25.6	11.0	14.2	29.8	29.4	6.6	18.9	18.4
LnGrp Delay(d),s/veh	265.2	143.8	45.6	433.2	156.2	33.6	181.1	146.3	153.5	62.1	63.6	39.0
LnGrp LOS	F	F	D	F	F	C	F	F	F	E	F	D
Approach Vol, veh/h		2195			2329			2097			2202	
Approach Delay, s/veh		160.4			206.8			156.2			57.6	
Approach LOS		F			F			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.9	50.1	22.0	43.0	26.0	49.0	22.0	43.0
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	17.1	37.1	21.1	43.2	17.1	37.1
Max Q Clear Time (g_c+I1), s	19.8	46.3	19.1	39.1	23.1	45.2	19.1	39.1
Green Ext Time (p_c), s	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	146.0
HCM 2010 LOS	F

Notes
User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	190	20	335	84	40	20	157	1684	42	10	1647	160
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	215	0	104	88	42	18	165	1773	30	11	1734	87
Adj No. of Lanes	2	0	1	0	1	0	1	3	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	0	146	104	49	21	172	2620	816	19	1517	679
Arrive On Green	0.10	0.00	0.10	0.12	0.12	0.12	0.12	0.61	0.61	0.01	0.51	0.51
Sat Flow, veh/h	2689	0	1333	887	423	181	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	215	0	104	148	0	0	165	1773	30	11	1734	87
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1492	0	0	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	10.2	0.0	9.8	12.6	0.0	0.0	14.3	35.7	1.2	1.0	66.2	4.5
Cycle Q Clear(g_c), s	10.2	0.0	9.8	12.6	0.0	0.0	14.3	35.7	1.2	1.0	66.2	4.5
Prop In Lane	1.00		1.00	0.59		0.12	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	260	0	146	174	0	0	172	2620	816	19	1517	679
V/C Ratio(X)	0.83	0.00	0.71	0.85	0.00	0.00	0.96	0.68	0.04	0.58	1.14	0.13
Avail Cap(c_a), veh/h	393	0	212	402	0	0	172	2620	816	138	1517	679
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	0.56	0.56	0.56	0.09	0.09	0.09
Uniform Delay (d), s/veh	57.7	0.0	55.9	56.3	0.0	0.0	57.2	16.7	10.0	63.8	31.9	16.8
Incr Delay (d2), s/veh	5.2	0.0	2.4	8.3	0.0	0.0	39.6	0.8	0.0	1.0	65.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	3.7	5.6	0.0	0.0	7.8	14.1	0.4	0.4	40.9	1.6
LnGrp Delay(d),s/veh	62.9	0.0	58.4	64.6	0.0	0.0	96.8	17.5	10.1	64.8	97.1	16.8
LnGrp LOS	E		E	E			F	B	B	E	F	B
Approach Vol, veh/h		319			148			1968			1832	
Approach Delay, s/veh		61.4			64.6			24.1			93.1	
Approach LOS		E			E			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.6	85.6		20.2	20.0	72.3		17.6
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0
Max Q Clear Time (g_c+I1), s	3.0	37.7		14.6	16.3	68.2		12.2
Green Ext Time (p_c), s	0.0	5.2		0.6	0.0	0.0		0.3

Intersection Summary			
HCM 2010 Ctrl Delay			57.9
HCM 2010 LOS			E

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	179	0	51	10	0	0	72	1714	0	10	1920	136
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1667	1700	1700	1667	1700	1667	1667	1700	1667	1667	1700
Adj Flow Rate, veh/h	188	0	11	11	0	0	76	1804	0	11	2021	141
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	242	0	111	20	0	0	94	2361	0	20	2102	145
Arrive On Green	0.08	0.00	0.08	0.01	0.00	0.00	0.06	0.75	0.00	0.01	0.70	0.70
Sat Flow, veh/h	3079	0	1417	1587	0	0	1587	3250	0	1587	3006	207
Grp Volume(v), veh/h	188	0	11	11	0	0	76	1804	0	11	1053	1109
Grp Sat Flow(s),veh/h/ln	1540	0	1417	1587	0	0	1587	1583	0	1587	1583	1630
Q Serve(g_s), s	7.5	0.0	0.9	0.9	0.0	0.0	5.9	42.1	0.0	0.9	74.7	80.0
Cycle Q Clear(g_c), s	7.5	0.0	0.9	0.9	0.0	0.0	5.9	42.1	0.0	0.9	74.7	80.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.13
Lane Grp Cap(c), veh/h	242	0	111	20	0	0	94	2361	0	20	1107	1140
V/C Ratio(X)	0.78	0.00	0.10	0.55	0.00	0.00	0.81	0.76	0.00	0.55	0.95	0.97
Avail Cap(c_a), veh/h	749	0	345	315	0	0	197	2361	0	133	1107	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	56.5	0.0	53.5	61.3	0.0	0.0	58.1	9.4	0.0	61.3	16.9	17.7
Incr Delay (d2), s/veh	2.0	0.0	0.1	8.3	0.0	0.0	6.1	2.4	0.0	0.8	2.6	3.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	0.4	0.4	0.0	0.0	2.8	18.8	0.0	0.4	33.0	36.6
LnGrp Delay(d),s/veh	58.5	0.0	53.6	69.6	0.0	0.0	64.3	11.8	0.0	62.1	19.5	21.6
LnGrp LOS	E		D	E			E	B		E	B	C
Approach Vol, veh/h		199			11			1880			2173	
Approach Delay, s/veh		58.2			69.6			13.9			20.8	
Approach LOS		E			E			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	98.7		5.8	11.9	92.9		14.4
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	10.5	40.5		* 25	15.5	35.5		30.4
Max Q Clear Time (g_c+I1), s	2.9	44.1		2.9	7.9	82.0		9.5
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.4

Intersection Summary			
HCM 2010 Ctrl Delay			19.6
HCM 2010 LOS			B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	331	610	740	90
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1300
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1300
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	348	642	779	95
RTOR Reduction (vph)	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	348	642	779	56
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			38.0	77.3	35.1	35.1
Effective Green, g (s)			38.0	77.3	35.1	35.1
Actuated g/C Ratio			0.42	0.85	0.39	0.39
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			622	2531	1149	501
v/s Ratio Prot			c0.23	0.22	c0.26	
v/s Ratio Perm						0.04
v/c Ratio			0.56	0.25	0.68	0.11
Uniform Delay, d1			20.1	1.3	23.2	17.9
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.6	0.1	1.8	0.1
Delay (s)			20.8	1.4	25.0	18.1
Level of Service			C	A	C	B
Approach Delay (s)	0.0			8.2	24.3	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	80	311	0	861	740	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	84	327	0	906	779	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.80	0.80	0.80			
vC, conflicting volume	1232	389	779			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	778	0	209			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	68	62	100			
cM capacity (veh/h)	265	863	1082			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	56	355	453	453	389	389
Volume Left	56	28	0	0	0	0
Volume Right	0	327	0	0	0	0
cSH	265	937	1700	1700	1700	1700
Volume to Capacity	0.21	0.38	0.27	0.27	0.23	0.23
Queue Length 95th (ft)	20	45	0	0	0	0
Control Delay (s)	22.2	12.4	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	13.7		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	836	300	641	30	51	960
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	880	0	675	0	54	1011
Adj No. of Lanes	2	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	786	402	1367	0	76	1690
Arrive On Green	0.30	0.00	0.15	0.00	0.05	0.57
Sat Flow, veh/h	2608	1333	3137	0	1494	3059
Grp Volume(v), veh/h	880	0	675	0	54	1011
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490
Q Serve(g_s), s	25.6	0.0	17.7	0.0	3.0	18.9
Cycle Q Clear(g_c), s	25.6	0.0	17.7	0.0	3.0	18.9
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	786	402	1367	0	76	1690
V/C Ratio(X)	1.12	0.00	0.49	0.00	0.71	0.60
Avail Cap(c_a), veh/h	786	402	1367	0	265	1690
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.92	0.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	27.0	0.0	39.7	12.1
Incr Delay (d2), s/veh	70.5	0.0	1.2	0.0	4.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.9	0.0	7.5	0.0	1.3	8.1
LnGrp Delay(d),s/veh	100.2	0.0	28.2	0.0	44.2	13.6
LnGrp LOS	F		C		D	B
Approach Vol, veh/h	880		675			1065
Approach Delay, s/veh	100.2		28.2			15.2
Approach LOS	F		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.2	44.8		31.0		54.0		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	15.1	28.2		25.6		48.2		
Max Q Clear Time (g_c+I1), s	5.0	19.7		27.6		20.9		
Green Ext Time (p_c), s	0.0	7.5		0.0		20.7		

Intersection Summary		
HCM 2010 Ctrl Delay		47.1
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2030	231	0	1470	510	250	1080	10	550	781	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	2137	235	0	1547	529	263	1137	10	579	822	10
Adj No. of Lanes	0	3	0	0	2	1	1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1835	199	0	1394	845	254	1070	9	434	1065	13
Arrive On Green	0.00	0.47	0.47	0.00	0.94	0.94	0.23	0.32	0.32	0.17	0.24	0.24
Sat Flow, veh/h	0	4064	425	0	3059	1332	1494	4378	39	2608	4361	53
Grp Volume(v), veh/h	0	1547	825	0	1547	529	263	741	406	579	538	294
Grp Sat Flow(s),veh/h/ln	0	1427	1493	0	1490	1332	1494	1427	1562	1304	1427	1559
Q Serve(g_s), s	0.0	65.5	65.5	0.0	65.5	12.0	23.8	34.2	34.2	23.3	24.6	24.6
Cycle Q Clear(g_c), s	0.0	65.5	65.5	0.0	65.5	12.0	23.8	34.2	34.2	23.3	24.6	24.6
Prop In Lane	0.00		0.28	0.00		1.00	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	0	1336	698	0	1394	845	254	697	382	434	697	381
V/C Ratio(X)	0.00	1.16	1.18	0.00	1.11	0.63	1.04	1.06	1.06	1.33	0.77	0.77
Avail Cap(c_a), veh/h	0	1336	698	0	1394	845	254	697	382	434	697	381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.09	0.09	0.85	0.85	0.85	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	37.3	37.3	0.0	4.5	1.4	54.2	47.3	47.3	58.3	49.3	49.3
Incr Delay (d2), s/veh	0.0	72.2	82.8	0.0	50.4	0.3	61.6	49.6	60.3	165.2	5.5	9.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	39.2	43.0	0.0	31.1	3.3	14.1	18.2	21.1	18.3	10.2	11.6
LnGrp Delay(d),s/veh	0.0	109.4	120.1	0.0	54.9	1.7	115.8	96.8	107.6	223.6	54.7	59.0
LnGrp LOS		F	F		F	A	F	F	F	F	D	E
Approach Vol, veh/h		2372			2076			1410			1411	
Approach Delay, s/veh		113.1			41.3			103.4			124.9	
Approach LOS		F			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		71.0	29.0	40.0		71.0	29.0	40.0
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 66	* 24	34.2		* 66	* 23	34.2
Max Q Clear Time (g_c+I1), s		67.5	25.8	26.6		67.5	25.3	36.2
Green Ext Time (p_c), s		0.0	0.0	6.3		0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	93.0
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	270	2181	20	71	1890	230	0	608	226	210	364	170
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	284	2296	21	75	1989	230	0	640	0	221	383	146
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	302	2629	24	91	1771	203	0	548	170	256	773	614
Arrive On Green	0.40	1.00	1.00	0.08	0.60	0.60	0.00	0.04	0.00	0.10	0.26	0.26
Sat Flow, veh/h	1494	4376	40	1494	3898	446	0	4424	1333	2608	2980	1330
Grp Volume(v), veh/h	284	1497	820	75	1451	768	0	640	0	221	383	146
Grp Sat Flow(s),veh/h/ln	1494	1427	1562	1494	1427	1489	0	1427	1333	1304	1490	1330
Q Serve(g_s), s	25.6	0.0	0.0	6.9	63.6	63.6	0.0	17.9	0.0	11.7	15.3	0.0
Cycle Q Clear(g_c), s	25.6	0.0	0.0	6.9	63.6	63.6	0.0	17.9	0.0	11.7	15.3	0.0
Prop In Lane	1.00		0.03	1.00		0.30	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	1715	938	91	1297	677	0	548	170	256	773	614
V/C Ratio(X)	0.94	0.87	0.87	0.83	1.12	1.13	0.00	1.17	0.00	0.86	0.50	0.24
Avail Cap(c_a), veh/h	302	1715	938	195	1297	677	0	548	170	266	786	620
HCM Platoon Ratio	2.00	2.00	2.00	1.33	1.33	1.33	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	0.00	0.77	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	40.9	0.0	0.0	63.6	27.7	27.7	0.0	67.0	0.0	62.2	44.0	22.8
Incr Delay (d2), s/veh	6.2	0.6	1.2	0.8	54.7	62.5	0.0	90.7	0.0	23.2	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	0.2	0.3	2.9	34.6	37.6	0.0	11.7	0.0	5.0	6.3	5.7
LnGrp Delay(d),s/veh	47.1	0.6	1.2	64.5	82.4	90.3	0.0	157.7	0.0	85.4	44.6	23.0
LnGrp LOS	D	A	A	E	F	F		F		F	D	C
Approach Vol, veh/h		2601			2294			640			750	
Approach Delay, s/veh		5.9			84.5			157.7			52.4	
Approach LOS		A			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	89.6		41.4	33.8	69.0	18.4	23.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 18	69.6		36.9	24.3	* 64	* 14	17.9
Max Q Clear Time (g_c+I1), s	8.9	2.0		17.3	27.6	65.6	13.7	19.9
Green Ext Time (p_c), s	0.0	49.4		7.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	55.6
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	2497	30	108	2061	480	70	80	153	80	30	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	95	2628	20	114	2169	486	74	84	70	58	68	8
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	2662	827	132	2244	479	104	109	211	101	118	99
Arrive On Green	0.15	1.00	1.00	0.18	1.00	1.00	0.07	0.07	0.07	0.08	0.08	0.08
Sat Flow, veh/h	1494	4282	1330	1494	3533	754	1494	1569	1333	1345	1569	1307
Grp Volume(v), veh/h	95	2628	20	114	1732	923	74	84	70	58	68	8
Grp Sat Flow(s),veh/h/ln	1494	1427	1330	1494	1427	1432	1494	1569	1333	1345	1569	1307
Q Serve(g_s), s	8.7	0.0	0.0	10.4	0.0	88.9	6.8	7.4	6.5	5.8	5.9	0.8
Cycle Q Clear(g_c), s	8.7	0.0	0.0	10.4	0.0	88.9	6.8	7.4	6.5	5.8	5.9	0.8
Prop In Lane	1.00		1.00	1.00		0.53	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	2662	827	132	1814	910	104	109	211	101	118	99
V/C Ratio(X)	0.85	0.99	0.02	0.87	0.96	1.01	0.71	0.77	0.33	0.57	0.57	0.08
Avail Cap(c_a), veh/h	142	2662	827	217	1814	910	159	167	259	316	369	307
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.20	0.20	0.20	0.09	0.09	0.09	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.8	0.0	0.0	56.9	0.0	0.0	63.7	64.0	52.4	62.5	62.6	60.2
Incr Delay (d2), s/veh	6.8	5.3	0.0	1.6	1.7	12.8	8.6	10.9	0.9	5.0	4.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	1.3	0.0	4.3	0.4	3.2	3.1	3.5	2.5	2.3	2.7	0.3
LnGrp Delay(d),s/veh	65.6	5.3	0.0	58.4	1.7	12.8	72.3	74.9	53.3	67.5	66.9	60.6
LnGrp LOS	E	A	A	E	A	F	E	E	D	E	E	E
Approach Vol, veh/h		2743			2769			228			134	
Approach Delay, s/veh		7.4			7.8			67.4			66.8	
Approach LOS		A			A			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.0	92.4		15.7	15.1	94.3		14.9
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	12.4	2.0		7.9	10.7	90.9		9.4
Green Ext Time (p_c), s	0.1	49.4		0.5	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	143	2537	2643	250	20	37
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.90	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1490	4282	4206		2429	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1490	4282	4206		2429	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	151	2671	2782	263	21	39
RTOR Reduction (vph)	0	0	5	0	37	0
Lane Group Flow (vph)	151	2671	3040	0	23	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	18.5	113.3	90.1		5.5	
Effective Green, g (s)	18.5	113.3	90.1		5.5	
Actuated g/C Ratio	0.13	0.81	0.64		0.04	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	196	3465	2706		95	
v/s Ratio Prot	0.10	c0.62	c0.72		c0.01	
v/s Ratio Perm						
v/c Ratio	0.77	0.77	1.12		0.24	
Uniform Delay, d1	58.7	6.8	25.0		65.2	
Progression Factor	1.29	1.21	1.00		1.00	
Incremental Delay, d2	1.6	0.2	61.1		0.6	
Delay (s)	77.3	8.4	86.1		65.8	
Level of Service	E	A	F		E	
Approach Delay (s)		12.0	86.1		65.8	
Approach LOS		B	F		E	

Intersection Summary			
HCM 2000 Control Delay	50.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	94.1%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	850	41	31	1172	363	99	371	57	274	162	20
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	74	895	43	33	1234	382	104	391	60	288	171	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	188	2515	121	344	2573	800	227	454	203	357	417	177
Arrive On Green	0.60	0.60	0.60	0.60	0.60	0.60	0.15	0.15	0.15	0.13	0.13	0.00
Sat Flow, veh/h	312	4187	201	595	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	74	610	328	33	1234	382	104	391	60	288	171	0
Grp Sat Flow(s),veh/h/ln	312	1427	1533	595	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	24.5	15.2	15.2	4.2	22.6	22.5	8.9	17.9	5.6	14.6	7.0	0.0
Cycle Q Clear(g_c), s	47.1	15.2	15.2	19.4	22.6	22.5	8.9	17.9	5.6	14.6	7.0	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	188	1715	921	344	2573	800	227	454	203	357	417	177
V/C Ratio(X)	0.39	0.36	0.36	0.10	0.48	0.48	0.46	0.86	0.30	0.81	0.41	0.00
Avail Cap(c_a), veh/h	188	1715	921	344	2573	800	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.50	0.50	0.50	0.94	0.94	0.94	1.00	1.00	1.00	0.85	0.85	0.00
Uniform Delay (d), s/veh	28.9	14.2	14.2	19.1	15.7	15.6	54.1	57.9	52.7	59.0	55.7	0.0
Incr Delay (d2), s/veh	3.1	0.3	0.5	0.5	0.6	1.9	1.5	12.3	0.8	3.9	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	6.0	6.5	0.7	9.1	8.6	3.8	8.2	2.1	5.6	3.1	0.0
LnGrp Delay(d),s/veh	32.0	14.5	14.7	19.7	16.3	17.6	55.6	70.2	53.5	62.8	56.3	0.0
LnGrp LOS	C	B	B	B	B	B	E	E	D	E	E	
Approach Vol, veh/h		1012			1649			555			459	
Approach Delay, s/veh		15.8			16.6			65.7			60.4	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		89.9		23.7		89.9		26.4
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		24.6		16.6		49.1		19.9
Green Ext Time (p_c), s		28.6		2.0		11.0		1.4

Intersection Summary			
HCM 2010 Ctrl Delay			29.3
HCM 2010 LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	20	1110	1130	100	80	90
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	21	1168	1189	83	84	17
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	716	3673	1430	444	156	80
Arrive On Green	0.48	0.86	0.67	0.67	0.06	0.06
Sat Flow, veh/h	1494	4424	4424	1329	2608	1333
Grp Volume(v), veh/h	21	1168	1189	83	84	17
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1329	1304	1333
Q Serve(g_s), s	1.0	6.9	27.0	3.1	4.1	1.6
Cycle Q Clear(g_c), s	1.0	6.9	27.0	3.1	4.1	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	716	3673	1430	444	156	80
V/C Ratio(X)	0.03	0.32	0.83	0.19	0.54	0.21
Avail Cap(c_a), veh/h	716	3673	2049	636	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.90	0.90	0.66	0.66	0.85	0.85
Uniform Delay (d), s/veh	17.9	1.8	18.9	14.9	59.4	58.2
Incr Delay (d2), s/veh	0.0	0.2	3.9	0.6	1.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.8	10.9	1.2	1.5	0.6
LnGrp Delay(d),s/veh	17.9	2.0	22.8	15.5	60.5	58.7
LnGrp LOS	B	A	C	B	E	E
Approach Vol, veh/h		1189	1272		101	
Approach Delay, s/veh		2.3	22.3		60.2	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	68.1	49.2		12.7		117.3		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	15.1	* 62		37.1		82.2		
Max Q Clear Time (g_c+I1), s	3.0	29.0		6.1		8.9		
Green Ext Time (p_c), s	7.4	14.5		0.2		16.5		

Intersection Summary	
HCM 2010 Ctrl Delay	14.5
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Volume (veh/h)	20	75	596	1329	200	1606		
Number	7	14	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569		
Adj Flow Rate, veh/h	21	0	627	0	211	1691		
Adj No. of Lanes	2	1	2	1	1	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	74	38	1864	834	235	2505		
Arrive On Green	0.03	0.00	0.63	0.00	0.32	1.00		
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059		
Grp Volume(v), veh/h	21	0	627	0	211	1691		
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490		
Q Serve(g_s), s	0.7	0.0	8.5	0.0	11.5	0.0		
Cycle Q Clear(g_c), s	0.7	0.0	8.5	0.0	11.5	0.0		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	74	38	1864	834	235	2505		
V/C Ratio(X)	0.28	0.00	0.34	0.00	0.90	0.67		
Avail Cap(c_a), veh/h	842	426	1864	834	248	2505		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00		
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.49	0.49		
Uniform Delay (d), s/veh	40.5	0.0	7.5	0.0	28.5	0.0		
Incr Delay (d2), s/veh	2.1	0.0	0.0	0.0	17.3	0.7		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.3	0.0	3.5	0.0	5.8	0.3		
LnGrp Delay(d),s/veh	42.6	0.0	7.6	0.0	45.7	0.7		
LnGrp LOS	D		A		D	A		
Approach Vol, veh/h	21		627			1902		
Approach Delay, s/veh	42.6		7.6			5.7		
Approach LOS	D		A			A		
Timer	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	18.3	59.0		7.7		77.3		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	13.5	10.5		2.7		2.0		
Green Ext Time (p_c), s	0.0	16.7		0.0		39.8		

Intersection Summary		
HCM 2010 Ctrl Delay		6.5
HCM 2010 LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	181	143	130	130	53	128	1586	154	47	1191	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	21	191	52	137	137	19	135	1669	159	49	1254	16
Adj No. of Lanes	1	2	0	1	2	1	1	3	0	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	523	139	229	669	298	409	2428	231	60	1581	492
Arrive On Green	0.22	0.22	0.22	0.22	0.22	0.22	0.27	0.61	0.61	0.04	0.37	0.37
Sat Flow, veh/h	1223	2330	618	1131	2980	1330	1494	3978	378	1494	4282	1331
Grp Volume(v), veh/h	21	120	123	137	137	19	135	1197	631	49	1254	16
Grp Sat Flow(s),veh/h/ln	1223	1490	1458	1131	1490	1330	1494	1427	1501	1494	1427	1331
Q Serve(g_s), s	1.8	8.9	9.3	15.2	4.9	1.5	9.4	36.6	36.7	4.2	34.0	1.0
Cycle Q Clear(g_c), s	6.7	8.9	9.3	24.4	4.9	1.5	9.4	36.6	36.7	4.2	34.0	1.0
Prop In Lane	1.00		0.42	1.00		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	284	334	327	229	669	298	409	1742	916	60	1581	492
V/C Ratio(X)	0.07	0.36	0.37	0.60	0.20	0.06	0.33	0.69	0.69	0.82	0.79	0.03
Avail Cap(c_a), veh/h	362	429	419	300	857	383	409	1742	916	197	1950	606
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	0.09	0.09	0.09	0.95	0.95	0.95
Uniform Delay (d), s/veh	43.7	42.5	42.7	53.0	41.0	39.7	37.7	17.0	17.0	61.9	36.6	26.2
Incr Delay (d2), s/veh	0.1	0.7	0.7	2.3	0.1	0.1	0.0	0.2	0.4	9.5	4.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.6	3.7	3.8	4.9	2.0	0.5	3.9	14.3	15.2	1.9	13.9	0.4
LnGrp Delay(d),s/veh	43.8	43.2	43.4	55.4	41.1	39.8	37.7	17.2	17.4	71.4	40.6	26.3
LnGrp LOS	D	D	D	E	D	D	D	B	B	E	D	C
Approach Vol, veh/h		264			293			1963			1319	
Approach Delay, s/veh		43.3			47.7			18.7			41.5	
Approach LOS		D			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.1	85.1		34.8	41.4	53.8		34.8
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	17.1	59.2		37.4	17.1	* 59		37.4
Max Q Clear Time (g_c+I1), s	6.2	38.7		11.3	11.4	36.0		26.4
Green Ext Time (p_c), s	0.0	15.5		3.0	4.3	12.0		2.2

Intersection Summary	
HCM 2010 Ctrl Delay	30.4
HCM 2010 LOS	C

Notes
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	377	1366	485	450	938	249	431	1097	454	291	984	282
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	397	1438	273	474	987	224	454	1155	433	306	1036	260
Adj No. of Lanes	2	3	1	2	3	1	2	3	0	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1247	353	319	1135	528	393	1005	376	344	1321	573
Arrive On Green	0.12	0.26	0.26	0.12	0.26	0.26	0.15	0.33	0.33	0.13	0.31	0.31
Sat Flow, veh/h	2689	4706	1330	2608	4282	1330	2608	3069	1149	2608	4282	1331
Grp Volume(v), veh/h	397	1438	273	474	987	224	454	1074	514	306	1036	260
Grp Sat Flow(s),veh/h/ln	1345	1569	1330	1304	1427	1330	1304	1427	1363	1304	1427	1331
Q Serve(g_s), s	17.1	37.1	26.6	17.1	30.8	17.1	21.1	45.8	45.8	16.2	30.9	19.4
Cycle Q Clear(g_c), s	17.1	37.1	26.6	17.1	30.8	17.1	21.1	45.8	45.8	16.2	30.9	19.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.84	1.00		1.00
Lane Grp Cap(c), veh/h	328	1247	353	319	1135	528	393	935	446	344	1321	573
V/C Ratio(X)	1.21	1.15	0.77	1.49	0.87	0.42	1.15	1.15	1.15	0.89	0.78	0.45
Avail Cap(c_a), veh/h	328	1247	353	319	1135	528	393	935	446	393	1321	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.23	0.23	0.23	0.23	0.23	0.23	0.43	0.43	0.43	0.70	0.70	0.70
Uniform Delay (d), s/veh	61.4	51.4	47.6	61.5	49.1	30.6	59.5	47.1	47.1	59.8	44.1	28.2
Incr Delay (d2), s/veh	100.7	71.3	2.6	223.3	1.9	0.1	82.1	73.1	79.1	14.8	3.3	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.9	24.3	10.0	16.0	12.4	6.3	12.1	27.5	27.0	6.5	12.6	7.4
LnGrp Delay(d),s/veh	162.2	122.8	50.2	284.8	51.0	30.8	141.6	120.2	126.2	74.6	47.5	30.0
LnGrp LOS	F	F	D	F	D	C	F	F	F	E	D	C
Approach Vol, veh/h		2108			1685			2042			1602	
Approach Delay, s/veh		120.8			114.1			126.4			49.8	
Approach LOS		F			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.4	51.6	22.0	43.0	26.0	49.0	22.0	43.0
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	17.1	37.1	21.1	43.2	17.1	37.1
Max Q Clear Time (g_c+I1), s	18.2	47.8	19.1	39.1	23.1	32.9	19.1	32.8
Green Ext Time (p_c), s	0.3	0.0	0.0	0.0	0.0	9.8	0.0	4.1

Intersection Summary	
HCM 2010 Ctrl Delay	105.5
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	178	20	281	39	10	70	77	1570	38	30	1614	161
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	202	0	81	41	11	71	81	1653	33	32	1699	165
Adj No. of Lanes	2	0	1	1	1	0	1	3	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	246	0	157	115	14	91	98	2752	857	39	1799	805
Arrive On Green	0.09	0.00	0.09	0.08	0.08	0.08	0.07	0.64	0.64	0.03	0.60	0.60
Sat Flow, veh/h	2689	0	1333	1494	183	1178	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	202	0	81	41	0	82	81	1653	33	32	1699	165
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1494	0	1361	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	9.6	0.0	7.4	3.4	0.0	7.7	7.0	29.2	1.2	2.8	68.3	7.3
Cycle Q Clear(g_c), s	9.6	0.0	7.4	3.4	0.0	7.7	7.0	29.2	1.2	2.8	68.3	7.3
Prop In Lane	1.00		1.00	1.00		0.87	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	246	0	157	115	0	105	98	2752	857	39	1799	805
V/C Ratio(X)	0.82	0.00	0.52	0.36	0.00	0.78	0.83	0.60	0.04	0.81	0.94	0.21
Avail Cap(c_a), veh/h	393	0	230	402	0	366	172	2752	857	138	1799	805
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.72	0.72	0.72	0.16	0.16	0.16
Uniform Delay (d), s/veh	58.0	0.0	53.8	56.9	0.0	58.9	60.0	13.5	8.5	63.0	23.8	11.7
Incr Delay (d2), s/veh	3.4	0.0	1.0	1.4	0.0	9.0	4.8	0.7	0.1	2.4	2.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.7	0.0	2.8	1.4	0.0	3.2	3.0	11.7	0.4	1.2	28.5	2.7
LnGrp Delay(d),s/veh	61.4	0.0	54.8	58.3	0.0	68.0	64.8	14.2	8.6	65.4	26.2	11.7
LnGrp LOS	E		D	E		E	E	B	A	E	C	B
Approach Vol, veh/h		283			123			1767			1896	
Approach Delay, s/veh		59.5			64.7			16.4			25.6	
Approach LOS		E			E			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.4	89.7		15.0	13.5	84.6		16.9
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0
Max Q Clear Time (g_c+I1), s	4.8	31.2		9.7	9.0	70.3		11.6
Green Ext Time (p_c), s	0.0	11.5		0.4	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	25.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	224	10	62	10	0	10	21	1451	10	10	1849	75
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1667	1700	1700	1667	1700	1667	1667	1700	1667	1667	1700
Adj Flow Rate, veh/h	236	11	17	11	0	10	22	1527	11	11	1946	78
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	270	52	80	13	0	12	27	2561	18	18	2449	97
Arrive On Green	0.09	0.09	0.09	0.02	0.00	0.02	0.02	0.79	0.79	0.01	0.79	0.79
Sat Flow, veh/h	3079	591	914	786	0	715	1587	3223	23	1587	3105	124
Grp Volume(v), veh/h	236	0	28	21	0	0	22	750	788	11	986	1038
Grp Sat Flow(s),veh/h/ln	1540	0	1505	1501	0	0	1587	1583	1663	1587	1583	1645
Q Serve(g_s), s	15.9	0.0	3.6	2.9	0.0	0.0	2.9	38.8	38.9	1.4	73.3	75.9
Cycle Q Clear(g_c), s	15.9	0.0	3.6	2.9	0.0	0.0	2.9	38.8	38.9	1.4	73.3	75.9
Prop In Lane	1.00		0.61	0.52		0.48	1.00		0.01	1.00		0.08
Lane Grp Cap(c), veh/h	270	0	132	25	0	0	27	1258	1321	18	1249	1297
V/C Ratio(X)	0.87	0.00	0.21	0.83	0.00	0.00	0.81	0.60	0.60	0.61	0.79	0.80
Avail Cap(c_a), veh/h	592	0	290	177	0	0	132	1258	1321	94	1249	1297
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	94.6	0.0	89.0	102.9	0.0	0.0	102.8	8.4	8.4	103.4	12.4	12.7
Incr Delay (d2), s/veh	3.5	0.0	0.3	21.9	0.0	0.0	18.1	2.1	2.0	1.2	0.5	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.9	0.0	1.5	1.4	0.0	0.0	1.4	17.6	18.5	0.6	31.9	34.2
LnGrp Delay(d),s/veh	98.1	0.0	89.3	124.9	0.0	0.0	121.0	10.5	10.4	104.5	12.9	13.2
LnGrp LOS	F		F	F			F	B	B	F	B	B
Approach Vol, veh/h		264			21			1560			2035	
Approach Delay, s/veh		97.2			124.9			12.0			13.6	
Approach LOS		F			F			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.9	172.4		7.7	8.1	171.1		23.0
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	12.5	113.5		* 25	17.5	108.5		40.4
Max Q Clear Time (g_c+I1), s	3.4	40.9		4.9	4.9	77.9		17.9
Green Ext Time (p_c), s	0.0	70.6		0.0	0.0	30.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	19.2
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	394	1120	800	80
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1299
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1299
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	415	1179	842	84
RTOR Reduction (vph)	0	0	0	0	0	32
Lane Group Flow (vph)	0	0	415	1179	842	52
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			39.0	79.7	36.5	36.5
Effective Green, g (s)			39.0	79.7	36.5	36.5
Actuated g/C Ratio			0.42	0.85	0.39	0.39
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			622	2542	1164	507
v/s Ratio Prot			c0.28	0.40	c0.28	
v/s Ratio Perm						0.04
v/c Ratio			0.67	0.46	0.72	0.10
Uniform Delay, d1			22.0	1.7	24.2	18.1
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			2.1	0.2	2.4	0.1
Delay (s)			24.1	1.8	26.6	18.2
Level of Service			C	A	C	B
Approach Delay (s)	0.0			7.6	25.8	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	13.7
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	40	391	0	1494	780	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	42	412	0	1573	821	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.77	0.77	0.77			
vC, conflicting volume	1607	411	821			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1202	0	187			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	69	51	100			
cM capacity (veh/h)	137	840	1073			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	28	426	786	786	411	411
Volume Left	28	14	0	0	0	0
Volume Right	0	412	0	0	0	0
cSH	137	869	1700	1700	1700	1700
Volume to Capacity	0.20	0.49	0.46	0.46	0.24	0.24
Queue Length 95th (ft)	18	69	0	0	0	0
Control Delay (s)	37.9	14.0	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	15.5		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1627	350	1094	60	54	1237
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	1713	0	1152	0	57	1302
Adj No. of Lanes	2	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	786	402	1363	0	78	1690
Arrive On Green	0.30	0.00	0.15	0.00	0.05	0.57
Sat Flow, veh/h	2608	1333	3137	0	1494	3059
Grp Volume(v), veh/h	1713	0	1152	0	57	1302
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490
Q Serve(g_s), s	25.6	0.0	32.0	0.0	3.2	28.5
Cycle Q Clear(g_c), s	25.6	0.0	32.0	0.0	3.2	28.5
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	786	402	1363	0	78	1690
V/C Ratio(X)	2.18	0.00	0.85	0.00	0.73	0.77
Avail Cap(c_a), veh/h	786	402	1363	0	283	1690
HCM Platoon Ratio	1.00	1.00	0.33	0.33	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.51	0.00	1.00	1.00
Uniform Delay (d), s/veh	29.7	0.0	33.2	0.0	39.7	14.1
Incr Delay (d2), s/veh	535.4	0.0	3.5	0.0	4.8	3.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	67.6	0.0	13.9	0.0	1.4	12.4
LnGrp Delay(d),s/veh	565.1	0.0	36.7	0.0	44.5	17.6
LnGrp LOS	F		D		D	B
Approach Vol, veh/h	1713		1152			1359
Approach Delay, s/veh	565.1		36.7			18.7
Approach LOS	F		D			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.3	44.7		31.0		54.0		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	16.1	27.2		25.6		48.2		
Max Q Clear Time (g_c+I1), s	5.2	34.0		27.6		30.5		
Green Ext Time (p_c), s	0.0	0.0		0.0		16.8		

Intersection Summary			
HCM 2010 Ctrl Delay			245.2
HCM 2010 LOS			F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1731	380	0	1630	520	364	1084	30	641	1410	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	1822	391	0	1716	539	383	1141	31	675	1484	20
Adj No. of Lanes	0	3	0	0	2	1	1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1557	328	0	1309	816	265	1139	31	453	1157	16
Arrive On Green	0.00	0.44	0.44	0.00	0.88	0.88	0.35	0.53	0.53	0.17	0.27	0.27
Sat Flow, veh/h	0	3685	747	0	3059	1332	1494	4286	116	2608	4354	59
Grp Volume(v), veh/h	0	1461	752	0	1716	539	383	760	412	675	973	531
Grp Sat Flow(s),veh/h/ln	0	1427	1436	0	1490	1332	1494	1427	1548	1304	1427	1558
Q Serve(g_s), s	0.0	61.5	61.5	0.0	61.5	25.0	24.8	37.2	37.2	24.3	37.2	37.2
Cycle Q Clear(g_c), s	0.0	61.5	61.5	0.0	61.5	25.0	24.8	37.2	37.2	24.3	37.2	37.2
Prop In Lane	0.00		0.52	0.00		1.00	1.00		0.08	1.00		0.04
Lane Grp Cap(c), veh/h	0	1254	631	0	1309	816	265	759	411	453	759	414
V/C Ratio(X)	0.00	1.17	1.19	0.00	1.31	0.66	1.45	1.00	1.00	1.49	1.28	1.28
Avail Cap(c_a), veh/h	0	1254	631	0	1309	816	265	759	411	453	759	414
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.09	0.09	0.66	0.66	0.66	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	39.3	39.3	0.0	8.5	3.3	45.2	32.8	32.8	57.8	51.4	51.4
Incr Delay (d2), s/veh	0.0	75.2	88.0	0.0	140.3	0.4	214.8	26.9	36.5	232.4	137.2	144.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	37.3	39.8	0.0	48.1	7.8	25.9	17.2	19.7	23.4	29.1	32.6
LnGrp Delay(d),s/veh	0.0	114.5	127.2	0.0	148.8	3.7	260.0	59.7	69.4	290.2	188.6	195.9
LnGrp LOS		F	F		F	A	F	F	F	F	F	F
Approach Vol, veh/h		2213			2255			1555			2179	
Approach Delay, s/veh		118.8			114.1			111.6			221.9	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		67.0	30.0	43.0		67.0	30.0	43.0
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 62	* 25	37.2		* 62	* 24	37.2
Max Q Clear Time (g_c+I1), s		63.5	26.8	39.2		63.5	26.3	39.2
Green Ext Time (p_c), s		0.0	0.0	0.0		0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	143.5
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	200	2132	30	81	1770	190	0	682	176	341	803	370
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	211	2244	31	85	1863	191	0	718	0	359	845	357
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	230	2315	32	101	1738	177	0	486	151	378	871	594
Arrive On Green	0.31	1.00	1.00	0.13	0.88	0.88	0.00	0.04	0.00	0.14	0.29	0.29
Sat Flow, veh/h	1494	4353	60	1494	3949	403	0	4424	1333	2608	2980	1331
Grp Volume(v), veh/h	211	1471	804	85	1344	710	0	718	0	359	845	357
Grp Sat Flow(s),veh/h/ln	1494	1427	1558	1494	1427	1497	0	1427	1333	1304	1490	1331
Q Serve(g_s), s	19.1	0.0	0.0	7.8	61.6	61.6	0.0	15.9	0.0	19.1	39.2	6.8
Cycle Q Clear(g_c), s	19.1	0.0	0.0	7.8	61.6	61.6	0.0	15.9	0.0	19.1	39.2	6.8
Prop In Lane	1.00		0.04	1.00		0.27	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	230	1518	829	101	1256	659	0	486	151	378	871	594
V/C Ratio(X)	0.92	0.97	0.97	0.84	1.07	1.08	0.00	1.48	0.00	0.95	0.97	0.60
Avail Cap(c_a), veh/h	238	1518	829	153	1256	659	0	486	151	378	871	594
HCM Platoon Ratio	2.00	2.00	2.00	2.00	2.00	2.00	1.00	0.33	0.33	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.39	0.39	0.39	0.00	0.65	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	47.5	0.0	0.0	59.8	8.4	8.4	0.0	67.4	0.0	59.3	49.0	29.3
Incr Delay (d2), s/veh	5.3	2.8	4.8	6.9	38.5	46.3	0.0	221.5	0.0	33.2	23.5	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.2	0.6	1.1	3.4	28.3	31.2	0.0	16.3	0.0	8.6	18.9	15.9
LnGrp Delay(d),s/veh	52.8	2.8	4.8	66.7	46.9	54.7	0.0	288.9	0.0	92.5	72.4	31.0
LnGrp LOS	D	A	A	E	F	F		F		F	E	C
Approach Vol, veh/h		2486			2139			718			1561	
Approach Delay, s/veh		7.7			50.2			288.9			67.6	
Approach LOS		A			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.1	79.9		46.0	27.0	67.0	25.0	21.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 14	69.6		40.9	22.3	* 62	* 20	15.9
Max Q Clear Time (g_c+I1), s	9.8	2.0		41.2	21.1	63.6	21.1	17.9
Green Ext Time (p_c), s	0.0	47.9		0.0	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	63.6
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	2478	81	250	1931	50	50	10	183	450	70	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	32	2608	45	263	2033	52	53	11	146	527	0	26
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	46	1670	518	217	2166	55	159	167	335	575	0	283
Arrive On Green	0.04	0.52	0.52	0.29	1.00	1.00	0.11	0.11	0.11	0.21	0.00	0.21
Sat Flow, veh/h	1494	4282	1328	1494	4294	110	1494	1569	1333	2689	0	1324
Grp Volume(v), veh/h	32	2608	45	263	1351	734	53	11	146	527	0	26
Grp Sat Flow(s),veh/h/ln	1494	1427	1328	1494	1427	1549	1494	1569	1333	1345	0	1324
Q Serve(g_s), s	3.0	54.6	2.4	20.3	0.0	0.0	4.6	0.9	12.9	26.8	0.0	2.2
Cycle Q Clear(g_c), s	3.0	54.6	2.4	20.3	0.0	0.0	4.6	0.9	12.9	26.8	0.0	2.2
Prop In Lane	1.00		1.00	1.00		0.07	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	46	1670	518	217	1440	781	159	167	335	575	0	283
V/C Ratio(X)	0.70	1.56	0.09	1.21	0.94	0.94	0.33	0.07	0.44	0.92	0.00	0.09
Avail Cap(c_a), veh/h	142	1670	518	217	1440	781	159	167	335	632	0	311
HCM Platoon Ratio	1.33	1.33	1.33	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.10	0.10	0.10	0.48	0.48	0.48	0.95	0.95	0.95	1.00	0.00	1.00
Uniform Delay (d), s/veh	66.5	33.7	21.1	49.7	0.0	0.0	58.0	56.3	44.1	53.8	0.0	44.1
Incr Delay (d2), s/veh	0.9	253.1	0.0	115.3	7.2	12.0	1.2	0.2	0.9	17.4	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	60.6	0.9	15.2	1.4	2.6	2.0	0.4	4.8	11.3	0.0	0.8
LnGrp Delay(d),s/veh	67.4	286.8	21.2	165.0	7.2	12.0	59.1	56.5	44.9	71.2	0.0	44.3
LnGrp LOS	E	F	C	F	A	B	E	E	D	E		D
Approach Vol, veh/h		2685			2348			210			553	
Approach Delay, s/veh		279.8			26.4			49.1			70.0	
Approach LOS		F			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	25.0	60.0		35.0	9.0	76.0		20.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	22.3	56.6		28.8	5.0	2.0		14.9
Green Ext Time (p_c), s	0.0	0.0		0.9	0.0	56.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	148.7
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	73	3018	2134	40	150	97
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1490	4282	4266		2502	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1490	4282	4266		2502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	77	3177	2246	42	158	102
RTOR Reduction (vph)	0	0	1	0	87	0
Lane Group Flow (vph)	77	3177	2287	0	173	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	11.7	104.9	88.5		13.9	
Effective Green, g (s)	11.7	104.9	88.5		13.9	
Actuated g/C Ratio	0.08	0.75	0.63		0.10	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	124	3208	2696		248	
v/s Ratio Prot	0.05	c0.74	0.54		c0.07	
v/s Ratio Perm						
v/c Ratio	0.62	0.99	0.85		0.70	
Uniform Delay, d1	62.0	17.1	20.4		61.0	
Progression Factor	1.06	2.17	1.00		1.00	
Incremental Delay, d2	0.7	3.0	3.6		6.9	
Delay (s)	66.7	40.0	24.0		67.9	
Level of Service	E	D	C		E	
Approach Delay (s)		40.7	24.0		67.9	
Approach LOS		D	C		E	

Intersection Summary			
HCM 2000 Control Delay	35.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	1634	76	106	1395	441	62	296	82	560	294	21
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	95	1720	77	112	1468	317	65	312	25	589	309	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	120	2158	97	97	2199	684	189	378	169	660	770	327
Arrive On Green	0.51	0.51	0.51	0.51	0.51	0.51	0.13	0.13	0.13	0.25	0.25	0.00
Sat Flow, veh/h	265	4202	188	261	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	95	1168	629	112	1468	317	65	312	25	589	309	0
Grp Sat Flow(s),veh/h/ln	265	1427	1535	261	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	36.4	47.2	47.3	24.6	35.5	21.3	5.6	14.3	2.3	29.6	11.5	0.0
Cycle Q Clear(g_c), s	71.9	47.2	47.3	71.9	35.5	21.3	5.6	14.3	2.3	29.6	11.5	0.0
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	120	1466	788	97	2199	684	189	378	169	660	770	327
V/C Ratio(X)	0.79	0.80	0.80	1.15	0.67	0.46	0.34	0.83	0.15	0.89	0.40	0.00
Avail Cap(c_a), veh/h	120	1466	788	97	2199	684	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.86	0.86	0.86	1.00	1.00	1.00	0.22	0.22	0.00
Uniform Delay (d), s/veh	56.9	28.0	28.1	64.2	25.2	21.7	55.8	59.6	54.4	51.0	44.2	0.0
Incr Delay (d2), s/veh	4.9	0.4	0.8	130.2	1.4	1.9	1.1	7.5	0.4	3.3	0.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	18.6	20.1	7.3	14.3	8.2	2.4	6.3	0.9	11.3	5.0	0.0
LnGrp Delay(d),s/veh	61.7	28.5	28.9	194.4	26.6	23.7	56.9	67.1	54.8	54.3	44.3	0.0
LnGrp LOS	E	C	C	F	C	C	E	E	D	D	D	
Approach Vol, veh/h		1892			1897			402			898	
Approach Delay, s/veh		30.3			36.0			64.7			50.9	
Approach LOS		C			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		77.7		39.5		77.7		22.8
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		73.9		31.6		73.9		16.3
Green Ext Time (p_c), s		0.0		2.6		0.0		1.5

Intersection Summary		
HCM 2010 Ctrl Delay		38.8
HCM 2010 LOS		D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	60	1660	1490	50	140	100
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	63	1747	1568	41	147	16
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	596	3618	1717	533	190	97
Arrive On Green	0.40	0.84	0.80	0.80	0.07	0.07
Sat Flow, veh/h	1494	4424	4424	1330	2608	1333
Grp Volume(v), veh/h	63	1747	1568	41	147	16
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1330	1304	1333
Q Serve(g_s), s	3.4	13.9	35.2	0.8	7.2	1.5
Cycle Q Clear(g_c), s	3.4	13.9	35.2	0.8	7.2	1.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	596	3618	1717	533	190	97
V/C Ratio(X)	0.11	0.48	0.91	0.08	0.77	0.16
Avail Cap(c_a), veh/h	596	3618	1950	606	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.36	0.36	0.09	0.09	0.55	0.55
Uniform Delay (d), s/veh	24.5	2.6	11.2	7.8	59.2	56.5
Incr Delay (d2), s/veh	0.0	0.2	1.0	0.0	1.7	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	5.4	13.2	0.3	2.6	0.5
LnGrp Delay(d),s/veh	24.5	2.8	12.2	7.8	60.9	56.7
LnGrp LOS	C	A	B	A	E	E
Approach Vol, veh/h		1810	1609		163	
Approach Delay, s/veh		3.6	12.0		60.5	
Approach LOS		A	B		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	57.7	57.9		14.4		115.6		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	18.1	* 59		37.1		82.2		
Max Q Clear Time (g_c+I1), s	5.4	37.2		9.2		15.9		
Green Ext Time (p_c), s	10.3	14.9		0.3		32.4		

Intersection Summary		
HCM 2010 Ctrl Delay		10.0
HCM 2010 LOS		A

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations								
Volume (veh/h)	30	82	1072	1405	240	2614		
Number	7	14	2	12	1	6		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569		
Adj Flow Rate, veh/h	32	0	1128	0	253	2752		
Adj No. of Lanes	2	1	2	1	1	2		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	2	0	2	2	2	2		
Cap, veh/h	101	51	1810	810	248	2476		
Arrive On Green	0.04	0.00	0.61	0.00	0.33	1.00		
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059		
Grp Volume(v), veh/h	32	0	1128	0	253	2752		
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490		
Q Serve(g_s), s	1.0	0.0	20.3	0.0	14.1	0.0		
Cycle Q Clear(g_c), s	1.0	0.0	20.3	0.0	14.1	0.0		
Prop In Lane	1.00	1.00		1.00	1.00			
Lane Grp Cap(c), veh/h	101	51	1810	810	248	2476		
V/C Ratio(X)	0.32	0.00	0.62	0.00	1.02	1.11		
Avail Cap(c_a), veh/h	842	426	1810	810	248	2476		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00		
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.09	0.09		
Uniform Delay (d), s/veh	39.9	0.0	10.5	0.0	28.4	0.0		
Incr Delay (d2), s/veh	1.8	0.0	0.1	0.0	22.7	50.8		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.1	0.0		
%ile BackOfQ(50%),veh/ln	0.4	0.0	8.3	0.0	7.3	17.5		
LnGrp Delay(d),s/veh	41.6	0.0	10.7	0.0	51.2	50.8		
LnGrp LOS	D		B		F	F		
Approach Vol, veh/h	32		1128			3005		
Approach Delay, s/veh	41.6		10.7			50.8		
Approach LOS	D		B			D		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	19.0	57.4		8.6		76.4		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	16.1	22.3		3.0		2.0		
Green Ext Time (p_c), s	0.0	5.9		0.1		45.1		
Intersection Summary								
HCM 2010 Ctrl Delay			39.9					
HCM 2010 LOS			D					

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	29	199	244	360	429	82	254	1833	225	134	2173	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	31	209	153	379	452	32	267	1929	229	141	2287	26
Adj No. of Lanes	1	2	0	1	2	1	1	3	0	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	209	496	346	248	880	393	327	1955	230	162	1654	514
Arrive On Green	0.30	0.30	0.30	0.30	0.30	0.30	0.22	0.50	0.50	0.11	0.39	0.39
Sat Flow, veh/h	907	1678	1171	1015	2980	1331	1494	3885	457	1494	4282	1331
Grp Volume(v), veh/h	31	184	178	379	452	32	267	1413	745	141	2287	26
Grp Sat Flow(s),veh/h/ln	907	1490	1359	1015	1490	1331	1494	1427	1487	1494	1427	1331
Q Serve(g_s), s	3.8	12.9	13.8	24.6	16.4	2.3	22.1	63.3	64.8	12.1	50.2	1.6
Cycle Q Clear(g_c), s	20.2	12.9	13.8	38.4	16.4	2.3	22.1	63.3	64.8	12.1	50.2	1.6
Prop In Lane	1.00		0.86	1.00		1.00	1.00		0.31	1.00		1.00
Lane Grp Cap(c), veh/h	209	440	401	248	880	393	327	1437	748	162	1654	514
V/C Ratio(X)	0.15	0.42	0.44	1.53	0.51	0.08	0.82	0.98	1.00	0.87	1.38	0.05
Avail Cap(c_a), veh/h	209	440	401	248	880	393	327	1437	748	288	1654	514
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.49	0.49	0.49	0.09	0.09	0.09	0.86	0.86	0.86
Uniform Delay (d), s/veh	46.4	36.8	37.1	55.4	38.0	33.1	48.3	31.8	32.1	57.0	39.9	25.0
Incr Delay (d2), s/veh	0.3	0.6	0.8	248.6	0.3	0.0	1.4	4.3	8.9	4.7	175.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.0	5.4	5.3	26.0	6.7	0.8	9.3	25.6	28.3	5.2	46.6	0.6
LnGrp Delay(d),s/veh	46.8	37.5	37.9	304.1	38.3	33.1	49.8	36.1	41.0	61.7	215.5	25.1
LnGrp LOS	D	D	D	F	D	C	D	D	D	E	F	C
Approach Vol, veh/h		393			863			2425			2454	
Approach Delay, s/veh		38.4			154.8			39.1			204.7	
Approach LOS		D			F			D			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	19.0	71.2		44.0	34.2	56.0		44.0
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	25.1	50.2		38.4	25.1	* 50		38.4
Max Q Clear Time (g_c+I1), s	14.1	66.8		22.2	24.1	52.2		40.4
Green Ext Time (p_c), s	0.1	0.0		6.8	0.1	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	121.6
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	560	1527	484	761	1448	478	509	1290	577	414	1502	646
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	589	1607	290	801	1524	465	536	1358	559	436	1581	643
Adj No. of Lanes	2	3	1	2	3	1	2	3	0	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	328	1247	353	319	1135	553	393	923	375	393	1321	573
Arrive On Green	0.12	0.26	0.26	0.12	0.26	0.26	0.15	0.31	0.31	0.15	0.31	0.31
Sat Flow, veh/h	2689	4706	1330	2608	4282	1330	2608	2991	1215	2608	4282	1331
Grp Volume(v), veh/h	589	1607	290	801	1524	465	536	1295	622	436	1581	643
Grp Sat Flow(s),veh/h/ln	1345	1569	1330	1304	1427	1330	1304	1427	1351	1304	1427	1331
Q Serve(g_s), s	17.1	37.1	28.7	17.1	37.1	37.1	21.1	43.2	43.2	21.1	43.2	43.2
Cycle Q Clear(g_c), s	17.1	37.1	28.7	17.1	37.1	37.1	21.1	43.2	43.2	21.1	43.2	43.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		0.90	1.00		1.00
Lane Grp Cap(c), veh/h	328	1247	353	319	1135	553	393	881	417	393	1321	573
V/C Ratio(X)	1.79	1.29	0.82	2.51	1.34	0.84	1.36	1.47	1.49	1.11	1.20	1.12
Avail Cap(c_a), veh/h	328	1247	353	319	1135	553	393	881	417	393	1321	573
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	0.25	0.25	0.25	0.09	0.09	0.09
Uniform Delay (d), s/veh	61.4	51.4	48.4	61.5	51.5	36.7	59.5	48.4	48.4	59.5	48.4	39.9
Incr Delay (d2), s/veh	358.1	130.5	1.5	682.2	154.9	1.2	167.7	213.3	224.0	53.0	89.1	57.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.7	31.1	10.7	36.3	30.9	16.3	16.7	43.1	42.0	10.5	27.9	31.2
LnGrp Delay(d),s/veh	419.5	181.9	49.9	743.7	206.3	37.9	227.1	261.7	272.4	112.4	137.5	96.9
LnGrp LOS	F	F	D	F	F	D	F	F	F	F	F	F
Approach Vol, veh/h		2486			2790			2453			2660	
Approach Delay, s/veh		222.8			332.5			256.8			123.6	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	49.0	22.0	43.0	26.0	49.0	22.0	43.0
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	17.1	37.1	21.1	43.2	17.1	37.1
Max Q Clear Time (g_c+I1), s	23.1	45.2	19.1	39.1	23.1	45.2	19.1	39.1
Green Ext Time (p_c), s	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	234.9
HCM 2010 LOS	F

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	285	20	353	108	40	64	184	1786	75	77	1714	319
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	315	0	123	114	42	64	194	1880	65	81	1804	255
Adj No. of Lanes	2	0	1	1	1	0	1	3	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	356	0	263	143	54	82	172	2332	726	98	1474	659
Arrive On Green	0.13	0.00	0.13	0.10	0.10	0.10	0.12	0.54	0.54	0.07	0.49	0.49
Sat Flow, veh/h	2689	0	1333	1494	562	856	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	315	0	123	114	0	106	194	1880	65	81	1804	255
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1494	0	1418	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	15.0	0.0	10.6	9.7	0.0	9.5	15.0	46.3	3.0	7.0	64.3	15.5
Cycle Q Clear(g_c), s	15.0	0.0	10.6	9.7	0.0	9.5	15.0	46.3	3.0	7.0	64.3	15.5
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	356	0	263	143	0	135	172	2332	726	98	1474	659
V/C Ratio(X)	0.89	0.00	0.47	0.80	0.00	0.78	1.13	0.81	0.09	0.83	1.22	0.39
Avail Cap(c_a), veh/h	393	0	282	402	0	382	172	2332	726	138	1474	659
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.33	0.33	0.33	0.09	0.09	0.09
Uniform Delay (d), s/veh	55.4	0.0	46.1	57.6	0.0	57.5	57.5	24.0	14.2	60.0	32.9	20.5
Incr Delay (d2), s/veh	18.4	0.0	0.5	7.4	0.0	7.2	78.4	1.0	0.1	1.9	101.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.5	0.0	3.9	4.3	0.0	4.0	9.9	18.3	1.1	2.9	47.2	5.8
LnGrp Delay(d),s/veh	73.8	0.0	46.6	65.0	0.0	64.6	135.9	25.1	14.3	61.9	134.2	20.7
LnGrp LOS	E		D	E		E	F	C	B	E	F	C
Approach Vol, veh/h		438			220			2139			2140	
Approach Delay, s/veh		66.2			64.8			34.8			117.9	
Approach LOS		E			E			C			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.5	76.9		17.4	20.0	70.4		22.2
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0
Max Q Clear Time (g_c+I1), s	9.0	48.3		11.7	17.0	66.3		17.0
Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	0.0		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	74.9
HCM 2010 LOS	E

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	188	0	52	10	0	0	74	1867	0	10	2012	152
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1600	1600	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	198	0	12	11	0	0	78	1965	0	11	2118	158
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	244	0	125	19	0	0	95	2178	0	19	1914	141
Arrive On Green	0.09	0.00	0.09	0.01	0.00	0.00	0.06	0.73	0.00	0.01	0.68	0.68
Sat Flow, veh/h	2608	0	1333	1494	0	0	1494	3059	0	1494	2815	207
Grp Volume(v), veh/h	198	0	12	11	0	0	78	1965	0	11	1109	1167
Grp Sat Flow(s),veh/h/ln	1304	0	1333	1494	0	0	1494	1490	0	1494	1490	1532
Q Serve(g_s), s	9.3	0.0	1.0	0.9	0.0	0.0	6.4	65.1	0.0	0.9	85.0	85.0
Cycle Q Clear(g_c), s	9.3	0.0	1.0	0.9	0.0	0.0	6.4	65.1	0.0	0.9	85.0	85.0
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.14
Lane Grp Cap(c), veh/h	244	0	125	19	0	0	95	2178	0	19	1014	1042
V/C Ratio(X)	0.81	0.00	0.10	0.58	0.00	0.00	0.82	0.90	0.00	0.58	1.09	1.12
Avail Cap(c_a), veh/h	634	0	324	296	0	0	185	2178	0	125	1014	1042
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	55.6	0.0	51.8	61.4	0.0	0.0	57.8	13.3	0.0	61.4	20.0	20.0
Incr Delay (d2), s/veh	2.5	0.0	0.1	10.0	0.0	0.0	6.6	6.6	0.0	0.9	44.1	55.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.4	0.0	0.4	0.4	0.0	0.0	2.8	28.2	0.0	0.4	46.8	51.4
LnGrp Delay(d),s/veh	58.1	0.0	52.0	71.4	0.0	0.0	64.4	19.9	0.0	62.3	64.1	75.5
LnGrp LOS	E		D	E			E	B		E	F	F
Approach Vol, veh/h		210			11			2043			2287	
Approach Delay, s/veh		57.7			71.4			21.6			69.9	
Approach LOS		E			E			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.1	96.9		5.8	12.4	90.5		16.3
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	10.5	40.5		* 25	15.5	35.5		30.4
Max Q Clear Time (g_c+I1), s	2.9	67.1		2.9	8.4	87.0		11.3
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	47.7
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX C: MITIGATED LOS REPORTS

TRAFFIX WITH MITIGATION REPORTS

Existing Plus Project PM Conditions

Long Beach SEADIP

Summary Scenario Comparison Report (With Average Critical Delay)
Future Volume Alternative

Intersection		Ex PP AM				Ex PP PM				CY PP AM						CY PP PM			
		LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)	LOS	Avg Del (sec)	Crit V/C	Crit V/C Change	Avg Crit Del (sec)	Avg Crit Del Change	LOS	Avg Del (sec)	Crit V/C	Avg Crit Del (sec)
#4	Ximeno & 7th	E	29.6	0.903	31.6	E	32.6	0.951	35.9	E	46.2	0.997	+ 0.046	49.3	+ 13.4	F	57.0	1.062	71.7
#13	Studebaker & Loynes	B	9.8	0.683	10.3	D	11.7	0.809	16.4	C	10.8	0.733	- 0.077	11.1	- 5.3	E	16.0	0.914	22.3
#14	Naples & 2nd	B	9.5	0.662	8.4	C	11.0	0.781	10.0	C	11.2	0.728	- 0.053	10.1	+ 0.1	D	14.4	0.866	13.6
#15	Marina & 2nd	B	13.8	0.656	16.9	D	22.3	0.853	29.5	C	15.2	0.717	- 0.136	19.8	- 9.7	E	32.1	0.980	44.0
#17	Shopkeeper & 2nd	B	11.7	0.693	13.7	D	20.0	0.878	25.2	B	13.7	0.652	- 0.227	15.5	- 9.8	D	22.8	0.888	20.8
#18	Studebaker & 2nd	C	14.7	0.738	22.5	D	21.1	0.880	28.3	C	14.9	0.715	- 0.165	21.9	- 6.4	D	20.3	0.890	27.7
#19	Seal Beach & 2nd/Westminster	A	21.8	0.590	23.8	E	31.1	0.906	35.6	B	22.1	0.616	- 0.290	23.2	- 12.4	D	28.0	0.865	32.4
#20	PCH & Studebaker	D	19.2	0.860	25.9	E	28.4	0.953	39.2	E	23.5	0.933	- 0.019	38.6	- 0.7	F	49.9	1.068	82.1

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #4: Ximeno & 7th

Scenario #1: Ex PP AM

North approach: Signal=Permit/Rights=Include

Initial Vol:	156		135		68***
Lanes:	1	0	1	0	1

West approach: Signal=Permit, Rights=Include

Initial Vol:	Lanes:
66***	1
	0
1414	1
	1
7	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.903
Avg Crit Del (sec/veh):	31.6
Avg Delay (sec/veh):	29.6
LOS:	E

East approach: Signal=Permit, Rights=Include

Lanes:	Initial Vol:
0	50
1	
1	1312***
0	
1	43

South approach: Signal=Permit/Rights=Include

Lanes:	1	0	0	1	0
Initial Vol:	23		282***		123

Scenario #3: CY PP AM

North approach: Signal=Permit/Rights=Include

Initial Vol:	180		150		80***
Lanes:	1	0	1	0	1

West approach: Signal=Permit, Rights=Include

Initial Vol:	Lanes:
80***	1
	0
1569	1
	1
10	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.997
Avg Crit Del (sec/veh):	49.3
Avg Delay (sec/veh):	46.2
LOS:	E

East approach: Signal=Permit, Rights=Include

Lanes:	Initial Vol:
0	60
1	
1	1442***
0	
1	50

South approach: Signal=Permit/Rights=Include

Lanes:	1	0	0	1	0
Initial Vol:	30		320***		140

Change

Crit V/C:	+ 0.046
Avg Crit Del:	+ 13.4
Avg Del:	+ 13.6

Scenario #2: Ex PP PM

North approach: Signal=Permit/Rights=Include

Initial Vol:	95		369		48***
Lanes:	1	0	1	0	1

West approach: Signal=Permit, Rights=Include

Initial Vol:	Lanes:
70	1
	0
1543***	1
	1
26	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.951
Avg Crit Del (sec/veh):	35.9
Avg Delay (sec/veh):	32.6
LOS:	E

East approach: Signal=Permit, Rights=Include

Lanes:	Initial Vol:
0	35
1	
1	1398
0	
1	93***

South approach: Signal=Permit/Rights=Include

Lanes:	1	0	0	1	0
Initial Vol:	24		284***		88

Change

Crit V/C:	+ 0.048
Avg Crit Del:	+ 4.3
Avg Del:	+ 3.0

Scenario #4: CY PP PM

North approach: Signal=Permit/Rights=Include

Initial Vol:	110		410		60***
Lanes:	1	0	1	0	1

West approach: Signal=Permit, Rights=Include

Initial Vol:	Lanes:
80	1
	0
1740***	1
	1
30	0

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	1.062
Avg Crit Del (sec/veh):	71.7
Avg Delay (sec/veh):	57.0
LOS:	F

East approach: Signal=Permit, Rights=Include

Lanes:	Initial Vol:
0	40
1	
1	1574
0	
1	110***

South approach: Signal=Permit/Rights=Include

Lanes:	1	0	0	1	0
Initial Vol:	30		320***		100

Change

Crit V/C:	+ 0.065
Avg Crit Del:	+ 22.4
Avg Del:	+ 10.7

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #13: Studebaker & Loynes

Scenario #1: Ex PP AM

Signal=Protect/Rights=Include
Initial Vol: 218 1236 0***
Lanes: 1 0 2 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
299***	2		Cycle Time (sec):	100		0	0
	0		Loss Time (sec):	15		0	
0	0		Critical V/C:	0.683		0	0
	0		Avg Crit Del (sec/veh):	10.3		0	
68	2		Avg Delay (sec/veh):	9.8		0	0
			LOS:	B			

Lanes: 1 0 2 0 0
Initial Vol: 47 1428*** 0
Signal=Protect/Rights=Include

Scenario #2: Ex PP PM

Signal=Protect/Rights=Include
Initial Vol: 584 1633*** 0
Lanes: 1 0 2 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
285***	2		Cycle Time (sec):	100		0	0
	0		Loss Time (sec):	15		0	
0	0		Critical V/C:	0.809		0	0
	0		Avg Crit Del (sec/veh):	16.4		0	
77	2		Avg Delay (sec/veh):	11.7		0	0
			LOS:	D			

Lanes: 1 0 2 0 0
Initial Vol: 105*** 1844 0
Signal=Protect/Rights=Include

Change
Crit V/C: + 0.126
Avg Crit Del: + 6.1
Avg Del: + 2.0

Scenario #3: CY PP AM

Signal=Protect/Rights=Include
Initial Vol: 242 1377 0***
Lanes: 1 0 2 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
329***	2		Cycle Time (sec):	100		0	0
	0		Loss Time (sec):	15		0	
0	0		Critical V/C:	0.733		0	0
	0		Avg Crit Del (sec/veh):	11.1		0	
78	2		Avg Delay (sec/veh):	10.8		0	0
			LOS:	C			

Lanes: 1 0 2 0 0
Initial Vol: 60 1557*** 0
Signal=Protect/Rights=Include

Change
Crit V/C: - 0.077
Avg Crit Del: - 5.3
Avg Del: - 0.9

Scenario #4: CY PP PM

Signal=Protect/Rights=Include
Initial Vol: 642 1906*** 0
Lanes: 1 0 2 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Include			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
320***	2		Cycle Time (sec):	100		0	0
	0		Loss Time (sec):	15		0	
0	0		Critical V/C:	0.914		0	0
	0		Avg Crit Del (sec/veh):	22.3		0	
93	2		Avg Delay (sec/veh):	16.0		0	0
			LOS:	E			

Lanes: 1 0 2 0 0
Initial Vol: 120*** 2131 0
Signal=Protect/Rights=Include

Change
Crit V/C: + 0.181
Avg Crit Del: + 11.2
Avg Del: + 5.2

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #14: Naples & 2nd

Scenario #1: Ex PP AM

Signal=Split/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 0 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Ignore			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
0	0					0	0
			Loss Time (sec):	15			
	0					0	
1395***	2		Critical V/C:	0.662		0	0
	0		Avg Crit Del (sec/veh):	8.4		0	
79	1		Avg Delay (sec/veh):	9.5		1	83***
			LOS:	B			

Lanes: 1 0 0 0 1
Initial Vol: 38*** 0 75
Signal=Split/Rights=Overlap

Scenario #2: Ex PP PM

Signal=Split/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 0 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Ignore			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
0	0					0	0
			Loss Time (sec):	15			
	0					0	
1750***	2		Critical V/C:	0.781		0	-8
	0		Avg Crit Del (sec/veh):	10.0		0	
59	1		Avg Delay (sec/veh):	11.0		1	96***
			LOS:	C			

Lanes: 1 0 0 0 1
Initial Vol: 38*** 0 81
Signal=Split/Rights=Overlap

Change
Crit V/C: + 0.119
Avg Crit Del: + 1.7
Avg Del: + 1.5

Scenario #3: CY PP AM

Signal=Split/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 0 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Ignore			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
0	0					0	0
			Loss Time (sec):	15			
	0					0	
1549***	2		Critical V/C:	0.728		0	-1
	0		Avg Crit Del (sec/veh):	10.1		0	
90	1		Avg Delay (sec/veh):	11.2		1	100***
			LOS:	C			

Lanes: 1 0 0 0 1
Initial Vol: 50*** 0 90
Signal=Split/Rights=Overlap

Change
Crit V/C: - 0.053
Avg Crit Del: + 0.1
Avg Del: + 0.2

Scenario #4: CY PP PM

Signal=Split/Rights=Include
Initial Vol: 0 0 0
Lanes: 0 0 0 0 0

Initial Vol:	Lanes:	Signal=Split Rights=Ignore			Signal=Split Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
0	0					0	0
			Loss Time (sec):	15			
	0					0	
1970***	2		Critical V/C:	0.866		0	-7
	0		Avg Crit Del (sec/veh):	13.6		0	
70	1		Avg Delay (sec/veh):	14.4		1	110***
			LOS:	D			

Lanes: 1 0 0 0 1
Initial Vol: 50*** 0 90
Signal=Split/Rights=Overlap

Change
Crit V/C: + 0.138
Avg Crit Del: + 3.4
Avg Del: + 3.2

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #15: Marina & 2nd

Scenario #1: Ex PP AM

Signal=Split/Rights=Overlap

Initial Vol:	56		13		142***
Lanes:	1	0	0	1	1

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
32	1					0	45
			Loss Time (sec):	18			
	0					1	
1530***	3		Critical V/C:	0.656		2	1382
	0		Avg Crit Del (sec/veh):	16.9		0	
367	1		Avg Delay (sec/veh):	13.8		1	80***
			LOS:	B			

Lanes:	1	1	1	0	1
Initial Vol:	225***		7		204

Signal=Split/Rights=Ignore

Scenario #2: Ex PP PM

Signal=Split/Rights=Overlap

Initial Vol:	92		27***		122
Lanes:	1	0	0	1	1

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
71	1					0	70
			Loss Time (sec):	18			
	0					1	
1738***	3		Critical V/C:	0.853		2	1922
	0		Avg Crit Del (sec/veh):	29.5		0	
503	1		Avg Delay (sec/veh):	22.3		1	234***
			LOS:	D			

Lanes:	1	1	1	0	1
Initial Vol:	426***		42		191

Signal=Split/Rights=Ignore

Change

Crit V/C:	+ 0.197
Avg Crit Del:	+ 12.7
Avg Del:	+ 8.5

Scenario #3: CY PP AM

Signal=Split/Rights=Overlap

Initial Vol:	66		20***		156
Lanes:	1	0	0	1	1

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
42	1					0	55
			Loss Time (sec):	18			
	0					1	
1700***	3		Critical V/C:	0.717		2	1523
	0		Avg Crit Del (sec/veh):	19.8		0	
417	1		Avg Delay (sec/veh):	15.2		1	99***
			LOS:	C			

Lanes:	1	1	1	0	1
Initial Vol:	253***		10		227

Signal=Split/Rights=Ignore

Change

Crit V/C:	- 0.136
Avg Crit Del:	- 9.7
Avg Del:	- 7.1

Scenario #4: CY PP PM

Signal=Split/Rights=Overlap

Initial Vol:	104		30		135***
Lanes:	1	0	0	1	1

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Include	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
			Cycle Time (sec):	100			
79	1					0	79
			Loss Time (sec):	18			
	0					1	
1932***	3		Critical V/C:	0.980		2	2133
	0		Avg Crit Del (sec/veh):	44.0		0	
579	1		Avg Delay (sec/veh):	32.1		1	332***
			LOS:	E			

Lanes:	1	1	1	0	1
Initial Vol:	497***		50		324

Signal=Split/Rights=Ignore

Change

Crit V/C:	+ 0.263
Avg Crit Del:	+ 24.1
Avg Del:	+ 16.9

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #17: Shopkeeper & 2nd

Scenario #1: Ex PP AM

Northbound/Southbound: Signal=Split/Rights=Include
Eastbound: Signal=Protect Rights=Include
Westbound: Signal=Protect Rights=Include

Approach					
South leg Initial Vol:	1		2***		1
South leg Lanes:	0	0	1!	0	0
North leg Lanes:	0	1	0	0	1
North leg Initial Vol:	135		2		182***

West Initial Vol:	West Lanes:	East Lanes:	East Initial Vol:
7	1	0	2
	0	1	
1842***	2	2	1360
	1	0	
50	0	2	147***

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.693
Avg Crit Del (sec/veh):	13.7
Avg Delay (sec/veh):	11.7
LOS:	B

Scenario #2: Ex PP PM

Northbound/Southbound: Signal=Split/Rights=Include
Eastbound: Signal=Protect Rights=Include
Westbound: Signal=Protect Rights=Include

Approach					
South leg Initial Vol:	1		0		1***
South leg Lanes:	0	0	1!	0	0
North leg Lanes:	0	1	0	0	1
North leg Initial Vol:	206		3		300***

West Initial Vol:	West Lanes:	East Lanes:	East Initial Vol:
22	1	0	1
	0	1	
1958***	2	2	2086
	1	0	
114	0	2	404***

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.878
Avg Crit Del (sec/veh):	25.2
Avg Delay (sec/veh):	20.0
LOS:	D

Change
Crit V/C: + 0.185
Avg Crit Del: + 11.5
Avg Del: + 8.3

Scenario #3: CY PP AM

Northbound/Southbound: Signal=Split/Rights=Include
Eastbound: Signal=Protect Rights=Include
Westbound: Signal=Protect Rights=Include

Approach					
South leg Initial Vol:	10		10***		10
South leg Lanes:	0	0	1!	0	0
North leg Lanes:	0	1	0	0	1
North leg Initial Vol:	150		10		192***

West Initial Vol:	West Lanes:	East Lanes:	East Initial Vol:
10	1	0	10
	0	1	
2019***	3	2	1520
	1	0	
58	0	2	166***

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.652
Avg Crit Del (sec/veh):	15.5
Avg Delay (sec/veh):	13.7
LOS:	B

Change
Crit V/C: - 0.227
Avg Crit Del: - 9.8
Avg Del: - 6.4

Scenario #4: CY PP PM

Northbound/Southbound: Signal=Split/Rights=Include
Eastbound: Signal=Protect Rights=Include
Westbound: Signal=Protect Rights=Include

Approach					
South leg Initial Vol:	10		0		10***
South leg Lanes:	0	0	1!	0	0
North leg Lanes:	0	1	0	0	1
North leg Initial Vol:	229		10		330***

West Initial Vol:	West Lanes:	East Lanes:	East Initial Vol:
30***	1	0	10
	0	1	
2292	3	2	2441***
	1	0	
123	0	2	445

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	14
Critical V/C:	0.888
Avg Crit Del (sec/veh):	20.8
Avg Delay (sec/veh):	22.8
LOS:	D

Change
Crit V/C: + 0.236
Avg Crit Del: + 5.3
Avg Del: + 9.1

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #18: Studebaker & 2nd

Scenario #1: Ex PP AM

Signal=Split/Rights=Overlap

Initial Vol:	868		0		349***
Lanes:	2	0	0	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
1261***	2		Cycle Time (sec):	100		1	196
			Loss Time (sec):	15			
	0					0	
830	2		Critical V/C:	0.738		3	568***
	0		Avg Crit Del (sec/veh):	22.5		0	
0	0		Avg Delay (sec/veh):	14.7		0	0
			LOS:	C			

Lanes:	0	0	0	0	0
Initial Vol:	0		0		0

Signal=Split/Rights=Include

Scenario #2: Ex PP PM

Signal=Split/Rights=Overlap

Initial Vol:	1421		0		292***
Lanes:	2	0	0	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
1451***	2		Cycle Time (sec):	100		1	487
			Loss Time (sec):	15			
	0					0	
826	2		Critical V/C:	0.880		3	1065***
	0		Avg Crit Del (sec/veh):	28.3		0	
0	0		Avg Delay (sec/veh):	21.1		0	0
			LOS:	D			

Lanes:	0	0	0	0	0
Initial Vol:	0		0		0

Signal=Split/Rights=Include

Change

Crit V/C: + 0.142
Avg Crit Del: + 5.8
Avg Del: + 6.4

Scenario #3: CY PP AM

Signal=Split/Rights=Overlap

Initial Vol:	977		0		388***
Lanes:	3	0	0	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
1377***	3		Cycle Time (sec):	100		1	220
			Loss Time (sec):	15			
	0					0	
914	2		Critical V/C:	0.715		3	639***
	0		Avg Crit Del (sec/veh):	21.9		0	
0	0		Avg Delay (sec/veh):	14.9		0	0
			LOS:	C			

Lanes:	0	0	0	0	0
Initial Vol:	0		0		0

Signal=Split/Rights=Include

Change

Crit V/C: - 0.165
Avg Crit Del: - 6.4
Avg Del: - 6.2

Scenario #4: CY PP PM

Signal=Split/Rights=Overlap

Initial Vol:	1676		0		323***
Lanes:	3	0	0	0	2

Initial Vol:	Lanes:	Signal=Protect Rights=Include			Signal=Protect Rights=Overlap	Lanes:	Initial Vol:
			Vol Cnt Date:	n/a			
1701***	3		Cycle Time (sec):	100		1	540
			Loss Time (sec):	15			
	0					0	
941	2		Critical V/C:	0.890		3	1210***
	0		Avg Crit Del (sec/veh):	27.7		0	
0	0		Avg Delay (sec/veh):	20.3		0	0
			LOS:	D			

Lanes:	0	0	0	0	0
Initial Vol:	0		0		0

Signal=Split/Rights=Include

Change

Crit V/C: + 0.175
Avg Crit Del: + 5.8
Avg Del: + 5.4

Existing Plus Project PM Conditions

Long Beach SEADIP

Detailed Scenario Comparison Report
ICU 1(Loss as Cycle Length %) (Future Volume Alternative)

Intersection #19: Seal Beach & 2nd/Westminster

Scenario #1: Ex PP AM

North approach: Signal=Protect/Rights=Include

Initial Vol:	343		858		314***
Lanes:	1	0	3	0	2

West approach: Signal=Protect Rights=Overlap

Initial Vol:	Lanes:
135***	2
	0
805	3
	0
11	1

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	10
Critical V/C:	0.590
Avg Crit Del (sec/veh):	23.8
Avg Delay (sec/veh):	21.8
LOS:	A

East approach: Signal=Protect Rights=Include

Lanes:	Initial Vol:
0	97
1	
1	625***
0	
2	228

South approach:

Lanes:	1	0	2	1	0
Initial Vol:	21		498***		143

Signal=Protect/Rights=Include

Scenario #2: Ex PP PM

North approach: Signal=Protect/Rights=Include

Initial Vol:	245		814		247***
Lanes:	1	0	3	0	2

West approach: Signal=Protect Rights=Overlap

Initial Vol:	Lanes:
453***	2
	0
948	3
	0
5	1

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	10
Critical V/C:	0.906
Avg Crit Del (sec/veh):	35.6
Avg Delay (sec/veh):	31.1
LOS:	E

East approach: Signal=Protect Rights=Include

Lanes:	Initial Vol:
0	228
1	
1	903***
0	
2	278

South approach:

Lanes:	1	0	2	1	0
Initial Vol:	63		914***		276

Signal=Protect/Rights=Include

Change

Crit V/C:	+ 0.315
Avg Crit Del:	+ 11.9
Avg Del:	+ 9.3

Scenario #3: CY PP AM

North approach: Signal=Protect/Rights=Include

Initial Vol:	380***		950		350
Lanes:	1	0	3	0	2

West approach: Signal=Protect Rights=Overlap

Initial Vol:	Lanes:
150	2
	0
882***	3
	0
20	1

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	10
Critical V/C:	0.616
Avg Crit Del (sec/veh):	23.2
Avg Delay (sec/veh):	22.1
LOS:	B

East approach: Signal=Protect Rights=Include

Lanes:	Initial Vol:
1	110
0	
2	699
0	
2	260***

South approach:

Lanes:	1	0	3	0	1
Initial Vol:	30***		560		160

Signal=Protect/Rights=Include

Change

Crit V/C:	- 0.290
Avg Crit Del:	- 12.4
Avg Del:	- 9.1

Scenario #4: CY PP PM

North approach: Signal=Protect/Rights=Include

Initial Vol:	280		910		280***
Lanes:	1	0	3	0	2

West approach: Signal=Protect Rights=Overlap

Initial Vol:	Lanes:
510***	2
	0
1074	3
	0
10	1

Vol Cnt Date:	n/a
Cycle Time (sec):	100
Loss Time (sec):	10
Critical V/C:	0.865
Avg Crit Del (sec/veh):	32.4
Avg Delay (sec/veh):	28.0
LOS:	D

East approach: Signal=Protect Rights=Include

Lanes:	Initial Vol:
1	260
0	
2	1030***
0	
2	310

South approach:

Lanes:	1	0	3	0	1
Initial Vol:	70		1020***		310

Signal=Protect/Rights=Include

Change

Crit V/C:	+ 0.249
Avg Crit Del:	+ 9.2
Avg Del:	+ 5.9

SYNCHRO WITH MITIGATION REPORTS

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	308	547	664	74
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1300
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1300
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	338	601	730	81
RTOR Reduction (vph)	0	0	0	0	0	36
Lane Group Flow (vph)	0	0	338	601	730	45
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			36.6	75.2	34.4	34.4
Effective Green, g (s)			36.6	75.2	34.4	34.4
Actuated g/C Ratio			0.41	0.84	0.39	0.39
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			612	2517	1151	502
v/s Ratio Prot			c0.23	0.20	c0.24	
v/s Ratio Perm						0.03
v/c Ratio			0.55	0.24	0.63	0.09
Uniform Delay, d1			20.0	1.3	22.2	17.4
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.6	0.1	1.3	0.1
Delay (s)			20.6	1.4	23.5	17.5
Level of Service			C	A	C	B
Approach Delay (s)	0.0			8.3	22.9	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	72	273	0	786	663	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	81	307	0	883	745	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.81	0.81	0.81			
vC, conflicting volume	1187	372	745			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	774	0	232			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	70	65	100			
cM capacity (veh/h)	273	884	1086			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	54	334	442	442	372	372
Volume Left	54	27	0	0	0	0
Volume Right	0	307	0	0	0	0
cSH	273	961	1700	1700	1700	1700
Volume to Capacity	0.20	0.35	0.26	0.26	0.22	0.22
Queue Length 95th (ft)	18	39	0	0	0	0
Control Delay (s)	21.4	11.9	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	13.2		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	52.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	746	265	584	24	41	864
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	838	0	656	0	46	971
Adj No. of Lanes	3	1	2	0	1	3
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	963	339	1264	0	80	2396
Arrive On Green	0.25	0.00	0.42	0.00	0.05	0.56
Sat Flow, veh/h	3792	1333	3137	0	1494	4424
Grp Volume(v), veh/h	838	0	656	0	46	971
Grp Sat Flow(s),veh/h/ln	1264	1333	1490	0	1494	1427
Q Serve(g_s), s	12.7	0.0	9.8	0.0	1.8	7.8
Cycle Q Clear(g_c), s	12.7	0.0	9.8	0.0	1.8	7.8
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	963	339	1264	0	80	2396
V/C Ratio(X)	0.87	0.00	0.52	0.00	0.58	0.41
Avail Cap(c_a), veh/h	1049	369	1264	0	152	2396
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.94	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	12.8	0.0	27.7	7.5
Incr Delay (d2), s/veh	7.1	0.0	1.4	0.0	2.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.1	0.0	4.3	0.0	0.8	3.1
LnGrp Delay(d),s/veh	28.5	0.0	14.2	0.0	30.1	8.0
LnGrp LOS	C		B		C	A
Approach Vol, veh/h	838		656			1017
Approach Delay, s/veh	28.5		14.2			9.0
Approach LOS	C		B			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.1	31.3		20.6		39.4		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	6.1	21.2		16.6		32.2		
Max Q Clear Time (g_c+I1), s	3.8	11.8		14.7		9.8		
Green Ext Time (p_c), s	0.0	8.1		0.5		17.1		

Intersection Summary		
HCM 2010 Ctrl Delay		16.9
HCM 2010 LOS		B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1832	201	0	1329	456	230	981	9	489	699	7
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	1889	199	0	1370	462	237	1011	8	504	721	6
Adj No. of Lanes	0	4	0	0	3	1	1	4	0	2	4	0
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	2035	214	0	1744	801	254	1429	11	506	1586	13
Arrive On Green	0.00	0.41	0.41	0.00	0.41	0.41	0.17	0.26	0.26	0.19	0.29	0.29
Sat Flow, veh/h	0	5215	526	0	4424	1331	1494	5564	44	2608	5561	46
Grp Volume(v), veh/h	0	1530	558	0	1370	462	237	735	284	504	524	203
Grp Sat Flow(s),veh/h/ln	0	1349	1475	0	1427	1331	1494	1349	1561	1304	1349	1560
Q Serve(g_s), s	0.0	43.2	43.3	0.0	33.5	25.4	18.8	19.8	19.8	23.2	12.8	12.8
Cycle Q Clear(g_c), s	0.0	43.2	43.3	0.0	33.5	25.4	18.8	19.8	19.8	23.2	12.8	12.8
Prop In Lane	0.00		0.36	0.00		1.00	1.00		0.03	1.00		0.03
Lane Grp Cap(c), veh/h	0	1649	601	0	1744	801	254	1039	401	506	1154	445
V/C Ratio(X)	0.00	0.93	0.93	0.00	0.79	0.58	0.93	0.71	0.71	1.00	0.45	0.46
Avail Cap(c_a), veh/h	0	1649	601	0	1744	801	254	1147	442	506	1261	486
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.13	0.13	0.89	0.89	0.89	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	33.9	33.9	0.0	31.0	14.6	49.1	40.5	40.5	48.3	35.2	35.2
Incr Delay (d2), s/veh	0.0	1.2	3.2	0.0	0.5	0.4	35.6	1.7	4.4	38.6	0.3	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	16.2	18.0	0.0	13.3	9.3	10.3	7.5	9.0	11.0	4.8	5.6
LnGrp Delay(d),s/veh	0.0	35.1	37.1	0.0	31.5	15.0	84.7	42.2	44.9	86.9	35.6	36.1
LnGrp LOS		D	D		C	B	F	D	D	F	D	D
Approach Vol, veh/h		2088			1832			1256			1231	
Approach Delay, s/veh		35.6			27.3			50.9			56.7	
Approach LOS		D			C			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		54.4	25.6	40.0		54.4	29.0	36.6
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 46	* 20	37.4		* 46	* 23	34.0
Max Q Clear Time (g_c+I1), s		45.3	20.8	14.8		35.5	25.2	21.8
Green Ext Time (p_c), s		0.4	0.0	13.7		10.2	0.0	8.8

Intersection Summary		
HCM 2010 Ctrl Delay		40.3
HCM 2010 LOS		D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	242	1970	17	56	1708	206	0	551	205	183	325	150
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	257	2096	18	60	1817	207	0	586	0	195	346	127
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	413	3048	26	73	1807	205	0	576	179	203	741	699
Arrive On Green	0.28	0.70	0.70	0.05	0.46	0.46	0.00	0.13	0.00	0.08	0.25	0.25
Sat Flow, veh/h	1494	4379	38	1494	3903	442	0	4424	1333	2608	2980	1330
Grp Volume(v), veh/h	257	1366	748	60	1326	698	0	586	0	195	346	127
Grp Sat Flow(s),veh/h/ln	1494	1427	1562	1494	1427	1490	0	1427	1333	1304	1490	1330
Q Serve(g_s), s	19.5	36.3	36.3	5.2	60.2	60.2	0.0	17.5	0.0	9.7	12.8	0.0
Cycle Q Clear(g_c), s	19.5	36.3	36.3	5.2	60.2	60.2	0.0	17.5	0.0	9.7	12.8	0.0
Prop In Lane	1.00		0.02	1.00		0.30	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	413	1987	1087	73	1322	690	0	576	179	203	741	699
V/C Ratio(X)	0.62	0.69	0.69	0.82	1.00	1.01	0.00	1.02	0.00	0.96	0.47	0.18
Avail Cap(c_a), veh/h	413	1987	1087	98	1322	690	0	576	179	203	741	699
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.15	0.15	0.15	0.32	0.32	0.32	0.00	0.82	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	41.1	11.5	11.5	61.3	34.9	34.9	0.0	56.3	0.0	59.8	41.5	16.2
Incr Delay (d2), s/veh	0.3	0.3	0.6	9.9	14.9	22.2	0.0	38.2	0.0	52.1	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.1	14.3	15.7	2.3	26.4	29.0	0.0	8.9	0.0	5.0	5.3	4.6
LnGrp Delay(d),s/veh	41.4	11.8	12.1	71.2	49.8	57.1	0.0	94.4	0.0	111.9	42.0	16.3
LnGrp LOS	D	B	B	E	F	F		F		F	D	B
Approach Vol, veh/h		2371			2084			586			668	
Approach Delay, s/veh		15.1			52.8			94.4			57.5	
Approach LOS		B			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.1	95.9		37.4	41.4	65.6	14.8	22.6
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 8.5	74.0		32.3	22.3	* 60	* 10	17.5
Max Q Clear Time (g_c+I1), s	7.2	38.3		14.8	21.5	62.2	11.7	19.5
Green Ext Time (p_c), s	0.0	27.6		6.2	0.1	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	42.0
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	75	2254	26	92	1858	429	57	70	133	64	21	45
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	78	2348	16	96	1935	428	59	73	49	44	53	2
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	85	2942	914	97	2452	528	73	76	151	86	101	84
Arrive On Green	0.06	0.69	0.69	0.06	0.70	0.70	0.05	0.05	0.05	0.06	0.06	0.06
Sat Flow, veh/h	1494	4282	1330	1494	3527	759	1494	1569	1333	1345	1569	1302
Grp Volume(v), veh/h	78	2348	16	96	1556	807	59	73	49	44	53	2
Grp Sat Flow(s),veh/h/ln	1494	1427	1330	1494	1427	1431	1494	1569	1333	1345	1569	1302
Q Serve(g_s), s	7.8	57.0	0.6	9.6	54.8	59.1	5.9	7.0	5.1	4.7	4.9	0.2
Cycle Q Clear(g_c), s	7.8	57.0	0.6	9.6	54.8	59.1	5.9	7.0	5.1	4.7	4.9	0.2
Prop In Lane	1.00		1.00	1.00		0.53	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	85	2942	914	97	1984	995	73	76	151	86	101	84
V/C Ratio(X)	0.92	0.80	0.02	0.99	0.78	0.81	0.81	0.96	0.32	0.51	0.53	0.02
Avail Cap(c_a), veh/h	85	2942	914	97	1984	995	73	76	151	287	335	278
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.44	0.44	0.44	0.27	0.27	0.27	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.4	16.3	7.4	70.1	15.3	16.0	70.7	71.2	61.2	67.9	68.0	65.8
Incr Delay (d2), s/veh	42.4	1.0	0.0	45.9	0.9	2.1	47.9	87.7	1.2	4.6	4.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	22.5	0.2	5.2	21.6	23.7	3.4	4.9	1.9	1.9	2.3	0.1
LnGrp Delay(d),s/veh	112.8	17.3	7.5	116.0	16.2	18.1	118.5	158.9	62.4	72.4	72.1	65.9
LnGrp LOS	F	B	A	F	B	B	F	F	E	E	E	E
Approach Vol, veh/h		2442			2459			181			99	
Approach Delay, s/veh		20.3			20.7			119.6			72.2	
Approach LOS		C			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	108.5		14.7	13.2	109.7		12.4
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 9.7	80.7		32.0	* 8.5	81.9		7.3
Max Q Clear Time (g_c+I1), s	11.6	59.0		6.9	9.8	61.1		9.0
Green Ext Time (p_c), s	0.0	21.7		0.4	0.0	20.7		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	25.0
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	128	2291	2383	219	18	31
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.91	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1490	4282	4208		2436	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1490	4282	4208		2436	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	132	2362	2457	226	19	32
RTOR Reduction (vph)	0	0	4	0	31	0
Lane Group Flow (vph)	132	2362	2679	0	20	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	16.8	113.4	91.9		5.4	
Effective Green, g (s)	16.8	113.4	91.9		5.4	
Actuated g/C Ratio	0.12	0.81	0.66		0.04	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	178	3468	2762		93	
v/s Ratio Prot	0.09	c0.55	c0.64		c0.01	
v/s Ratio Perm						
v/c Ratio	0.74	0.68	0.97		0.22	
Uniform Delay, d1	59.5	5.6	22.7		65.3	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	13.7	1.1	11.4		0.5	
Delay (s)	73.2	6.7	34.1		65.8	
Level of Service	E	A	C		E	
Approach Delay (s)		10.3	34.1		65.8	
Approach LOS		B	C		E	

Intersection Summary			
HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.86		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	86.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	58	766	34	25	1077	330	89	332	51	246	138	14
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	61	806	36	26	1134	347	94	349	54	259	145	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	226	2629	117	401	2679	833	208	416	186	325	379	161
Arrive On Green	0.63	0.63	0.63	0.63	0.63	0.63	0.14	0.14	0.14	0.12	0.12	0.00
Sat Flow, veh/h	355	4203	187	651	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	61	547	295	26	1134	347	94	349	54	259	145	0
Grp Sat Flow(s),veh/h/ln	355	1427	1535	651	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	14.8	12.4	12.5	2.7	18.9	18.5	8.1	16.0	5.1	13.1	6.0	0.0
Cycle Q Clear(g_c), s	33.7	12.4	12.5	15.2	18.9	18.5	8.1	16.0	5.1	13.1	6.0	0.0
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	226	1786	960	401	2679	833	208	416	186	325	379	161
V/C Ratio(X)	0.27	0.31	0.31	0.06	0.42	0.42	0.45	0.84	0.29	0.80	0.38	0.00
Avail Cap(c_a), veh/h	226	1786	960	401	2679	833	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.88	0.95	0.95	0.95	1.00	1.00	1.00	0.86	0.86	0.00
Uniform Delay (d), s/veh	21.9	12.1	12.2	15.7	13.4	13.3	55.3	58.7	54.0	59.9	56.7	0.0
Incr Delay (d2), s/veh	2.6	0.4	0.7	0.3	0.5	1.5	1.6	9.4	0.9	4.1	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	5.0	5.4	0.5	7.6	7.1	3.4	7.1	1.9	5.1	2.6	0.0
LnGrp Delay(d),s/veh	24.5	12.5	12.9	16.0	13.8	14.7	56.9	68.1	54.9	64.0	57.3	0.0
LnGrp LOS	C	B	B	B	B	B	E	E	D	E	E	
Approach Vol, veh/h		903			1507			497			404	
Approach Delay, s/veh		13.5			14.1			64.6			61.6	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		93.4		22.0		93.4		24.6
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		20.9		15.1		35.7		18.0
Green Ext Time (p_c), s		27.6		1.8		19.7		1.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.3
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	17	1002	1020	89	70	74
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	18	1077	1097	73	75	0
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	711	3684	1455	452	150	77
Arrive On Green	0.48	0.86	0.34	0.34	0.06	0.00
Sat Flow, veh/h	1494	4424	4424	1329	2608	1333
Grp Volume(v), veh/h	18	1077	1097	73	75	0
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1329	1304	1333
Q Serve(g_s), s	0.8	6.1	29.6	5.0	3.6	0.0
Cycle Q Clear(g_c), s	0.8	6.1	29.6	5.0	3.6	0.0
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	711	3684	1455	452	150	77
V/C Ratio(X)	0.03	0.29	0.75	0.16	0.50	0.00
Avail Cap(c_a), veh/h	711	3684	2049	636	744	381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.74	0.74	0.89	0.00
Uniform Delay (d), s/veh	18.1	1.7	38.1	30.0	59.5	0.0
Incr Delay (d2), s/veh	0.0	0.2	2.8	0.6	1.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	2.4	12.1	1.9	1.3	0.0
LnGrp Delay(d),s/veh	18.1	1.9	40.8	30.5	60.5	0.0
LnGrp LOS	B	A	D	C	E	
Approach Vol, veh/h		1095	1170		75	
Approach Delay, s/veh		2.1	40.2		60.5	
Approach LOS		A	D		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	67.7	50.0		12.4		117.6		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	15.1	* 62		37.1		82.2		
Max Q Clear Time (g_c+I1), s	2.8	31.6		5.6		8.1		
Green Ext Time (p_c), s	7.0	12.6		0.1		14.5		

Intersection Summary	
HCM 2010 Ctrl Delay	23.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	11	65	546	1223	173	1442
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	12	0	607	0	192	1602
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	47	24	1923	860	221	2536
Arrive On Green	0.02	0.00	0.65	0.00	0.15	0.85
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	12	0	607	0	192	1602
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	0.4	0.0	7.7	0.0	10.7	14.7
Cycle Q Clear(g_c), s	0.4	0.0	7.7	0.0	10.7	14.7
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	47	24	1923	860	221	2536
V/C Ratio(X)	0.26	0.00	0.32	0.00	0.87	0.63
Avail Cap(c_a), veh/h	842	426	1923	860	248	2536
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.76	0.76
Uniform Delay (d), s/veh	41.2	0.0	6.7	0.0	35.4	2.0
Incr Delay (d2), s/veh	2.8	0.0	0.0	0.0	18.2	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	3.1	0.0	5.5	6.1
LnGrp Delay(d),s/veh	44.1	0.0	6.8	0.0	53.6	3.0
LnGrp LOS	D		A		D	A
Approach Vol, veh/h	12		607			1794
Approach Delay, s/veh	44.1		6.8			8.4
Approach LOS	D		A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	17.5	60.6		6.9		78.1		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	12.7	9.7		2.4		16.7		
Green Ext Time (p_c), s	0.0	17.2		0.0		27.2		

Intersection Summary		
HCM 2010 Ctrl Delay		8.2
HCM 2010 LOS		A

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	17	162	127	112	110	43	114	1452	138	38	1072	12
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	18	171	35	118	116	8	120	1528	142	40	1128	8
Adj No. of Lanes	1	2	0	2	2	1	1	3	0	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	256	429	86	411	517	231	469	2433	226	52	1375	427
Arrive On Green	0.17	0.17	0.17	0.17	0.17	0.17	0.31	0.61	0.61	0.04	0.32	0.32
Sat Flow, veh/h	1259	2474	496	2267	2980	1329	1494	3987	370	1494	4282	1331
Grp Volume(v), veh/h	18	102	104	118	116	8	120	1094	576	40	1128	8
Grp Sat Flow(s),veh/h/ln	1259	1490	1479	1134	1490	1329	1494	1427	1503	1494	1427	1331
Q Serve(g_s), s	1.1	5.4	5.7	4.4	3.0	0.5	5.4	21.8	21.8	2.4	21.8	0.4
Cycle Q Clear(g_c), s	4.1	5.4	5.7	10.0	3.0	0.5	5.4	21.8	21.8	2.4	21.8	0.4
Prop In Lane	1.00		0.34	1.00		1.00	1.00		0.25	1.00		1.00
Lane Grp Cap(c), veh/h	256	259	257	411	517	231	469	1742	917	52	1375	427
V/C Ratio(X)	0.07	0.39	0.41	0.29	0.22	0.03	0.26	0.63	0.63	0.76	0.82	0.02
Avail Cap(c_a), veh/h	541	596	592	924	1192	531	469	1742	917	83	1504	467
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.94	0.94	0.94	0.73	0.73	0.73	0.96	0.96	0.96
Uniform Delay (d), s/veh	33.8	33.0	33.1	37.5	32.0	30.9	23.0	11.1	11.1	43.0	28.2	20.9
Incr Delay (d2), s/veh	0.1	1.0	1.0	0.4	0.2	0.1	0.1	1.3	2.4	7.9	5.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.3	2.4	1.4	1.3	0.2	2.2	8.8	9.6	1.1	9.3	0.1
LnGrp Delay(d),s/veh	33.9	34.0	34.1	37.9	32.2	31.0	23.1	12.3	13.5	51.0	33.5	20.9
LnGrp LOS	C	C	C	D	C	C	C	B	B	D	C	C
Approach Vol, veh/h		224			242			1790			1176	
Approach Delay, s/veh		34.0			34.9			13.4			34.0	
Approach LOS		C			C			B			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.1	60.7		21.2	34.1	34.7		21.2
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	5.0	32.7		36.0	6.1	* 32		36.0
Max Q Clear Time (g_c+I1), s	4.4	23.8		7.7	7.4	23.8		12.0
Green Ext Time (p_c), s	0.0	7.2		2.6	0.0	5.0		2.5

Intersection Summary	
HCM 2010 Ctrl Delay	23.4
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	344	1242	437	389	848	231	390	996	413	266	883	248
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	358	1294	220	405	883	204	406	1038	385	277	920	222
Adj No. of Lanes	2	4	2	3	4	2	3	4	2	2	4	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	303	1527	662	435	1519	877	353	1856	806	243	1856	613
Arrive On Green	0.12	0.28	0.28	0.11	0.28	0.28	0.19	0.69	0.69	0.09	0.34	0.34
Sat Flow, veh/h	2608	5396	2338	3792	5396	2338	3792	5396	2343	2608	5396	1331
Grp Volume(v), veh/h	358	1294	220	405	883	204	406	1038	385	277	920	222
Grp Sat Flow(s),veh/h/ln	1304	1349	1169	1264	1349	1169	1264	1349	1171	1304	1349	1331
Q Serve(g_s), s	15.1	29.4	9.7	13.8	18.3	7.8	12.1	12.7	9.9	12.1	17.5	14.1
Cycle Q Clear(g_c), s	15.1	29.4	9.7	13.8	18.3	7.8	12.1	12.7	9.9	12.1	17.5	14.1
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	303	1527	662	435	1519	877	353	1856	806	243	1856	613
V/C Ratio(X)	1.18	0.85	0.33	0.93	0.58	0.23	1.15	0.56	0.48	1.14	0.50	0.36
Avail Cap(c_a), veh/h	303	1544	669	435	1536	884	353	1856	806	243	1856	613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.47	0.47	0.77	0.77	0.77	0.66	0.66	0.66	0.85	0.85	0.85
Uniform Delay (d), s/veh	57.5	44.0	36.9	57.0	40.1	27.9	52.9	15.3	14.9	59.0	33.7	22.7
Incr Delay (d2), s/veh	96.9	2.2	0.2	22.4	0.5	0.1	87.7	0.8	1.4	96.9	0.8	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.5	11.2	3.1	5.7	6.9	2.5	7.0	4.7	3.3	7.6	6.6	5.4
LnGrp Delay(d),s/veh	154.4	46.2	37.0	79.5	40.6	28.0	140.6	16.1	16.2	155.8	34.5	24.2
LnGrp LOS	F	D	D	E	D	C	F	B	B	F	C	C
Approach Vol, veh/h		1872			1492			1829			1419	
Approach Delay, s/veh		65.8			49.4			43.8			56.6	
Approach LOS		E			D			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	17.0	50.5	19.8	42.7	17.0	50.5	20.0	42.5
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	12.1	44.3	14.9	37.2	12.1	44.3	15.1	37.0
Max Q Clear Time (g_c+I1), s	14.1	14.7	15.8	31.4	14.1	19.5	17.1	20.3
Green Ext Time (p_c), s	0.0	24.2	0.0	5.4	0.0	20.8	0.0	14.3

Intersection Summary		
HCM 2010 Ctrl Delay		54.0
HCM 2010 LOS		D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	171	16	251	36	8	63	62	1402	28	20	1463	145
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	185	0	48	37	8	61	63	1431	22	20	1493	144
Adj No. of Lanes	2	0	1	1	1	0	1	3	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	228	0	140	101	11	81	77	2849	887	30	1888	845
Arrive On Green	0.08	0.00	0.08	0.07	0.07	0.07	0.05	0.67	0.67	0.02	0.63	0.63
Sat Flow, veh/h	2689	0	1333	1494	157	1200	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	185	0	48	37	0	69	63	1431	22	20	1493	144
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1494	0	1357	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	8.8	0.0	4.3	3.1	0.0	6.5	5.4	21.8	0.7	1.7	47.8	5.8
Cycle Q Clear(g_c), s	8.8	0.0	4.3	3.1	0.0	6.5	5.4	21.8	0.7	1.7	47.8	5.8
Prop In Lane	1.00		1.00	1.00		0.88	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	228	0	140	101	0	92	77	2849	887	30	1888	845
V/C Ratio(X)	0.81	0.00	0.34	0.37	0.00	0.75	0.82	0.50	0.02	0.68	0.79	0.17
Avail Cap(c_a), veh/h	393	0	221	402	0	365	172	2849	887	138	1888	845
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.78	0.78	0.78	0.76	0.76	0.76
Uniform Delay (d), s/veh	58.4	0.0	54.0	57.9	0.0	59.5	61.1	10.9	7.4	63.3	17.5	9.8
Incr Delay (d2), s/veh	2.6	0.0	0.5	1.6	0.0	8.8	6.2	0.5	0.0	7.4	2.7	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.3	0.0	1.6	1.3	0.0	2.7	2.4	8.6	0.3	0.8	20.2	2.2
LnGrp Delay(d),s/veh	61.1	0.0	54.6	59.6	0.0	68.3	67.2	11.4	7.4	70.7	20.2	10.1
LnGrp LOS	E		D	E		E	E	B	A	E	C	B
Approach Vol, veh/h		233			106			1516			1657	
Approach Delay, s/veh		59.7			65.2			13.7			19.9	
Approach LOS		E			E			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	7.6	92.6		13.8	11.7	88.5		16.0
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	12.0	* 43		* 35	15.0	* 40		19.0
Max Q Clear Time (g_c+I1), s	3.7	23.8		8.5	7.4	49.8		10.8
Green Ext Time (p_c), s	0.0	18.2		0.4	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	21.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	186	1	49	2	0	1	14	1308	2	2	1682	63
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1600	1600	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	194	1	3	2	0	0	15	1362	2	2	1752	65
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	221	29	88	4	0	0	21	2505	4	4	2372	88
Arrive On Green	0.08	0.08	0.08	0.00	0.00	0.00	0.01	0.82	0.82	0.00	0.81	0.81
Sat Flow, veh/h	2608	346	1039	1494	0	0	1494	3054	4	1494	2931	108
Grp Volume(v), veh/h	194	0	4	2	0	0	15	665	699	2	887	930
Grp Sat Flow(s),veh/h/ln	1304	0	1385	1494	0	0	1494	1490	1568	1494	1490	1550
Q Serve(g_s), s	15.4	0.0	0.6	0.3	0.0	0.0	2.1	30.4	30.4	0.3	58.8	60.2
Cycle Q Clear(g_c), s	15.4	0.0	0.6	0.3	0.0	0.0	2.1	30.4	30.4	0.3	58.8	60.2
Prop In Lane	1.00		0.75	1.00		0.00	1.00		0.00	1.00		0.07
Lane Grp Cap(c), veh/h	221	0	117	4	0	0	21	1223	1286	4	1206	1254
V/C Ratio(X)	0.88	0.00	0.03	0.51	0.00	0.00	0.72	0.54	0.54	0.51	0.74	0.74
Avail Cap(c_a), veh/h	502	0	267	176	0	0	124	1223	1286	89	1206	1254
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	95.0	0.0	88.2	104.6	0.0	0.0	103.1	6.1	6.1	104.6	9.4	9.6
Incr Delay (d2), s/veh	4.3	0.0	0.0	33.4	0.0	0.0	16.1	1.7	1.7	3.4	0.4	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.7	0.0	0.2	0.2	0.0	0.0	1.0	13.0	13.6	0.1	24.0	25.5
LnGrp Delay(d),s/veh	99.4	0.0	88.3	138.0	0.0	0.0	119.2	7.8	7.8	108.0	9.8	9.9
LnGrp LOS	F		F	F			F	A	A	F	A	A
Approach Vol, veh/h		198			2			1379			1819	
Approach Delay, s/veh		99.1			138.0			9.0			10.0	
Approach LOS		F			F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	5.1	177.8		4.8	7.4	175.4		22.4
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	12.5	113.5		* 25	17.5	108.5		40.4
Max Q Clear Time (g_c+I1), s	2.3	32.4		2.3	4.1	62.2		17.4
Green Ext Time (p_c), s	0.0	75.3		0.0	0.0	44.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	14.9
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	330	1011	717	64
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1300
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1300
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	363	1111	788	70
RTOR Reduction (vph)	0	0	0	0	0	28
Lane Group Flow (vph)	0	0	363	1111	788	42
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			38.7	78.0	35.1	35.1
Effective Green, g (s)			38.7	78.0	35.1	35.1
Actuated g/C Ratio			0.42	0.85	0.38	0.38
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			628	2532	1139	497
v/s Ratio Prot			c0.24	0.37	c0.26	
v/s Ratio Perm						0.03
v/c Ratio			0.58	0.44	0.69	0.08
Uniform Delay, d1			20.3	1.7	23.8	18.1
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.8	0.2	2.0	0.1
Delay (s)			21.1	1.8	25.8	18.2
Level of Service			C	A	C	B
Approach Delay (s)	0.0			6.6	25.2	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	13.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	91.8	Sum of lost time (s)	13.7
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	29	323	0	1322	704	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	351	0	1437	765	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.79	0.79	0.79			
vC, conflicting volume	1484	383	765			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1089	0	184			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	81	59	100			
cM capacity (veh/h)	166	861	1102			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	21	362	718	718	383	383
Volume Left	21	11	0	0	0	0
Volume Right	0	351	0	0	0	0
cSH	166	886	1700	1700	1700	1700
Volume to Capacity	0.13	0.41	0.42	0.42	0.23	0.23
Queue Length 95th (ft)	11	50	0	0	0	0
Control Delay (s)	29.7	12.5	0.0	0.0	0.0	0.0
Lane LOS	D	B				
Approach Delay (s)	13.4		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.0		
Intersection Capacity Utilization	54.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1411	315	959	51	48	1093
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	1517	0	1031	0	52	1175
Adj No. of Lanes	3	1	2	0	1	3
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1584	557	1119	0	68	2014
Arrive On Green	0.42	0.00	0.38	0.00	0.05	0.47
Sat Flow, veh/h	3792	1333	3137	0	1494	4424
Grp Volume(v), veh/h	1517	0	1031	0	52	1175
Grp Sat Flow(s),veh/h/ln	1264	1333	1490	0	1494	1427
Q Serve(g_s), s	38.8	0.0	33.0	0.0	3.4	20.0
Cycle Q Clear(g_c), s	38.8	0.0	33.0	0.0	3.4	20.0
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	1584	557	1119	0	68	2014
V/C Ratio(X)	0.96	0.00	0.92	0.00	0.76	0.58
Avail Cap(c_a), veh/h	1615	568	1119	0	91	2014
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.70	0.00	1.00	1.00
Uniform Delay (d), s/veh	28.3	0.0	29.8	0.0	47.2	19.3
Incr Delay (d2), s/veh	13.4	0.0	10.3	0.0	15.3	1.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.5	0.0	15.2	0.0	1.7	8.1
LnGrp Delay(d),s/veh	41.7	0.0	40.1	0.0	62.4	20.6
LnGrp LOS	D		D		E	C
Approach Vol, veh/h	1517		1031			1227
Approach Delay, s/veh	41.7		40.1			22.3
Approach LOS	D		D			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.5	43.4		47.2		52.8		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	6.1	35.2		42.6		46.2		
Max Q Clear Time (g_c+I1), s	5.4	35.0		40.8		22.0		
Green Ext Time (p_c), s	0.0	0.2		0.9		21.7		

Intersection Summary	
HCM 2010 Ctrl Delay	35.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1559	319	0	1472	462	301	951	19	577	1248	14
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1600	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	1575	313	0	1487	459	304	961	18	583	1261	13
Adj No. of Lanes	0	4	0	0	3	1	1	4	0	2	4	0
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1652	328	0	1554	778	317	1508	28	576	1592	16
Arrive On Green	0.00	0.36	0.36	0.00	0.73	0.73	0.21	0.27	0.27	0.22	0.29	0.29
Sat Flow, veh/h	0	4770	904	0	4424	1331	1494	5495	103	2608	5548	57
Grp Volume(v), veh/h	0	1401	487	0	1487	459	304	707	272	583	920	354
Grp Sat Flow(s),veh/h/ln	0	1349	1407	0	1427	1331	1494	1349	1550	1304	1349	1558
Q Serve(g_s), s	0.0	40.5	40.5	0.0	37.4	23.9	24.1	18.4	18.5	26.5	25.2	25.2
Cycle Q Clear(g_c), s	0.0	40.5	40.5	0.0	37.4	23.9	24.1	18.4	18.5	26.5	25.2	25.2
Prop In Lane	0.00		0.64	0.00		1.00	1.00		0.07	1.00		0.04
Lane Grp Cap(c), veh/h	0	1469	511	0	1554	778	317	1111	426	576	1162	447
V/C Ratio(X)	0.00	0.95	0.95	0.00	0.96	0.59	0.96	0.64	0.64	1.01	0.79	0.79
Avail Cap(c_a), veh/h	0	1469	511	0	1554	778	317	1147	439	576	1197	461
HCM Platoon Ratio	1.00	1.00	1.00	1.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.29	0.29	0.81	0.81	0.81	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	37.2	37.2	0.0	15.6	6.6	46.7	38.3	38.3	46.8	39.5	39.5
Incr Delay (d2), s/veh	0.0	2.1	5.2	0.0	5.7	1.0	34.3	1.0	2.6	40.5	3.7	9.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	15.3	16.4	0.0	14.9	8.3	13.0	7.0	8.2	12.8	9.8	12.0
LnGrp Delay(d),s/veh	0.0	39.3	42.5	0.0	21.3	7.6	81.0	39.3	40.9	87.3	43.2	48.7
LnGrp LOS		D	D		C	A	F	D	D	F	D	D
Approach Vol, veh/h		1888			1946			1283			1857	
Approach Delay, s/veh		40.1			18.0			49.5			58.1	
Approach LOS		D			B			D			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		49.1	30.7	40.2		49.1	32.2	38.7
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 43	* 26	35.5		* 43	* 27	34.0
Max Q Clear Time (g_c+I1), s		42.5	26.1	27.2		39.4	28.5	20.5
Green Ext Time (p_c), s		0.0	0.0	7.3		3.1	0.0	11.2

Intersection Summary		
HCM 2010 Ctrl Delay		40.5
HCM 2010 LOS		D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	179	1925	23	69	1594	171	0	586	159	305	692	329
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	183	1964	22	70	1627	165	0	598	0	311	706	305
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	242	2366	26	85	1704	172	0	614	191	333	924	628
Arrive On Green	0.32	1.00	1.00	0.06	0.43	0.43	0.00	0.14	0.00	0.13	0.31	0.31
Sat Flow, veh/h	1494	4366	49	1494	3952	400	0	4424	1333	2608	2980	1331
Grp Volume(v), veh/h	183	1284	702	70	1175	617	0	598	0	311	706	305
Grp Sat Flow(s),veh/h/ln	1494	1427	1560	1494	1427	1497	0	1427	1333	1304	1490	1331
Q Serve(g_s), s	13.2	0.0	0.0	5.6	47.7	47.9	0.0	16.7	0.0	14.2	25.7	0.0
Cycle Q Clear(g_c), s	13.2	0.0	0.0	5.6	47.7	47.9	0.0	16.7	0.0	14.2	25.7	0.0
Prop In Lane	1.00		0.03	1.00		0.27	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	242	1547	845	85	1231	645	0	614	191	333	924	628
V/C Ratio(X)	0.76	0.83	0.83	0.82	0.95	0.96	0.00	0.97	0.00	0.94	0.76	0.49
Avail Cap(c_a), veh/h	242	1547	845	86	1235	648	0	614	191	333	924	628
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.11	0.11	0.11	0.64	0.64	0.64	0.00	0.80	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	38.5	0.0	0.0	56.0	33.0	33.0	0.0	51.2	0.0	51.9	37.4	21.7
Incr Delay (d2), s/veh	1.4	0.6	1.1	30.4	12.3	19.6	0.0	26.2	0.0	32.8	3.9	0.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	0.1	0.3	3.0	20.9	23.2	0.0	8.1	0.0	6.6	11.1	10.2
LnGrp Delay(d),s/veh	39.8	0.6	1.1	86.4	45.2	52.7	0.0	77.3	0.0	84.6	41.3	22.3
LnGrp LOS	D	A	A	F	D	D		E		F	D	C
Approach Vol, veh/h		2169			1862			598			1322	
Approach Delay, s/veh		4.1			49.3			77.3			47.1	
Approach LOS		A			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.5	70.4		42.3	24.8	57.1	20.0	22.3
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 6.9	60.7		37.2	15.7	* 52	* 15	17.2
Max Q Clear Time (g_c+I1), s	7.6	2.0		27.7	15.2	49.9	16.2	18.7
Green Ext Time (p_c), s	0.0	36.1		6.2	0.0	1.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.1
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	23	2241	65	223	1739	41	44	8	159	402	57	67
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	24	2334	28	232	1811	42	46	8	119	461	0	13
Adj No. of Lanes	1	4	1	1	3	0	1	1	1	2	0	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	39	2469	608	232	2525	59	75	78	273	518	0	255
Arrive On Green	0.03	0.46	0.46	0.31	1.00	1.00	0.05	0.05	0.05	0.19	0.00	0.19
Sat Flow, veh/h	1494	5396	1329	1494	4306	100	1494	1569	1333	2689	0	1323
Grp Volume(v), veh/h	24	2334	28	232	1200	653	46	8	119	461	0	13
Grp Sat Flow(s),veh/h/ln	1494	1349	1329	1494	1427	1551	1494	1569	1333	1345	0	1323
Q Serve(g_s), s	2.2	57.9	1.6	21.7	0.0	0.0	4.2	0.7	7.0	23.4	0.0	1.1
Cycle Q Clear(g_c), s	2.2	57.9	1.6	21.7	0.0	0.0	4.2	0.7	7.0	23.4	0.0	1.1
Prop In Lane	1.00		1.00	1.00		0.06	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	39	2469	608	232	1674	909	75	78	273	518	0	255
V/C Ratio(X)	0.62	0.95	0.05	1.00	0.72	0.72	0.62	0.10	0.44	0.89	0.00	0.05
Avail Cap(c_a), veh/h	76	2469	608	232	1674	909	75	78	273	615	0	302
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.33	0.33	0.33	0.68	0.68	0.68	0.96	0.96	0.96	1.00	0.00	1.00
Uniform Delay (d), s/veh	67.5	36.3	21.0	48.3	0.0	0.0	65.2	63.5	48.6	55.1	0.0	46.1
Incr Delay (d2), s/veh	2.4	3.6	0.0	49.4	1.8	3.4	13.6	0.5	1.0	13.5	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	22.2	0.6	12.1	0.4	0.8	2.0	0.3	4.1	9.7	0.0	0.4
LnGrp Delay(d),s/veh	69.9	39.9	21.1	97.7	1.8	3.4	78.8	64.0	49.6	68.6	0.0	46.2
LnGrp LOS	E	D	C	F	A	A	E	E	D	E		D
Approach Vol, veh/h		2386			2085			173			474	
Approach Delay, s/veh		40.0			13.0			58.1			68.0	
Approach LOS		D			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	26.4	69.5		32.0	8.3	87.5		12.1
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 22	59.0		32.0	* 7.1	73.6		7.0
Max Q Clear Time (g_c+I1), s	23.7	59.9		25.4	4.2	2.0		9.0
Green Ext Time (p_c), s	0.0	0.0		1.0	0.0	70.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	32.2
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	65	2725	1930	32	128	87
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.91		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1490	4282	4268		2498	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1490	4282	4268		2498	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	66	2781	1969	33	131	89
RTOR Reduction (vph)	0	0	1	0	81	0
Lane Group Flow (vph)	66	2781	2001	0	139	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	9.5	106.7	92.5		12.1	
Effective Green, g (s)	9.5	106.7	92.5		12.1	
Actuated g/C Ratio	0.07	0.76	0.66		0.09	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	101	3263	2819		215	
v/s Ratio Prot	0.04	c0.65	0.47		c0.06	
v/s Ratio Perm						
v/c Ratio	0.65	0.85	0.71		0.65	
Uniform Delay, d1	63.6	11.3	15.2		61.9	
Progression Factor	1.12	1.11	1.00		1.00	
Incremental Delay, d2	4.6	1.2	1.5		5.1	
Delay (s)	76.1	13.8	16.7		66.9	
Level of Service	E	B	B		E	
Approach Delay (s)		15.2	16.7		66.9	
Approach LOS		B	B		E	

Intersection Summary			
HCM 2000 Control Delay	18.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	79.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	79	1432	63	92	1219	371	56	264	67	474	265	16
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	81	1476	62	95	1257	238	58	272	9	489	273	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	183	2353	99	159	2391	744	169	337	151	576	673	286
Arrive On Green	0.56	0.56	0.56	0.56	0.56	0.56	0.11	0.11	0.11	0.21	0.21	0.00
Sat Flow, veh/h	350	4215	177	336	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	81	1000	538	95	1257	238	58	272	9	489	273	0
Grp Sat Flow(s),veh/h/ln	350	1427	1537	336	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	26.3	33.3	33.3	37.5	25.7	13.5	5.0	12.5	0.8	24.4	10.5	0.0
Cycle Q Clear(g_c), s	52.0	33.3	33.3	70.8	25.7	13.5	5.0	12.5	0.8	24.4	10.5	0.0
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	183	1594	858	159	2391	744	169	337	151	576	673	286
V/C Ratio(X)	0.44	0.63	0.63	0.60	0.53	0.32	0.34	0.81	0.06	0.85	0.41	0.00
Avail Cap(c_a), veh/h	183	1594	858	159	2391	744	266	530	237	728	849	361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.47	0.47	0.47	0.89	0.89	0.89	1.00	1.00	1.00	0.55	0.55	0.00
Uniform Delay (d), s/veh	35.6	21.0	21.0	45.1	19.3	16.6	57.3	60.6	55.4	52.8	47.3	0.0
Incr Delay (d2), s/veh	3.7	0.9	1.7	13.9	0.7	1.0	1.3	5.2	0.2	4.6	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	13.3	14.5	4.1	10.3	5.2	2.1	5.4	0.3	9.5	4.6	0.0
LnGrp Delay(d),s/veh	39.3	21.9	22.7	59.0	20.1	17.6	58.5	65.8	55.6	57.4	47.6	0.0
LnGrp LOS	D	C	C	E	C	B	E	E	E	E	D	
Approach Vol, veh/h		1619			1590			339			762	
Approach Delay, s/veh		23.0			22.0			64.3			53.9	
Approach LOS		C			C			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		84.0		35.1		84.0		20.9
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		61.2		37.9		61.2		24.9
Max Q Clear Time (g_c+I1), s		72.8		26.4		54.0		14.5
Green Ext Time (p_c), s		0.0		3.3		7.0		1.4

Intersection Summary	
HCM 2010 Ctrl Delay	31.4
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	54	1495	1345	43	124	89
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	57	1574	1416	33	131	5
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	602	3646	1730	537	173	88
Arrive On Green	0.40	0.85	0.40	0.40	0.07	0.07
Sat Flow, veh/h	1494	4424	4424	1330	2608	1333
Grp Volume(v), veh/h	57	1574	1416	33	131	5
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1330	1304	1333
Q Serve(g_s), s	3.1	11.2	38.3	2.0	6.4	0.5
Cycle Q Clear(g_c), s	3.1	11.2	38.3	2.0	6.4	0.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	602	3646	1730	537	173	88
V/C Ratio(X)	0.09	0.43	0.82	0.06	0.76	0.06
Avail Cap(c_a), veh/h	602	3646	1950	606	744	381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.63	0.63	0.44	0.44	0.55	0.55
Uniform Delay (d), s/veh	24.1	2.3	34.5	23.7	59.7	56.9
Incr Delay (d2), s/veh	0.0	0.2	2.0	0.1	1.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	4.5	15.4	0.7	2.4	0.2
LnGrp Delay(d),s/veh	24.1	2.5	36.5	23.8	61.4	57.0
LnGrp LOS	C	A	D	C	E	E
Approach Vol, veh/h		1631	1449		136	
Approach Delay, s/veh		3.3	36.2		61.2	
Approach LOS		A	D		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	58.2	58.3		13.5		116.5		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	18.1	* 59		37.1		82.2		
Max Q Clear Time (g_c+I1), s	5.1	40.3		8.4		13.2		
Green Ext Time (p_c), s	9.9	12.2		0.3		27.4		

Intersection Summary	
HCM 2010 Ctrl Delay	20.6
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	66	942	1214	214	2281
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	21	0	1002	0	228	2427
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	74	38	1839	823	248	2505
Arrive On Green	0.03	0.00	0.62	0.00	0.17	0.84
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	21	0	1002	0	228	2427
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	0.7	0.0	16.5	0.0	12.8	59.4
Cycle Q Clear(g_c), s	0.7	0.0	16.5	0.0	12.8	59.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	74	38	1839	823	248	2505
V/C Ratio(X)	0.28	0.00	0.54	0.00	0.92	0.97
Avail Cap(c_a), veh/h	842	426	1839	823	248	2505
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.51	0.51
Uniform Delay (d), s/veh	40.5	0.0	9.4	0.0	34.9	5.8
Incr Delay (d2), s/veh	2.1	0.0	0.1	0.0	22.4	7.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	6.7	0.0	6.8	25.5
LnGrp Delay(d),s/veh	42.6	0.0	9.5	0.0	57.3	13.2
LnGrp LOS	D		A		E	B
Approach Vol, veh/h	21		1002			2655
Approach Delay, s/veh	42.6		9.5			17.0
Approach LOS	D		A			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	19.0	58.3		7.7		77.3		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	14.1	28.2		26.6		47.2		
Max Q Clear Time (g_c+I1), s	14.8	18.5		2.7		61.4		
Green Ext Time (p_c), s	0.0	9.7		0.0		0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	15.1
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	22	178	206	338	385	70	219	1587	202	118	1892	40
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1600	1569	1569	1569
Adj Flow Rate, veh/h	23	185	112	352	401	20	228	1653	202	123	1971	16
Adj No. of Lanes	1	2	0	2	2	1	1	3	0	1	3	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	203	494	285	488	809	361	366	2369	289	142	1952	607
Arrive On Green	0.27	0.27	0.27	0.27	0.27	0.27	0.25	0.61	0.61	0.09	0.46	0.46
Sat Flow, veh/h	961	1821	1050	2089	2980	1330	1494	3868	471	1494	4282	1332
Grp Volume(v), veh/h	23	150	147	352	401	20	228	1219	636	123	1971	16
Grp Sat Flow(s),veh/h/ln	961	1490	1381	1044	1490	1330	1494	1427	1485	1494	1427	1332
Q Serve(g_s), s	2.9	11.4	12.2	23.1	15.9	1.6	19.0	40.4	40.7	11.4	63.8	0.9
Cycle Q Clear(g_c), s	18.7	11.4	12.2	35.3	15.9	1.6	19.0	40.4	40.7	11.4	63.8	0.9
Prop In Lane	1.00		0.76	1.00		1.00	1.00		0.32	1.00		1.00
Lane Grp Cap(c), veh/h	203	405	375	488	809	361	366	1748	909	142	1952	607
V/C Ratio(X)	0.11	0.37	0.39	0.72	0.50	0.06	0.62	0.70	0.70	0.87	1.01	0.03
Avail Cap(c_a), veh/h	206	409	379	494	817	365	366	1748	909	172	1952	607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.59	0.59	0.59	0.60	0.60	0.60	0.89	0.89	0.89
Uniform Delay (d), s/veh	50.8	41.3	41.6	56.0	42.9	37.7	47.1	18.3	18.4	62.5	38.1	21.0
Incr Delay (d2), s/veh	0.2	0.6	0.7	3.0	0.3	0.0	1.5	1.4	2.7	24.9	21.7	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	4.8	4.7	6.9	6.5	0.6	8.0	16.1	17.3	5.7	29.0	0.4
LnGrp Delay(d),s/veh	51.1	41.9	42.3	59.0	43.2	37.8	48.5	19.7	21.1	87.4	59.8	21.1
LnGrp LOS	D	D	D	E	D	D	D	B	C	F	F	C
Approach Vol, veh/h		320			773			2083			2110	
Approach Delay, s/veh		42.7			50.3			23.3			61.1	
Approach LOS		D			D			C			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.2	91.6		43.6	40.2	69.6		43.6
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	16.1	69.2		38.4	21.5	* 64		38.4
Max Q Clear Time (g_c+I1), s	13.4	42.7		20.7	21.0	65.8		37.3
Green Ext Time (p_c), s	0.0	19.2		6.2	0.0	0.0		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	43.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	466	1322	433	566	1299	434	452	1126	464	381	1309	536
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	471	1335	227	572	1312	402	457	1137	423	385	1322	506
Adj No. of Lanes	2	4	2	3	4	2	3	4	2	2	4	2
Peak Hour Factor	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	473	1430	918	618	1331	907	483	1554	1057	367	1626	1131
Arrive On Green	0.18	0.27	0.27	0.16	0.25	0.25	0.25	0.58	0.58	0.14	0.30	0.30
Sat Flow, veh/h	2608	5396	2338	3792	5396	2337	3792	5396	2342	2608	5396	2342
Grp Volume(v), veh/h	471	1335	227	572	1312	402	457	1137	423	385	1322	506
Grp Sat Flow(s),veh/h/ln	1304	1349	1169	1264	1349	1169	1264	1349	1171	1304	1349	1171
Q Serve(g_s), s	27.1	36.2	9.8	22.3	36.3	19.1	17.8	23.2	13.9	21.1	34.0	21.4
Cycle Q Clear(g_c), s	27.1	36.2	9.8	22.3	36.3	19.1	17.8	23.2	13.9	21.1	34.0	21.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	473	1430	918	618	1331	907	483	1554	1057	367	1626	1131
V/C Ratio(X)	1.00	0.93	0.25	0.93	0.99	0.44	0.95	0.73	0.40	1.05	0.81	0.45
Avail Cap(c_a), veh/h	473	1430	918	627	1331	907	483	1554	1057	367	1626	1131
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.16	0.16	0.16	0.09	0.09	0.09	0.52	0.52	0.52	0.09	0.09	0.09
Uniform Delay (d), s/veh	61.3	53.8	30.7	61.9	56.2	34.0	55.4	27.6	15.7	64.4	48.5	25.6
Incr Delay (d2), s/veh	15.7	2.4	0.0	2.6	4.7	0.0	18.1	1.6	0.6	29.3	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.8	13.8	3.2	7.9	13.9	6.1	7.0	8.7	4.5	9.1	12.7	6.9
LnGrp Delay(d),s/veh	77.0	56.2	30.7	64.5	61.0	34.0	73.5	29.2	16.3	93.7	48.9	25.7
LnGrp LOS	E	E	C	E	E	C	E	C	B	F	D	C
Approach Vol, veh/h		2033			2286			2017			2213	
Approach Delay, s/veh		58.2			57.1			36.5			51.4	
Approach LOS		E			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	26.0	49.0	29.3	45.7	24.0	51.0	32.1	42.9
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	21.1	43.2	24.8	39.4	19.1	45.2	27.2	37.0
Max Q Clear Time (g_c+I1), s	23.1	25.2	24.3	38.2	19.8	36.0	29.1	38.3
Green Ext Time (p_c), s	0.0	17.3	0.1	1.1	0.0	9.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	51.0
HCM 2010 LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	264	15	306	86	34	55	146	1594	61	76	1514	300
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	289	0	73	91	36	55	154	1678	50	80	1594	235
Adj No. of Lanes	2	0	1	1	1	0	1	3	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	251	0	210	120	45	69	129	2663	829	96	1786	799
Arrive On Green	0.09	0.00	0.09	0.08	0.08	0.08	0.09	0.62	0.62	0.06	0.60	0.60
Sat Flow, veh/h	2689	0	1333	1494	561	857	1494	4282	1333	1494	2980	1333
Grp Volume(v), veh/h	289	0	73	91	0	91	154	1678	50	80	1594	235
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1494	0	1417	1494	1427	1333	1494	1490	1333
Q Serve(g_s), s	14.0	0.0	7.3	8.9	0.0	9.5	13.0	36.5	2.2	7.9	69.1	12.9
Cycle Q Clear(g_c), s	14.0	0.0	7.3	8.9	0.0	9.5	13.0	36.5	2.2	7.9	69.1	12.9
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	251	0	210	120	0	114	129	2663	829	96	1786	799
V/C Ratio(X)	1.15	0.00	0.35	0.76	0.00	0.80	1.19	0.63	0.06	0.84	0.89	0.29
Avail Cap(c_a), veh/h	251	0	210	339	0	321	129	2663	829	110	1786	799
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.53	0.53	0.53	0.53	0.53	0.53
Uniform Delay (d), s/veh	68.0	0.0	56.3	67.6	0.0	67.8	68.5	17.6	11.1	69.4	25.9	14.6
Incr Delay (d2), s/veh	103.9	0.0	0.4	7.1	0.0	9.2	118.7	0.6	0.1	20.3	4.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.8	0.0	2.7	3.9	0.0	4.0	9.6	14.4	0.8	3.8	29.4	4.8
LnGrp Delay(d),s/veh	171.9	0.0	56.7	74.7	0.0	77.0	187.2	18.3	11.2	89.7	30.0	15.1
LnGrp LOS	F		E	E		E	F	B	B	F	C	B
Approach Vol, veh/h		362			182			1882			1909	
Approach Delay, s/veh		148.7			75.9			31.9			30.7	
Approach LOS		F			E			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.6	99.4		17.0	18.0	96.0		19.0
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	11.0	* 70		* 34	13.0	* 68		14.0
Max Q Clear Time (g_c+I1), s	9.9	38.5		11.5	15.0	71.1		16.0
Green Ext Time (p_c), s	0.0	30.2		0.6	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	43.0
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	153	0	43	1	0	0	60	1667	0	3	1799	100
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1600	1600	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	163	0	2	1	0	0	64	1773	0	3	1914	104
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	207	0	106	2	0	0	78	2280	0	6	2061	111
Arrive On Green	0.08	0.00	0.08	0.00	0.00	0.00	0.05	0.76	0.00	0.00	0.72	0.72
Sat Flow, veh/h	2608	0	1333	1494	0	0	1494	3059	0	1494	2877	155
Grp Volume(v), veh/h	163	0	2	1	0	0	64	1773	0	3	983	1035
Grp Sat Flow(s),veh/h/ln	1304	0	1333	1494	0	0	1494	1490	0	1494	1490	1541
Q Serve(g_s), s	7.7	0.0	0.2	0.1	0.0	0.0	5.3	43.1	0.0	0.3	68.7	72.4
Cycle Q Clear(g_c), s	7.7	0.0	0.2	0.1	0.0	0.0	5.3	43.1	0.0	0.3	68.7	72.4
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.10
Lane Grp Cap(c), veh/h	207	0	106	2	0	0	78	2280	0	6	1068	1105
V/C Ratio(X)	0.79	0.00	0.02	0.49	0.00	0.00	0.82	0.78	0.00	0.51	0.92	0.94
Avail Cap(c_a), veh/h	634	0	324	296	0	0	185	2280	0	125	1068	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	56.5	0.0	53.1	62.4	0.0	0.0	58.6	8.5	0.0	62.1	14.8	15.3
Incr Delay (d2), s/veh	2.5	0.0	0.0	55.0	0.0	0.0	7.6	2.7	0.0	2.2	1.7	2.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.8	0.0	0.1	0.1	0.0	0.0	2.4	18.3	0.0	0.1	28.4	30.8
LnGrp Delay(d),s/veh	59.0	0.0	53.1	117.3	0.0	0.0	66.3	11.2	0.0	64.4	16.4	17.3
LnGrp LOS	E		D	F			E	B		E	B	B
Approach Vol, veh/h		165			1			1837			2021	
Approach Delay, s/veh		59.0			117.3			13.1			17.0	
Approach LOS		E			F			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	5.0	101.1		4.4	11.0	95.1		14.5				
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6				
Max Green Setting (Gmax), s	10.5	40.5		* 25	15.5	35.5		30.4				
Max Q Clear Time (g_c+I1), s	2.3	45.1		2.1	7.3	74.4		9.7				
Green Ext Time (p_c), s	0.0	0.0		0.0	0.0	0.0		0.3				
Intersection Summary												
HCM 2010 Ctrl Delay			17.0									
HCM 2010 LOS			B									

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	331	610	740	90
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1300
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1300
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	348	642	779	95
RTOR Reduction (vph)	0	0	0	0	0	39
Lane Group Flow (vph)	0	0	348	642	779	56
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			38.0	77.3	35.1	35.1
Effective Green, g (s)			38.0	77.3	35.1	35.1
Actuated g/C Ratio			0.42	0.85	0.39	0.39
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			622	2531	1149	501
v/s Ratio Prot			c0.23	0.22	c0.26	
v/s Ratio Perm						0.04
v/c Ratio			0.56	0.25	0.68	0.11
Uniform Delay, d1			20.1	1.3	23.2	17.9
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			0.6	0.1	1.8	0.1
Delay (s)			20.8	1.4	25.0	18.1
Level of Service			C	A	C	B
Approach Delay (s)	0.0			8.2	24.3	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.58		
Actuated Cycle Length (s)	91.0	Sum of lost time (s)	13.7
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	80	311	0	861	740	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	84	327	0	906	779	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.80	0.80	0.80			
vC, conflicting volume	1232	389	779			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	778	0	209			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	68	62	100			
cM capacity (veh/h)	265	863	1082			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	56	355	453	453	389	389
Volume Left	56	28	0	0	0	0
Volume Right	0	327	0	0	0	0
cSH	265	937	1700	1700	1700	1700
Volume to Capacity	0.21	0.38	0.27	0.27	0.23	0.23
Queue Length 95th (ft)	20	45	0	0	0	0
Control Delay (s)	22.2	12.4	0.0	0.0	0.0	0.0
Lane LOS	C	B				
Approach Delay (s)	13.7		0.0		0.0	
Approach LOS	B					

Intersection Summary			
Average Delay	2.7		
Intersection Capacity Utilization	54.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	836	300	641	30	51	960
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	880	0	675	0	54	1011
Adj No. of Lanes	2	1	2	0	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	949	485	1045	0	83	1420
Arrive On Green	0.36	0.00	0.35	0.00	0.06	0.48
Sat Flow, veh/h	2608	1333	3137	0	1494	3059
Grp Volume(v), veh/h	880	0	675	0	54	1011
Grp Sat Flow(s),veh/h/ln	1304	1333	1490	0	1494	1490
Q Serve(g_s), s	22.7	0.0	13.3	0.0	2.5	18.8
Cycle Q Clear(g_c), s	22.7	0.0	13.3	0.0	2.5	18.8
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	949	485	1045	0	83	1420
V/C Ratio(X)	0.93	0.00	0.65	0.00	0.65	0.71
Avail Cap(c_a), veh/h	1028	526	1045	0	128	1420
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.95	0.00	1.00	1.00
Uniform Delay (d), s/veh	21.4	0.0	19.1	0.0	32.4	14.5
Incr Delay (d2), s/veh	12.8	0.0	2.9	0.0	3.1	3.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.8	0.0	5.9	0.0	1.1	8.3
LnGrp Delay(d),s/veh	34.2	0.0	22.0	0.0	35.5	17.6
LnGrp LOS	C		C		D	B
Approach Vol, veh/h	880		675			1065
Approach Delay, s/veh	34.2		22.0			18.5
Approach LOS	C		C			B

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	8.8	30.3		30.9		39.1		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	6.0	20.3		27.6		31.2		
Max Q Clear Time (g_c+I1), s	4.5	15.3		24.7		20.8		
Green Ext Time (p_c), s	0.0	4.5		0.8		9.0		

Intersection Summary			
HCM 2010 Ctrl Delay			24.7
HCM 2010 LOS			C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	2030	231	0	1470	510	250	1080	10	550	781	10
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1569	0	1569	1569	1569	1569	1600	1412	1569	1600
Adj Flow Rate, veh/h	0	2137	235	0	1547	529	263	1137	10	579	822	10
Adj No. of Lanes	0	4	1	0	4	1	1	3	0	2	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	2096	517	0	2096	809	283	1145	10	572	1286	16
Arrive On Green	0.00	0.39	0.39	0.00	0.39	0.39	0.19	0.26	0.26	0.22	0.29	0.29
Sat Flow, veh/h	0	5616	1331	0	5616	1331	1494	4378	39	2608	4361	53
Grp Volume(v), veh/h	0	2137	235	0	1547	529	263	741	406	579	538	294
Grp Sat Flow(s),veh/h/ln	0	1349	1331	0	1349	1331	1494	1427	1562	1304	1427	1559
Q Serve(g_s), s	0.0	50.5	17.0	0.0	32.0	33.6	22.5	33.7	33.7	28.5	21.3	21.3
Cycle Q Clear(g_c), s	0.0	50.5	17.0	0.0	32.0	33.6	22.5	33.7	33.7	28.5	21.3	21.3
Prop In Lane	0.00		1.00	0.00		1.00	1.00		0.02	1.00		0.03
Lane Grp Cap(c), veh/h	0	2096	517	0	2096	809	283	747	408	572	842	460
V/C Ratio(X)	0.00	1.02	0.45	0.00	0.74	0.65	0.93	0.99	0.99	1.01	0.64	0.64
Avail Cap(c_a), veh/h	0	2096	517	0	2096	809	325	747	408	572	842	460
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.09	0.09	0.80	0.80	0.80	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	39.8	29.5	0.0	34.1	16.6	51.8	47.9	47.9	50.8	39.8	39.8
Incr Delay (d2), s/veh	0.0	11.8	0.3	0.0	0.2	0.4	24.4	27.6	37.9	40.8	1.7	3.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	20.5	6.3	0.0	12.0	12.3	11.2	16.1	18.8	13.5	8.6	9.6
LnGrp Delay(d),s/veh	0.0	51.5	29.8	0.0	34.3	17.0	76.2	75.5	85.8	91.6	41.6	43.0
LnGrp LOS		F	C		C	B	E	E	F	F	D	D
Approach Vol, veh/h		2372			2076			1410			1411	
Approach Delay, s/veh		49.4			29.9			78.6			62.4	
Approach LOS		D			C			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		56.0	29.9	44.1		56.0	34.2	39.8
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 51	* 28	34.7		* 51	* 29	34.0
Max Q Clear Time (g_c+I1), s		52.5	24.5	23.3		35.6	30.5	35.7
Green Ext Time (p_c), s		0.0	0.2	9.0		14.8	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	52.0
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	270	2181	20	71	1890	230	0	608	226	210	364	170
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	284	2296	21	75	1989	230	0	640	0	221	383	146
Adj No. of Lanes	1	3	0	1	3	0	0	3	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	302	2629	24	91	1771	203	0	548	170	256	773	614
Arrive On Green	0.20	0.60	0.60	0.08	0.60	0.60	0.00	0.13	0.00	0.10	0.26	0.26
Sat Flow, veh/h	1494	4376	40	1494	3898	446	0	4424	1333	2608	2980	1330
Grp Volume(v), veh/h	284	1497	820	75	1451	768	0	640	0	221	383	146
Grp Sat Flow(s),veh/h/ln	1494	1427	1562	1494	1427	1489	0	1427	1333	1304	1490	1330
Q Serve(g_s), s	26.2	61.6	61.8	6.9	63.6	63.6	0.0	17.9	0.0	11.7	15.3	0.0
Cycle Q Clear(g_c), s	26.2	61.6	61.8	6.9	63.6	63.6	0.0	17.9	0.0	11.7	15.3	0.0
Prop In Lane	1.00		0.03	1.00		0.30	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	302	1715	938	91	1297	677	0	548	170	256	773	614
V/C Ratio(X)	0.94	0.87	0.87	0.83	1.12	1.13	0.00	1.17	0.00	0.86	0.50	0.24
Avail Cap(c_a), veh/h	302	1715	938	195	1297	677	0	548	170	266	786	620
HCM Platoon Ratio	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	0.00	0.72	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	55.0	23.5	23.5	63.6	27.7	27.7	0.0	61.0	0.0	62.2	44.0	22.8
Incr Delay (d2), s/veh	6.2	0.6	1.2	0.8	54.7	62.5	0.0	89.9	0.0	23.2	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	24.3	26.7	2.9	34.6	37.6	0.0	11.6	0.0	5.0	6.3	5.7
LnGrp Delay(d),s/veh	61.3	24.1	24.7	64.5	82.4	90.3	0.0	151.0	0.0	85.4	44.6	23.0
LnGrp LOS	E	C	C	E	F	F		F		F	D	C
Approach Vol, veh/h		2601			2294			640			750	
Approach Delay, s/veh		28.3			84.5			151.0			52.4	
Approach LOS		C			F			F			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.2	89.6		41.4	33.8	69.0	18.4	23.0
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 18	69.6		36.9	24.3	* 64	* 14	17.9
Max Q Clear Time (g_c+I1), s	8.9	63.8		17.3	28.2	65.6	13.7	19.9
Green Ext Time (p_c), s	0.0	5.5		7.3	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	64.2
HCM 2010 LOS	E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	2497	30	108	2061	480	70	80	153	80	30	50
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1600	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	95	2628	20	114	2169	486	74	84	70	58	68	8
Adj No. of Lanes	1	3	1	1	3	0	1	1	1	1	1	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	111	2658	826	133	2244	479	104	109	212	101	118	99
Arrive On Green	0.15	1.00	1.00	0.09	0.64	0.64	0.07	0.07	0.07	0.08	0.08	0.08
Sat Flow, veh/h	1494	4282	1330	1494	3533	754	1494	1569	1333	1345	1569	1307
Grp Volume(v), veh/h	95	2628	20	114	1732	923	74	84	70	58	68	8
Grp Sat Flow(s),veh/h/ln	1494	1427	1330	1494	1427	1432	1494	1569	1333	1345	1569	1307
Q Serve(g_s), s	8.7	0.0	0.0	10.5	78.8	88.9	6.8	7.4	6.5	5.8	5.9	0.8
Cycle Q Clear(g_c), s	8.7	0.0	0.0	10.5	78.8	88.9	6.8	7.4	6.5	5.8	5.9	0.8
Prop In Lane	1.00		1.00	1.00		0.53	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	111	2658	826	133	1814	910	104	109	212	101	118	99
V/C Ratio(X)	0.85	0.99	0.02	0.86	0.96	1.01	0.71	0.77	0.33	0.57	0.57	0.08
Avail Cap(c_a), veh/h	142	2658	826	217	1814	910	159	167	261	316	369	307
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.20	0.20	0.20	0.45	0.45	0.45	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	58.8	0.0	0.0	62.9	23.7	25.5	63.7	64.0	52.3	62.5	62.6	60.2
Incr Delay (d2), s/veh	6.8	5.6	0.0	6.6	7.0	23.5	8.6	10.9	0.9	5.0	4.3	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	1.4	0.0	4.6	32.6	40.8	3.1	3.5	2.5	2.3	2.7	0.3
LnGrp Delay(d),s/veh	65.6	5.6	0.0	69.5	30.7	49.1	72.3	74.9	53.2	67.5	66.9	60.6
LnGrp LOS	E	A	A	E	C	F	E	E	D	E	E	E
Approach Vol, veh/h		2743			2769			228			134	
Approach Delay, s/veh		7.6			38.4			67.4			66.8	
Approach LOS		A			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	17.2	92.3		15.7	15.1	94.3		14.9
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 20	51.6		32.9	* 13	58.6		14.9
Max Q Clear Time (g_c+I1), s	12.5	2.0		7.9	10.7	90.9		9.4
Green Ext Time (p_c), s	0.1	49.4		0.5	0.0	0.0		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	25.8
HCM 2010 LOS	C

Notes
User approved volume balancing among the lanes for turning movement.
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	143	2537	2643	250	20	37
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.86		0.97	
Frpb, ped/bikes	1.00	1.00	0.99		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	0.99		0.90	
Flt Protected	0.95	1.00	1.00		0.98	
Satd. Flow (prot)	1490	4282	5298		2429	
Flt Permitted	0.95	1.00	1.00		0.98	
Satd. Flow (perm)	1490	4282	5298		2429	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	151	2671	2782	263	21	39
RTOR Reduction (vph)	0	0	7	0	38	0
Lane Group Flow (vph)	151	2671	3038	0	22	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	20.8	124.0	98.5		4.8	
Effective Green, g (s)	20.8	124.0	98.5		4.8	
Actuated g/C Ratio	0.14	0.83	0.66		0.03	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	206	3539	3479		77	
v/s Ratio Prot	0.10	c0.62	c0.57		c0.01	
v/s Ratio Perm						
v/c Ratio	0.73	0.75	0.87		0.29	
Uniform Delay, d1	61.9	6.0	20.7		70.9	
Progression Factor	1.00	1.00	1.00		1.00	
Incremental Delay, d2	11.2	1.5	3.4		0.9	
Delay (s)	73.1	7.5	24.1		71.8	
Level of Service	E	A	C		E	
Approach Delay (s)		11.0	24.1		71.8	
Approach LOS		B	C		E	

Intersection Summary			
HCM 2000 Control Delay	18.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	77.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	70	850	41	31	1172	363	99	371	57	274	162	20
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	74	895	43	33	1234	382	104	391	60	288	171	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	186	2173	104	315	2222	691	227	452	202	380	443	188
Arrive On Green	0.52	0.52	0.52	0.52	0.52	0.52	0.15	0.15	0.15	0.14	0.14	0.00
Sat Flow, veh/h	312	4187	201	595	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	74	610	328	33	1234	382	104	391	60	288	171	0
Grp Sat Flow(s),veh/h/ln	312	1427	1533	595	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	17.9	11.1	11.1	3.1	16.6	16.4	5.4	10.9	3.4	8.8	4.2	0.0
Cycle Q Clear(g_c), s	34.4	11.1	11.1	14.2	16.6	16.4	5.4	10.9	3.4	8.8	4.2	0.0
Prop In Lane	1.00		0.13	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	186	1481	795	315	2222	691	227	452	202	380	443	188
V/C Ratio(X)	0.40	0.41	0.41	0.10	0.56	0.55	0.46	0.86	0.30	0.76	0.39	0.00
Avail Cap(c_a), veh/h	186	1481	795	315	2222	691	227	452	202	440	513	218
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.76	0.94	0.94	0.94	1.00	1.00	1.00	0.85	0.85	0.00
Uniform Delay (d), s/veh	25.5	12.5	12.5	16.9	13.8	13.8	32.9	35.2	32.0	35.1	33.2	0.0
Incr Delay (d2), s/veh	4.8	0.6	1.2	0.6	0.9	3.0	1.5	16.0	0.8	5.6	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.8	4.5	4.9	0.6	6.7	6.5	2.3	5.5	1.3	3.5	1.9	0.0
LnGrp Delay(d),s/veh	30.2	13.1	13.7	17.5	14.8	16.8	34.4	51.2	32.9	40.7	33.6	0.0
LnGrp LOS	C	B	B	B	B	B	C	D	C	D	C	
Approach Vol, veh/h		1012			1649			555			459	
Approach Delay, s/veh		14.6			15.3			46.0			38.1	
Approach LOS		B			B			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		49.9		17.1		49.9		18.0
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		42.2		13.9		42.2		12.9
Max Q Clear Time (g_c+I1), s		18.6		10.8		36.4		12.9
Green Ext Time (p_c), s		19.9		0.7		5.4		0.0

Intersection Summary			
HCM 2010 Ctrl Delay			22.6
HCM 2010 LOS			C

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	20	1110	1130	100	80	90
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	21	1168	1189	83	84	17
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	716	3673	1430	444	156	80
Arrive On Green	0.48	0.86	0.67	0.67	0.06	0.06
Sat Flow, veh/h	1494	4424	4424	1329	2608	1333
Grp Volume(v), veh/h	21	1168	1189	83	84	17
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1329	1304	1333
Q Serve(g_s), s	1.0	6.9	27.0	3.1	4.1	1.6
Cycle Q Clear(g_c), s	1.0	6.9	27.0	3.1	4.1	1.6
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	716	3673	1430	444	156	80
V/C Ratio(X)	0.03	0.32	0.83	0.19	0.54	0.21
Avail Cap(c_a), veh/h	716	3673	2049	636	744	381
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.00	1.00
Upstream Filter(I)	0.88	0.88	0.49	0.49	0.85	0.85
Uniform Delay (d), s/veh	17.9	1.8	18.9	14.9	59.4	58.2
Incr Delay (d2), s/veh	0.0	0.2	2.9	0.5	1.1	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	2.8	10.7	1.2	1.5	0.6
LnGrp Delay(d),s/veh	17.9	2.0	21.8	15.3	60.5	58.7
LnGrp LOS	B	A	C	B	E	E
Approach Vol, veh/h		1189	1272		101	
Approach Delay, s/veh		2.3	21.4		60.2	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	68.1	49.2		12.7		117.3		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	15.1	* 62		37.1		82.2		
Max Q Clear Time (g_c+I1), s	3.0	29.0		6.1		8.9		
Green Ext Time (p_c), s	7.4	14.5		0.2		16.5		

Intersection Summary	
HCM 2010 Ctrl Delay	14.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	20	75	596	1329	200	1606
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	21	0	627	0	211	1691
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	63	32	2251	1007	170	2688
Arrive On Green	0.02	0.00	0.76	0.00	0.11	0.90
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	21	0	627	0	211	1691
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	1.2	0.0	9.8	0.0	17.1	19.3
Cycle Q Clear(g_c), s	1.2	0.0	9.8	0.0	17.1	19.3
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	63	32	2251	1007	170	2688
V/C Ratio(X)	0.33	0.00	0.28	0.00	1.24	0.63
Avail Cap(c_a), veh/h	466	236	2251	1007	170	2688
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.48	0.48
Uniform Delay (d), s/veh	72.1	0.0	5.7	0.0	66.4	1.7
Incr Delay (d2), s/veh	3.1	0.0	0.0	0.0	129.4	0.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	4.0	0.0	13.2	7.7
LnGrp Delay(d),s/veh	75.2	0.0	5.7	0.0	195.9	2.2
LnGrp LOS	E		A		F	A
Approach Vol, veh/h	21		627			1902
Approach Delay, s/veh	75.2		5.7			23.7
Approach LOS	E		A			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	22.0	119.1		8.9		141.1		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	17.1	90.8		26.0		112.8		
Max Q Clear Time (g_c+I1), s	19.1	11.8		3.2		21.3		
Green Ext Time (p_c), s	0.0	64.1		0.0		72.0		

Intersection Summary	
HCM 2010 Ctrl Delay	19.7
HCM 2010 LOS	B

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	20	181	143	130	130	53	128	1586	154	47	1191	20
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	21	191	52	137	137	19	135	1669	159	49	1254	16
Adj No. of Lanes	1	2	1	2	2	1	1	2	1	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	205	486	216	342	486	216	509	2004	896	59	1559	485
Arrive On Green	0.16	0.16	0.16	0.16	0.16	0.16	0.34	0.67	0.67	0.04	0.36	0.36
Sat Flow, veh/h	1223	2980	1328	2192	2980	1328	1494	2980	1332	1494	4282	1331
Grp Volume(v), veh/h	21	191	52	137	137	19	135	1669	159	49	1254	16
Grp Sat Flow(s),veh/h/ln	1223	1490	1328	1096	1490	1328	1494	1490	1332	1494	1427	1331
Q Serve(g_s), s	2.0	7.5	4.4	7.8	5.2	1.6	8.5	54.2	5.8	4.2	34.2	1.0
Cycle Q Clear(g_c), s	7.2	7.5	4.4	15.2	5.2	1.6	8.5	54.2	5.8	4.2	34.2	1.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	205	486	216	342	486	216	509	2004	896	59	1559	485
V/C Ratio(X)	0.10	0.39	0.24	0.40	0.28	0.09	0.27	0.83	0.18	0.84	0.80	0.03
Avail Cap(c_a), veh/h	345	825	368	592	825	368	509	2004	896	59	1861	579
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.93	0.93	0.93	0.62	0.62	0.62	0.95	0.95	0.95
Uniform Delay (d), s/veh	50.9	48.7	47.4	55.5	47.7	46.2	31.1	15.9	7.9	62.0	37.2	26.6
Incr Delay (d2), s/veh	0.2	0.5	0.6	0.7	0.3	0.2	0.1	2.7	0.3	58.3	4.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	3.1	1.7	2.4	2.2	0.6	3.5	22.8	2.2	2.7	14.1	0.4
LnGrp Delay(d),s/veh	51.1	49.2	48.0	56.2	48.0	46.4	31.1	18.5	8.2	120.3	41.5	26.7
LnGrp LOS	D	D	D	E	D	D	C	B	A	F	D	C
Approach Vol, veh/h		264			293			1963			1319	
Approach Delay, s/veh		49.1			51.7			18.5			44.2	
Approach LOS		D			D			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.0	93.2		26.8	50.1	53.1		26.8
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	5.1	72.6		36.0	21.2	* 57		36.0
Max Q Clear Time (g_c+I1), s	6.2	56.2		9.5	10.5	36.2		17.2
Green Ext Time (p_c), s	0.0	13.2		3.1	9.1	11.1		2.8

Intersection Summary	
HCM 2010 Ctrl Delay	32.0
HCM 2010 LOS	C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	377	1366	485	450	938	249	431	1097	454	291	984	282
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	397	1438	273	474	987	224	454	1155	433	306	1036	260
Adj No. of Lanes	2	5	1	2	4	1	2	4	2	2	4	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	395	1565	533	402	1344	497	402	1790	1138	325	1632	1063
Arrive On Green	0.15	0.25	0.25	0.15	0.25	0.25	0.15	0.33	0.33	0.12	0.30	0.30
Sat Flow, veh/h	2608	6353	1330	2608	5396	1330	2608	5396	2342	2608	5396	2342
Grp Volume(v), veh/h	397	1438	273	474	987	224	454	1155	433	306	1036	260
Grp Sat Flow(s),veh/h/ln	1304	1271	1330	1304	1349	1330	1304	1349	1171	1304	1349	1171
Q Serve(g_s), s	22.7	33.1	23.2	23.1	25.2	19.0	23.1	27.3	17.5	17.5	24.9	10.2
Cycle Q Clear(g_c), s	22.7	33.1	23.2	23.1	25.2	19.0	23.1	27.3	17.5	17.5	24.9	10.2
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	395	1565	533	402	1344	497	402	1790	1138	325	1632	1063
V/C Ratio(X)	1.01	0.92	0.51	1.18	0.73	0.45	1.13	0.65	0.38	0.94	0.63	0.24
Avail Cap(c_a), veh/h	395	1567	533	402	1345	498	402	1790	1138	325	1632	1063
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.23	0.23	0.23	0.23	0.23	0.23	0.39	0.39	0.39	0.76	0.76	0.76
Uniform Delay (d), s/veh	63.6	55.1	33.9	63.5	51.8	35.4	63.5	42.6	24.3	65.1	45.2	25.2
Incr Delay (d2), s/veh	23.2	2.5	0.2	87.2	0.5	0.2	71.2	0.7	0.4	29.1	1.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.4	11.8	8.5	13.2	9.4	7.0	12.3	10.3	5.7	7.6	9.4	3.4
LnGrp Delay(d),s/veh	86.8	57.5	34.2	150.6	52.3	35.6	134.6	43.3	24.7	94.2	46.6	25.6
LnGrp LOS	F	E	C	F	D	D	F	D	C	F	D	C
Approach Vol, veh/h		2108			1685			2042			1602	
Approach Delay, s/veh		60.0			77.7			59.7			52.3	
Approach LOS		E			E			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	23.6	55.6	28.0	42.8	28.0	51.2	27.6	43.2
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	18.7	49.7	23.1	37.0	23.1	45.3	22.7	37.4
Max Q Clear Time (g_c+I1), s	19.5	29.3	25.1	35.1	25.1	26.9	24.7	27.2
Green Ext Time (p_c), s	0.0	18.6	0.0	1.9	0.0	16.9	0.0	9.5

Intersection Summary	
HCM 2010 Ctrl Delay	62.3
HCM 2010 LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	178	20	281	39	10	70	77	1570	38	30	1614	161
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	202	0	81	41	11	71	81	1653	33	32	1699	165
Adj No. of Lanes	2	0	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	220	0	147	119	15	94	68	2647	824	42	2574	801
Arrive On Green	0.08	0.00	0.08	0.08	0.08	0.08	0.05	0.62	0.62	0.03	0.60	0.60
Sat Flow, veh/h	2689	0	1333	1494	183	1178	1494	4282	1333	1494	4282	1333
Grp Volume(v), veh/h	202	0	81	41	0	82	81	1653	33	32	1699	165
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1494	0	1361	1494	1427	1333	1494	1427	1333
Q Serve(g_s), s	8.2	0.0	6.3	2.9	0.0	6.5	5.0	26.4	1.1	2.3	28.9	6.2
Cycle Q Clear(g_c), s	8.2	0.0	6.3	2.9	0.0	6.5	5.0	26.4	1.1	2.3	28.9	6.2
Prop In Lane	1.00		1.00	1.00		0.87	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	220	0	147	119	0	109	68	2647	824	42	2574	801
V/C Ratio(X)	0.92	0.00	0.55	0.34	0.00	0.75	1.19	0.62	0.04	0.76	0.66	0.21
Avail Cap(c_a), veh/h	220	0	147	462	0	421	68	2647	824	68	2574	801
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.69	0.69	0.69	0.46	0.46	0.46
Uniform Delay (d), s/veh	50.1	0.0	46.4	47.9	0.0	49.5	52.5	13.1	8.2	53.1	14.5	10.0
Incr Delay (d2), s/veh	38.2	0.0	2.6	1.3	0.0	7.6	151.3	0.8	0.1	4.6	0.6	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.2	0.0	2.4	1.2	0.0	2.7	4.9	10.4	0.4	1.0	11.5	2.3
LnGrp Delay(d),s/veh	88.4	0.0	49.0	49.1	0.0	57.2	203.8	13.8	8.3	57.7	15.1	10.3
LnGrp LOS	F		D	D		E	F	B	A	E	B	B
Approach Vol, veh/h		283			123			1767			1896	
Approach Delay, s/veh		77.1			54.5			22.4			15.4	
Approach LOS		E			D			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.1	74.1		13.8	10.0	72.2		14.0
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	5.0	* 41		* 34	5.0	* 41		9.0
Max Q Clear Time (g_c+I1), s	4.3	28.4		8.5	7.0	30.9		10.2
Green Ext Time (p_c), s	0.0	12.3		0.4	0.0	9.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	23.9
HCM 2010 LOS	C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	224	10	62	10	0	10	21	1451	10	10	1849	75
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1667	1700	1700	1667	1700	1667	1667	1700	1667	1667	1700
Adj Flow Rate, veh/h	236	11	17	11	0	10	22	1527	11	11	1946	78
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	284	55	84	15	0	14	32	2404	17	20	2292	91
Arrive On Green	0.09	0.09	0.09	0.02	0.00	0.02	0.02	0.75	0.75	0.01	0.74	0.74
Sat Flow, veh/h	3079	591	914	786	0	715	1587	3223	23	1587	3105	124
Grp Volume(v), veh/h	236	0	28	21	0	0	22	750	788	11	986	1038
Grp Sat Flow(s),veh/h/ln	1540	0	1505	1501	0	0	1587	1583	1663	1587	1583	1645
Q Serve(g_s), s	10.9	0.0	2.5	2.0	0.0	0.0	2.0	33.1	33.2	1.0	62.7	64.9
Cycle Q Clear(g_c), s	10.9	0.0	2.5	2.0	0.0	0.0	2.0	33.1	33.2	1.0	62.7	64.9
Prop In Lane	1.00		0.61	0.52		0.48	1.00		0.01	1.00		0.08
Lane Grp Cap(c), veh/h	284	0	139	30	0	0	32	1181	1240	20	1169	1214
V/C Ratio(X)	0.83	0.00	0.20	0.71	0.00	0.00	0.68	0.63	0.64	0.56	0.84	0.85
Avail Cap(c_a), veh/h	552	0	270	248	0	0	55	1181	1240	55	1169	1214
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	0.20	0.20	0.20
Uniform Delay (d), s/veh	64.7	0.0	60.9	70.7	0.0	0.0	70.6	8.9	8.9	71.2	13.2	13.5
Incr Delay (d2), s/veh	2.4	0.0	0.3	11.1	0.0	0.0	9.1	2.6	2.5	1.9	1.6	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.8	0.0	1.1	0.9	0.0	0.0	1.0	15.2	16.0	0.5	27.7	29.7
LnGrp Delay(d),s/veh	67.1	0.0	61.1	81.7	0.0	0.0	79.7	11.5	11.4	73.1	14.8	15.2
LnGrp LOS	E		E	F			E	B	B	E	B	B
Approach Vol, veh/h		264			21			1560			2035	
Approach Delay, s/veh		66.5			81.7			12.4			15.3	
Approach LOS		E			F			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.3	113.7		7.1	7.4	112.5		18.0
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	5.0	71.2		* 24	5.0	71.2		26.0
Max Q Clear Time (g_c+I1), s	3.0	35.2		4.0	4.0	66.9		12.9
Green Ext Time (p_c), s	0.0	35.5		0.0	0.0	4.3		0.4

Intersection Summary	
HCM 2010 Ctrl Delay	18.0
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (vph)	0	0	394	1120	800	80
Ideal Flow (vphpl)	1600	1600	1600	1600	1600	1600
Total Lost time (s)			4.2	4.9	4.9	4.9
Lane Util. Factor			1.00	0.95	0.95	1.00
Frpb, ped/bikes			1.00	1.00	1.00	0.97
Flpb, ped/bikes			1.00	1.00	1.00	1.00
Frt			1.00	1.00	1.00	0.85
Flt Protected			0.95	1.00	1.00	1.00
Satd. Flow (prot)			1490	2980	2980	1299
Flt Permitted			0.95	1.00	1.00	1.00
Satd. Flow (perm)			1490	2980	2980	1299
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	415	1179	842	84
RTOR Reduction (vph)	0	0	0	0	0	32
Lane Group Flow (vph)	0	0	415	1179	842	52
Confl. Peds. (#/hr)						2
Turn Type			Prot	NA	NA	Perm
Protected Phases			5	2	6	
Permitted Phases						6
Actuated Green, G (s)			39.0	79.7	36.5	36.5
Effective Green, g (s)			39.0	79.7	36.5	36.5
Actuated g/C Ratio			0.42	0.85	0.39	0.39
Clearance Time (s)			4.2	4.9	4.9	4.9
Vehicle Extension (s)			2.0	4.0	4.0	4.0
Lane Grp Cap (vph)			622	2542	1164	507
v/s Ratio Prot			c0.28	0.40	c0.28	
v/s Ratio Perm						0.04
v/c Ratio			0.67	0.46	0.72	0.10
Uniform Delay, d1			22.0	1.7	24.2	18.1
Progression Factor			1.00	1.00	1.00	1.00
Incremental Delay, d2			2.1	0.2	2.4	0.1
Delay (s)			24.1	1.8	26.6	18.2
Level of Service			C	A	C	B
Approach Delay (s)	0.0			7.6	25.8	
Approach LOS	A			A	C	

Intersection Summary			
HCM 2000 Control Delay	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	93.4	Sum of lost time (s)	13.7
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	40	391	0	1494	780	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	42	412	0	1573	821	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)		3				
Median type				None	None	
Median storage veh)						
Upstream signal (ft)					408	
pX, platoon unblocked	0.77	0.77	0.77			
vC, conflicting volume	1607	411	821			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1202	0	187			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	69	51	100			
cM capacity (veh/h)	137	840	1073			

Direction, Lane #	EB 1	EB 2	NB 1	NB 2	SB 1	SB 2
Volume Total	28	426	786	786	411	411
Volume Left	28	14	0	0	0	0
Volume Right	0	412	0	0	0	0
cSH	137	869	1700	1700	1700	1700
Volume to Capacity	0.20	0.49	0.46	0.46	0.24	0.24
Queue Length 95th (ft)	18	69	0	0	0	0
Control Delay (s)	37.9	14.0	0.0	0.0	0.0	0.0
Lane LOS	E	B				
Approach Delay (s)	15.5		0.0		0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	61.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	1627	350	1094	60	54	1237
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1600	1569	1569
Adj Flow Rate, veh/h	1713	0	1152	0	57	1302
Adj No. of Lanes	3	1	3	0	1	3
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	1814	638	1251	0	76	1701
Arrive On Green	0.48	0.00	0.29	0.00	0.05	0.40
Sat Flow, veh/h	3792	1333	4565	0	1494	4424
Grp Volume(v), veh/h	1713	0	1152	0	57	1302
Grp Sat Flow(s),veh/h/ln	1264	1333	1427	0	1494	1427
Q Serve(g_s), s	38.7	0.0	23.4	0.0	3.4	23.7
Cycle Q Clear(g_c), s	38.7	0.0	23.4	0.0	3.4	23.7
Prop In Lane	1.00	1.00		0.00	1.00	
Lane Grp Cap(c), veh/h	1814	638	1251	0	76	1701
V/C Ratio(X)	0.94	0.00	0.92	0.00	0.75	0.77
Avail Cap(c_a), veh/h	1921	676	1251	0	101	1701
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.73	0.00	1.00	1.00
Uniform Delay (d), s/veh	22.3	0.0	30.9	0.0	42.2	23.5
Incr Delay (d2), s/veh	9.7	0.0	9.6	0.0	12.8	3.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	15.0	0.0	10.3	0.0	1.7	9.8
LnGrp Delay(d),s/veh	32.0	0.0	40.4	0.0	55.0	26.8
LnGrp LOS	C		D		D	C
Approach Vol, veh/h	1713		1152			1359
Approach Delay, s/veh	32.0		40.4			28.0
Approach LOS	C		D			C

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	9.5	32.1		48.5		41.5		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	6.1	22.2		45.6		33.2		
Max Q Clear Time (g_c+I1), s	5.4	25.4		40.7		25.7		
Green Ext Time (p_c), s	0.0	0.0		2.4		7.3		

Intersection Summary	
HCM 2010 Ctrl Delay	33.0
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	1731	380	0	1630	520	364	1084	30	641	1410	20
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1569	1569	0	1569	1569	1569	1569	1600	1412	1569	1569
Adj Flow Rate, veh/h	0	1822	391	0	1716	539	383	1141	31	675	1484	20
Adj No. of Lanes	0	4	1	0	4	1	1	4	0	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2	2	2	2	2	2	2
Cap, veh/h	0	1869	461	0	1869	819	318	1434	39	701	1383	430
Arrive On Green	0.00	0.35	0.35	0.00	0.35	0.35	0.21	0.26	0.26	0.27	0.32	0.32
Sat Flow, veh/h	0	5616	1331	0	5616	1331	1494	5442	148	2608	4282	1331
Grp Volume(v), veh/h	0	1822	391	0	1716	539	383	848	324	675	1484	20
Grp Sat Flow(s),veh/h/ln	0	1349	1331	0	1349	1331	1494	1349	1542	1304	1427	1331
Q Serve(g_s), s	0.0	46.6	38.1	0.0	42.7	36.7	29.8	27.3	27.4	35.8	45.2	1.4
Cycle Q Clear(g_c), s	0.0	46.6	38.1	0.0	42.7	36.7	29.8	27.3	27.4	35.8	45.2	1.4
Prop In Lane	0.00		1.00	0.00		1.00	1.00		0.10	1.00		1.00
Lane Grp Cap(c), veh/h	0	1869	461	0	1869	819	318	1067	406	701	1383	430
V/C Ratio(X)	0.00	0.97	0.85	0.00	0.92	0.66	1.20	0.79	0.80	0.96	1.07	0.05
Avail Cap(c_a), veh/h	0	1869	461	0	1869	819	318	1067	406	701	1383	430
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.00	0.09	0.09	0.00	0.32	0.32	0.77	0.77	0.77	1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	45.1	42.3	0.0	43.8	17.4	55.1	48.0	48.1	50.5	47.4	32.6
Incr Delay (d2), s/veh	0.0	2.7	1.9	0.0	3.2	1.3	112.9	3.4	8.6	25.1	46.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	17.7	14.2	0.0	16.3	13.8	22.2	10.5	12.7	15.3	23.8	0.5
LnGrp Delay(d),s/veh	0.0	47.8	44.2	0.0	47.0	18.8	168.0	51.4	56.6	75.6	93.9	32.6
LnGrp LOS		D	D		D	B	F	D	E	E	F	C
Approach Vol, veh/h		2213			2255			1555			2179	
Approach Delay, s/veh		47.2			40.3			81.2			87.7	
Approach LOS		D			D			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		54.0	35.0	51.0		54.0	43.3	42.7
Change Period (Y+Rc), s		* 5.5	* 5.2	5.8		* 5.5	* 5.7	5.8
Max Green Setting (Gmax), s		* 49	* 30	45.2		* 49	* 38	36.9
Max Q Clear Time (g_c+I1), s		48.6	31.8	47.2		44.7	37.8	29.4
Green Ext Time (p_c), s		0.0	0.0	0.0		3.8	0.0	7.0

Intersection Summary		
HCM 2010 Ctrl Delay		62.5
HCM 2010 LOS		E

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	200	2132	30	81	1770	190	0	682	176	341	803	370
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1600	0	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	211	2244	31	85	1863	191	0	718	0	359	845	357
Adj No. of Lanes	1	4	0	1	4	0	0	4	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	2	2	2
Cap, veh/h	395	3341	46	103	2020	207	0	741	183	372	1382	782
Arrive On Green	0.26	0.60	0.60	0.07	0.40	0.40	0.00	0.14	0.00	0.14	0.32	0.32
Sat Flow, veh/h	1494	5526	76	1494	5011	514	0	5616	1333	2608	4282	1331
Grp Volume(v), veh/h	211	1643	632	85	1505	549	0	718	0	359	845	357
Grp Sat Flow(s),veh/h/ln	1494	1349	1555	1494	1349	1477	0	1349	1333	1304	1427	1331
Q Serve(g_s), s	13.3	29.7	29.7	6.2	38.9	38.9	0.0	14.6	0.0	15.1	18.3	0.0
Cycle Q Clear(g_c), s	13.3	29.7	29.7	6.2	38.9	38.9	0.0	14.6	0.0	15.1	18.3	0.0
Prop In Lane	1.00		0.05	1.00		0.35	0.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	395	2447	940	103	1631	595	0	741	183	372	1382	782
V/C Ratio(X)	0.53	0.67	0.67	0.82	0.92	0.92	0.00	0.97	0.00	0.96	0.61	0.46
Avail Cap(c_a), veh/h	395	2447	940	167	1641	599	0	741	183	372	1382	782
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.15	0.15	0.15	0.73	0.73	0.73	0.00	0.50	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	34.7	14.5	14.5	50.5	31.2	31.2	0.0	47.2	0.0	46.9	31.4	12.8
Incr Delay (d2), s/veh	0.1	0.2	0.6	6.3	7.8	17.5	0.0	16.5	0.0	37.1	0.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	11.0	12.8	2.7	15.5	18.8	0.0	6.3	0.0	7.4	7.3	10.9
LnGrp Delay(d),s/veh	34.8	14.7	15.1	56.9	39.0	48.7	0.0	63.8	0.0	84.0	32.2	13.2
LnGrp LOS	C	B	B	E	D	D		E		F	C	B
Approach Vol, veh/h		2486			2139			718			1561	
Approach Delay, s/veh		16.5			42.2			63.8			39.8	
Approach LOS		B			D			E			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.3	72.3		40.6	34.9	49.7	20.4	20.2
Change Period (Y+Rc), s	* 4.7	5.4		5.1	5.4	* 5.4	* 4.7	5.1
Max Green Setting (Gmax), s	* 12	47.0		35.5	14.7	* 45	* 16	15.1
Max Q Clear Time (g_c+I1), s	8.2	31.7		20.3	15.3	40.9	17.1	16.6
Green Ext Time (p_c), s	0.0	13.7		10.1	0.0	3.5	0.0	0.0

Intersection Summary			
HCM 2010 Ctrl Delay			34.6
HCM 2010 LOS			C

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	2478	81	250	1931	50	50	10	183	450	70	80
Number	5	2	12	1	6	16	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	32	2608	45	263	2033	52	53	11	146	527	0	26
Adj No. of Lanes	1	5	0	1	4	1	1	1	1	2	0	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	44	2792	48	268	3120	768	71	74	302	564	0	278
Arrive On Green	0.03	0.43	0.43	0.36	1.00	1.00	0.05	0.05	0.05	0.21	0.00	0.21
Sat Flow, veh/h	1494	6518	112	1494	5396	1328	1494	1569	1333	2689	0	1324
Grp Volume(v), veh/h	32	2033	620	263	2033	52	53	11	146	527	0	26
Grp Sat Flow(s),veh/h/ln	1494	1271	1548	1494	1349	1328	1494	1569	1333	1345	0	1324
Q Serve(g_s), s	3.2	57.2	57.2	26.1	0.0	0.0	5.3	1.0	7.1	28.9	0.0	2.4
Cycle Q Clear(g_c), s	3.2	57.2	57.2	26.1	0.0	0.0	5.3	1.0	7.1	28.9	0.0	2.4
Prop In Lane	1.00		0.07	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	44	2177	663	268	3120	768	71	74	302	564	0	278
V/C Ratio(X)	0.73	0.93	0.93	0.98	0.65	0.07	0.75	0.15	0.48	0.93	0.00	0.09
Avail Cap(c_a), veh/h	79	2177	663	268	3120	768	71	74	302	590	0	290
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.34	0.34	0.34	0.78	0.78	0.78	0.95	0.95	0.95	1.00	0.00	1.00
Uniform Delay (d), s/veh	72.2	40.9	40.9	47.9	0.0	0.0	70.6	68.5	50.4	58.3	0.0	47.8
Incr Delay (d2), s/veh	3.5	3.5	9.8	43.4	0.8	0.1	33.9	0.9	1.1	21.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	20.6	26.2	13.9	0.2	0.0	2.8	0.5	5.4	12.5	0.0	0.9
LnGrp Delay(d),s/veh	75.7	44.4	50.7	91.3	0.8	0.1	104.5	69.4	51.5	80.1	0.0	47.9
LnGrp LOS	E	D	D	F	A	A	F	E	D	F		D
Approach Vol, veh/h		2685			2348			210			553	
Approach Delay, s/veh		46.2			11.0			65.8			78.6	
Approach LOS		D			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	31.6	69.7		36.5	9.1	92.1		12.2
Change Period (Y+Rc), s	* 4.7	5.4		5.1	* 4.7	5.4		5.1
Max Green Setting (Gmax), s	* 27	62.8		32.9	* 7.9	81.8		7.1
Max Q Clear Time (g_c+I1), s	28.1	59.2		30.9	5.2	2.0		9.1
Green Ext Time (p_c), s	0.0	3.6		0.5	0.0	78.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.7
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (vph)	73	3018	2134	40	150	97
Ideal Flow (vphpl)	1600	1600	1600	1600	1440	1600
Total Lost time (s)	4.7	5.4	5.4		4.7	
Lane Util. Factor	1.00	0.91	0.86		0.97	
Frpb, ped/bikes	1.00	1.00	1.00		1.00	
Flpb, ped/bikes	1.00	1.00	1.00		1.00	
Frt	1.00	1.00	1.00		0.94	
Flt Protected	0.95	1.00	1.00		0.97	
Satd. Flow (prot)	1490	4282	5375		2502	
Flt Permitted	0.95	1.00	1.00		0.97	
Satd. Flow (perm)	1490	4282	5375		2502	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	77	3177	2246	42	158	102
RTOR Reduction (vph)	0	0	1	0	77	0
Lane Group Flow (vph)	77	3177	2287	0	183	0
Confl. Peds. (#/hr)				10		
Turn Type	Prot	NA	NA		Prot	
Protected Phases	5	2	6		3	
Permitted Phases						
Actuated Green, G (s)	11.3	120.5	104.5		8.3	
Effective Green, g (s)	11.3	120.5	104.5		8.3	
Actuated g/C Ratio	0.08	0.80	0.70		0.06	
Clearance Time (s)	4.7	5.4	5.4		4.7	
Vehicle Extension (s)	2.1	4.0	4.0		2.1	
Lane Grp Cap (vph)	112	3439	3744		138	
v/s Ratio Prot	0.05	c0.74	0.43		c0.07	
v/s Ratio Perm						
v/c Ratio	0.69	0.92	0.61		1.33	
Uniform Delay, d1	67.6	11.2	12.0		70.8	
Progression Factor	0.80	3.02	1.00		1.00	
Incremental Delay, d2	4.0	1.7	0.8		189.5	
Delay (s)	58.4	35.6	12.8		260.3	
Level of Service	E	D	B		F	
Approach Delay (s)		36.2	12.8		260.3	
Approach LOS		D	B		F	

Intersection Summary			
HCM 2000 Control Delay	37.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	19.9
Intersection Capacity Utilization	87.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	90	1634	76	106	1395	441	62	296	82	560	294	21
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1600	1569	1569	1569	1569	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	95	1720	77	112	1468	317	65	312	25	589	309	0
Adj No. of Lanes	1	3	0	1	3	1	1	2	1	2	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	140	2396	107	119	2442	759	128	256	115	638	744	316
Arrive On Green	0.57	0.57	0.57	0.57	0.57	0.57	0.09	0.09	0.09	0.24	0.24	0.00
Sat Flow, veh/h	265	4202	188	261	4282	1332	1494	2980	1333	2689	3137	1333
Grp Volume(v), veh/h	95	1168	629	112	1468	317	65	312	25	589	309	0
Grp Sat Flow(s),veh/h/ln	265	1427	1535	261	1427	1332	1494	1490	1333	1345	1569	1333
Q Serve(g_s), s	51.9	44.6	44.7	40.8	33.6	20.1	6.2	12.9	2.6	32.1	12.5	0.0
Cycle Q Clear(g_c), s	85.5	44.6	44.7	85.5	33.6	20.1	6.2	12.9	2.6	32.1	12.5	0.0
Prop In Lane	1.00		0.12	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	140	1628	875	119	2442	759	128	256	115	638	744	316
V/C Ratio(X)	0.68	0.72	0.72	0.94	0.60	0.42	0.51	1.22	0.22	0.92	0.42	0.00
Avail Cap(c_a), veh/h	140	1628	875	119	2442	759	128	256	115	663	774	329
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.15	0.15	0.15	0.86	0.86	0.86	1.00	1.00	1.00	0.75	0.75	0.00
Uniform Delay (d), s/veh	50.0	23.5	23.5	62.1	21.1	18.2	65.5	68.6	63.9	55.9	48.4	0.0
Incr Delay (d2), s/veh	4.1	0.4	0.8	61.7	0.9	1.4	3.3	127.9	1.0	15.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	17.6	19.1	6.7	13.4	7.7	2.7	9.9	1.0	13.3	5.4	0.0
LnGrp Delay(d),s/veh	54.1	23.9	24.3	123.8	22.0	19.6	68.8	196.4	64.8	70.9	48.8	0.0
LnGrp LOS	D	C	C	F	C	B	E	F	E	E	D	
Approach Vol, veh/h		1892			1897			402			898	
Approach Delay, s/veh		25.5			27.6			167.6			63.2	
Approach LOS		C			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4		6		8
Phs Duration (G+Y+Rc), s		91.3		40.7		91.3		18.0
Change Period (Y+Rc), s		5.8		5.1		5.8		5.1
Max Green Setting (Gmax), s		84.1		37.0		84.1		12.9
Max Q Clear Time (g_c+I1), s		87.5		34.1		87.5		14.9
Green Ext Time (p_c), s		0.0		1.4		0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	44.2
HCM 2010 LOS	D

Notes

User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Volume (veh/h)	60	1660	1490	50	140	100
Number	1	6	2	12	7	14
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1412	1569
Adj Flow Rate, veh/h	63	1747	1568	41	147	16
Adj No. of Lanes	1	3	3	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2
Cap, veh/h	556	3618	1833	569	190	97
Arrive On Green	0.37	0.84	0.43	0.43	0.07	0.07
Sat Flow, veh/h	1494	4424	4424	1330	2608	1333
Grp Volume(v), veh/h	63	1747	1568	41	147	16
Grp Sat Flow(s),veh/h/ln	1494	1427	1427	1330	1304	1333
Q Serve(g_s), s	3.6	13.9	43.0	2.4	7.2	1.5
Cycle Q Clear(g_c), s	3.6	13.9	43.0	2.4	7.2	1.5
Prop In Lane	1.00			1.00	1.00	1.00
Lane Grp Cap(c), veh/h	556	3618	1833	569	190	97
V/C Ratio(X)	0.11	0.48	0.86	0.07	0.77	0.16
Avail Cap(c_a), veh/h	556	3618	1950	606	744	381
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.53	0.53	0.09	0.09	0.24	0.24
Uniform Delay (d), s/veh	26.8	2.6	33.6	21.9	59.2	56.5
Incr Delay (d2), s/veh	0.0	0.2	0.5	0.0	0.8	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.4	16.9	0.9	2.6	0.5
LnGrp Delay(d),s/veh	26.8	2.9	34.1	22.0	60.0	56.6
LnGrp LOS	C	A	C	C	E	E
Approach Vol, veh/h		1810	1609		163	
Approach Delay, s/veh		3.7	33.8		59.6	
Approach LOS		A	C		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	54.2	61.4		14.4		115.6		
Change Period (Y+Rc), s	5.8	* 5.8		4.9		5.8		
Max Green Setting (Gmax), s	18.1	* 59		37.1		82.2		
Max Q Clear Time (g_c+I1), s	5.6	45.0		9.2		15.9		
Green Ext Time (p_c), s	10.2	10.7		0.3		32.4		

Intersection Summary	
HCM 2010 Ctrl Delay	19.8
HCM 2010 LOS	B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	30	82	1072	1405	240	2614
Number	7	14	2	12	1	6
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00	1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1600	1569	1569	1569	1569
Adj Flow Rate, veh/h	32	0	1128	0	253	2752
Adj No. of Lanes	2	1	2	1	1	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	2	2	2	2
Cap, veh/h	79	40	2193	981	190	2670
Arrive On Green	0.03	0.00	0.74	0.00	0.13	0.90
Sat Flow, veh/h	2689	1360	3059	1333	1494	3059
Grp Volume(v), veh/h	32	0	1128	0	253	2752
Grp Sat Flow(s),veh/h/ln	1345	1360	1490	1333	1494	1490
Q Serve(g_s), s	1.8	0.0	24.1	0.0	19.1	134.4
Cycle Q Clear(g_c), s	1.8	0.0	24.1	0.0	19.1	134.4
Prop In Lane	1.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h	79	40	2193	981	190	2670
V/C Ratio(X)	0.40	0.00	0.51	0.00	1.33	1.03
Avail Cap(c_a), veh/h	466	236	2193	981	190	2670
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	0.09	0.00	0.38	0.38
Uniform Delay (d), s/veh	71.5	0.0	8.4	0.0	65.4	7.8
Incr Delay (d2), s/veh	3.3	0.0	0.1	0.0	161.9	19.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	0.0	9.9	0.0	16.4	60.0
LnGrp Delay(d),s/veh	74.8	0.0	8.5	0.0	227.3	27.6
LnGrp LOS	E		A		F	F
Approach Vol, veh/h	32		1128			3005
Approach Delay, s/veh	74.8		8.5			44.5
Approach LOS	E		A			D

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4		6		
Phs Duration (G+Y+Rc), s	24.0	116.2		9.8		140.2		
Change Period (Y+Rc), s	4.9	5.8		5.4		5.8		
Max Green Setting (Gmax), s	19.1	88.8		26.0		112.8		
Max Q Clear Time (g_c+I1), s	21.1	26.1		3.8		136.4		
Green Ext Time (p_c), s	0.0	62.4		0.1		0.0		

Intersection Summary		
HCM 2010 Ctrl Delay		34.9
HCM 2010 LOS		C

Notes
User approved volume balancing among the lanes for turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	29	199	244	360	429	82	254	1833	225	134	2173	49
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	31	209	153	379	452	32	267	1929	229	141	2287	26
Adj No. of Lanes	1	2	1	2	2	1	1	2	1	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	142	715	319	455	715	319	526	2289	1023	130	2130	662
Arrive On Green	0.24	0.24	0.24	0.24	0.24	0.24	0.35	0.77	0.77	0.09	0.50	0.50
Sat Flow, veh/h	907	2980	1330	1967	2980	1330	1494	2980	1332	1494	4282	1332
Grp Volume(v), veh/h	31	209	153	379	452	32	267	1929	229	141	2287	26
Grp Sat Flow(s),veh/h/ln	907	1490	1330	984	1490	1330	1494	1490	1332	1494	1427	1332
Q Serve(g_s), s	4.8	8.6	14.8	27.4	20.4	2.8	21.2	63.8	7.2	13.1	74.6	1.5
Cycle Q Clear(g_c), s	25.1	8.6	14.8	36.0	20.4	2.8	21.2	63.8	7.2	13.1	74.6	1.5
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	142	715	319	455	715	319	526	2289	1023	130	2130	662
V/C Ratio(X)	0.22	0.29	0.48	0.83	0.63	0.10	0.51	0.84	0.22	1.08	1.07	0.04
Avail Cap(c_a), veh/h	142	715	319	455	715	319	526	2289	1023	130	2130	662
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.49	0.49	0.49	0.09	0.09	0.09	0.86	0.86	0.86
Uniform Delay (d), s/veh	62.3	46.6	49.0	62.0	51.1	44.4	38.3	11.4	4.9	68.5	37.7	19.3
Incr Delay (d2), s/veh	0.8	0.2	1.1	6.5	0.9	0.1	0.0	0.4	0.0	96.1	41.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	3.6	5.5	8.3	8.5	1.0	8.8	25.8	2.6	8.9	37.6	0.6
LnGrp Delay(d),s/veh	63.1	46.8	50.1	68.6	52.0	44.5	38.4	11.8	4.9	164.5	79.3	19.4
LnGrp LOS	E	D	D	E	D	D	D	B	A	F	F	B
Approach Vol, veh/h		393			863			2425			2454	
Approach Delay, s/veh		49.4			59.0			14.1			83.6	
Approach LOS		D			E			B			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.0	121.9		41.6	59.5	80.4		41.6
Change Period (Y+Rc), s	4.9	5.8		5.6	5.8	* 5.8		5.6
Max Green Setting (Gmax), s	13.1	84.6		36.0	23.1	* 75		36.0
Max Q Clear Time (g_c+I1), s	15.1	65.8		27.1	23.2	76.6		38.0
Green Ext Time (p_c), s	0.0	16.4		4.7	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	560	1527	484	761	1448	478	509	1290	577	414	1502	646
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1412	1569	1569	1412	1569	1569	1412	1569	1569
Adj Flow Rate, veh/h	589	1607	290	801	1524	465	536	1358	559	436	1581	643
Adj No. of Lanes	2	5	1	2	4	1	2	4	2	2	4	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	367	1567	507	489	1583	533	350	1702	1178	280	1558	1006
Arrive On Green	0.14	0.25	0.25	0.19	0.29	0.29	0.27	0.63	0.63	0.11	0.29	0.29
Sat Flow, veh/h	2608	6353	1330	2608	5396	1331	2608	5396	2342	2608	5396	2342
Grp Volume(v), veh/h	589	1607	290	801	1524	465	536	1358	559	436	1581	643
Grp Sat Flow(s),veh/h/ln	1304	1271	1330	1304	1349	1331	1304	1349	1171	1304	1349	1171
Q Serve(g_s), s	21.1	37.0	25.9	28.1	41.7	44.0	20.1	28.1	18.4	16.1	43.3	32.4
Cycle Q Clear(g_c), s	21.1	37.0	25.9	28.1	41.7	44.0	20.1	28.1	18.4	16.1	43.3	32.4
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	367	1567	507	489	1583	533	350	1702	1178	280	1558	1006
V/C Ratio(X)	1.61	1.03	0.57	1.64	0.96	0.87	1.53	0.80	0.47	1.56	1.01	0.64
Avail Cap(c_a), veh/h	367	1567	507	489	1583	533	350	1702	1178	280	1558	1006
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	0.09	0.09	0.09	0.09	0.09	0.09	0.32	0.32	0.32	0.11	0.11	0.11
Uniform Delay (d), s/veh	64.4	56.5	36.8	61.0	52.2	41.4	54.9	24.1	12.5	67.0	53.3	33.7
Incr Delay (d2), s/veh	273.5	14.7	0.2	288.5	2.2	1.6	244.7	1.3	0.4	252.8	11.8	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	21.5	14.3	9.5	29.7	15.8	17.9	19.1	10.3	5.8	15.6	17.4	10.6
LnGrp Delay(d),s/veh	338.0	71.2	36.9	349.5	54.4	43.0	299.6	25.5	12.9	319.8	65.1	34.0
LnGrp LOS	F	F	D	F	D	D	F	C	B	F	F	C
Approach Vol, veh/h		2486			2790			2453			2660	
Approach Delay, s/veh		130.4			137.2			82.5			99.4	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.0	53.1	33.0	42.9	25.0	49.1	26.0	49.9
Change Period (Y+Rc), s	4.9	5.8	4.9	5.9	4.9	5.8	4.9	5.9
Max Green Setting (Gmax), s	16.1	47.3	28.1	37.0	20.1	43.3	21.1	44.0
Max Q Clear Time (g_c+I1), s	18.1	30.1	30.1	39.0	22.1	45.3	23.1	46.0
Green Ext Time (p_c), s	0.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		113.0
HCM 2010 LOS		F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	285	20	353	108	40	64	184	1786	75	77	1714	319
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1569	1569	1569	1600	1569	1569	1569	1569	1569	1569
Adj Flow Rate, veh/h	315	0	123	114	42	64	194	1880	65	81	1804	255
Adj No. of Lanes	2	0	1	1	1	0	1	3	1	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	305	0	231	139	52	79	179	2540	791	90	2283	711
Arrive On Green	0.11	0.00	0.11	0.09	0.09	0.09	0.12	0.59	0.59	0.08	0.71	0.71
Sat Flow, veh/h	2689	0	1333	1494	562	856	1494	4282	1333	1494	4282	1333
Grp Volume(v), veh/h	315	0	123	114	0	106	194	1880	65	81	1804	255
Grp Sat Flow(s),veh/h/ln	1345	0	1333	1494	0	1418	1494	1427	1333	1494	1427	1333
Q Serve(g_s), s	17.0	0.0	12.6	11.2	0.0	11.0	18.0	47.8	3.1	8.1	41.8	11.2
Cycle Q Clear(g_c), s	17.0	0.0	12.6	11.2	0.0	11.0	18.0	47.8	3.1	8.1	41.8	11.2
Prop In Lane	1.00		1.00	1.00		0.60	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	305	0	231	139	0	132	179	2540	791	90	2283	711
V/C Ratio(X)	1.03	0.00	0.53	0.82	0.00	0.81	1.08	0.74	0.08	0.90	0.79	0.36
Avail Cap(c_a), veh/h	305	0	231	339	0	321	179	2540	791	90	2283	711
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.36	0.36	0.36	0.09	0.09	0.09
Uniform Delay (d), s/veh	66.5	0.0	56.5	66.8	0.0	66.7	66.0	22.1	13.0	68.6	16.3	11.8
Incr Delay (d2), s/veh	60.5	0.0	1.2	8.7	0.0	8.3	64.4	0.7	0.1	11.1	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.9	0.0	4.7	5.0	0.0	4.6	10.6	19.0	1.2	3.6	16.2	4.1
LnGrp Delay(d),s/veh	127.0	0.0	57.7	75.5	0.0	75.0	130.4	22.9	13.1	79.7	16.5	11.9
LnGrp LOS	F		E	E		E	F	C	B	E	B	B
Approach Vol, veh/h		438			220			2139			2140	
Approach Delay, s/veh		107.5			75.3			32.3			18.4	
Approach LOS		F			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	95.1		18.9	23.0	86.1		22.0
Change Period (Y+Rc), s	5.0	* 6.1		* 5	5.0	* 6.1		5.0
Max Green Setting (Gmax), s	9.0	* 69		* 34	18.0	* 60		17.0
Max Q Clear Time (g_c+I1), s	10.1	49.8		13.2	20.0	43.8		19.0
Green Ext Time (p_c), s	0.0	18.9		0.7	0.0	15.9		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		34.9
HCM 2010 LOS		C

Notes

User approved volume balancing among the lanes for turning movement.

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	188	0	52	10	0	0	74	1867	0	10	2012	152
Number	3	8	18	7	4	14	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1412	1569	1600	1600	1569	1600	1569	1569	1600	1569	1569	1600
Adj Flow Rate, veh/h	198	0	12	11	0	0	78	1965	0	11	2118	158
Adj No. of Lanes	2	1	0	0	1	0	1	2	0	1	2	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	0	121	18	0	0	57	2250	0	18	2053	151
Arrive On Green	0.09	0.00	0.09	0.01	0.00	0.00	0.04	0.75	0.00	0.01	0.73	0.73
Sat Flow, veh/h	2608	0	1333	1494	0	0	1494	3059	0	1494	2815	207
Grp Volume(v), veh/h	198	0	12	11	0	0	78	1965	0	11	1109	1167
Grp Sat Flow(s),veh/h/ln	1304	0	1333	1494	0	0	1494	1490	0	1494	1490	1532
Q Serve(g_s), s	10.8	0.0	1.2	1.1	0.0	0.0	5.5	68.8	0.0	1.1	105.8	105.8
Cycle Q Clear(g_c), s	10.8	0.0	1.2	1.1	0.0	0.0	5.5	68.8	0.0	1.1	105.8	105.8
Prop In Lane	1.00		1.00	1.00		0.00	1.00		0.00	1.00		0.14
Lane Grp Cap(c), veh/h	237	0	121	18	0	0	57	2250	0	18	1087	1117
V/C Ratio(X)	0.84	0.00	0.10	0.60	0.00	0.00	1.38	0.87	0.00	0.60	1.02	1.04
Avail Cap(c_a), veh/h	468	0	239	247	0	0	57	2250	0	52	1087	1117
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.19	0.19	0.19
Uniform Delay (d), s/veh	64.9	0.0	60.5	71.2	0.0	0.0	69.8	12.8	0.0	71.2	19.6	19.6
Incr Delay (d2), s/veh	3.0	0.0	0.1	10.9	0.0	0.0	248.6	5.1	0.0	2.1	17.3	25.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	0.0	0.4	0.5	0.0	0.0	6.2	29.4	0.0	0.5	48.1	52.0
LnGrp Delay(d),s/veh	67.9	0.0	60.6	82.2	0.0	0.0	318.3	17.8	0.0	73.4	36.9	45.2
LnGrp LOS	E		E	F			F	B		E	F	F
Approach Vol, veh/h		210			11			2043			2287	
Approach Delay, s/veh		67.5			82.2			29.3			41.3	
Approach LOS		E			F			C			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	6.3	115.0		6.0	10.0	111.3		17.8
Change Period (Y+Rc), s	4.5	5.5		* 4.2	4.5	5.5		4.6
Max Green Setting (Gmax), s	5.0	71.2		* 24	5.5	70.7		26.0
Max Q Clear Time (g_c+I1), s	3.1	70.8		3.1	7.5	107.8		12.8
Green Ext Time (p_c), s	0.0	0.4		0.0	0.0	0.0		0.3

Intersection Summary	
HCM 2010 Ctrl Delay	37.2
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

APPENDIX D: FREEWAY LOS REPORTS

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	5,800	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,526	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,243	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	5,979	pcph	11,750	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	264	pcph	2,100	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,249	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.53	
Density, D	19.2	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 NB N. of Studebaker
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	5,800	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,526	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,243	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,249	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.53	
Density, D	19.2	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 SB. N. of Studebaker
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	5,400	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,421	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	5,812	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,162	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.49	
Density, D	17.9	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	5,082	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,337	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	5,470	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	5,128	pcph	11,750	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	342	pcph	2,100	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,094	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.47	
Density, D	16.8	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	WB SR-22
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	3,400	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	895	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,625	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,813	pcphpl
Average passenger-car speed, S	62.6	mph
Volume-to-capacity ratio, v/c	0.77	
Density, D	29.0	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	2,454	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	646	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	2,617	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	1,609	pcph	4,700	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	1,008	pcph	1,900	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,308	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.56	
Density, D	20.1	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	3,600	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	947	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,838	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	2,702	pcph	4,700	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	1,136	pcph	1,900	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,919	pcphpl
Average passenger-car speed, S	61.2	mph
Volume-to-capacity ratio, v/c	0.82	
Density, D	31.4	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	EB SR-22
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	3,600	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	947	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,839	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,919	pcphpl
Average passenger-car speed, S	61.2	mph
Volume-to-capacity ratio, v/c	0.82	
Density, D	31.4	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	6,547	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,723	veh
Trucks and buses	5%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	7,047	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	0	pcph	0	pcph	Yes
Exiting freeway volume	11,750	pcph	1	pcph	Yes
On-ramp volume	0	pcph	326	pcph	No
Off-ramp volume	0	pcph		pcph	No

LOS and Performance Measures

Flow rate, v_p	1,409	pcphpl
Average passenger-car speed, S	0.6	mph
Volume-to-capacity ratio, v/c	11750.00	
Density, D	65.0	pcpmpl
Level of service, LOS	22	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 NB N. of Studebaker
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	6,850	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,803	veh
Trucks and buses	5%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	7,373	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	0	pcph	0	pcph	Yes
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	No
Off-ramp volume	0	pcph		pcph	No

LOS and Performance Measures

Flow rate, v_p	1,475	pcphpl
Average passenger-car speed, S	0.6	mph
Volume-to-capacity ratio, v/c	11750.00	
Density, D	64.9	pcpmpl
Level of service, LOS	23	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 SB. N. of Studebaker
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	5,900	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,553	veh
Trucks and buses	5%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,350	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	0	pcph	0	pcph	Yes
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	No
Off-ramp volume	0	pcph		pcph	No

LOS and Performance Measures

Flow rate, v_p	1,270	pcphpl
Average passenger-car speed, S	0.5	mph
Volume-to-capacity ratio, v/c	11750.00	
Density, D	65.0	pcpmpl
Level of service, LOS	20	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	5,609	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,476	veh
Trucks and buses	5%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,037	pcph

Speed Inputs and Adjustments

Number of lanes, N	5	
Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	0	pcph	0	pcph	Yes
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	No
Off-ramp volume	0	pcph	216	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,207	pcphpl
Average passenger-car speed, S	0.5	mph
Volume-to-capacity ratio, v/c	11750.00	
Density, D	65.0	pcpmpl
Level of service, LOS	19	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	WB SR-22
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	4,100	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,079	veh
Trucks and buses	3%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,372	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	0	pcph	0	pcph	Yes
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	No
Off-ramp volume	0	pcph		pcph	No

LOS and Performance Measures

Flow rate, v_p	2,186	pcphpl
Average passenger-car speed, S	0.9	mph
Volume-to-capacity ratio, v/c	4700.00	
Density, D	56.2	pcpmpl
Level of service, LOS	39	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	2,742	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	722	veh
Trucks and buses	3%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	2,924	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	0	pcph	0	pcph	Yes
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	No
Off-ramp volume	0	pcph	1,447	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,462	pcphpl
Average passenger-car speed, S	0.6	mph
Volume-to-capacity ratio, v/c	4700.00	
Density, D	64.9	pcpmpl
Level of service, LOS	23	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	2,095	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	551	veh
Trucks and buses	3%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	2,234	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	0	pcph	0	pcph	Yes
Exiting freeway volume	4,700	pcph	1	pcph	Yes
On-ramp volume	0	pcph	1,284	pcph	No
Off-ramp volume	0	pcph		pcph	No

LOS and Performance Measures

Flow rate, v_p	1,117	pcphpl
Average passenger-car speed, S	0.5	mph
Volume-to-capacity ratio, v/c	4700.00	
Density, D	65.0	pcpmpl
Level of service, LOS	17	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	EB SR-22
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	3,300	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	868	veh
Trucks and buses	3%	
Recreational vehicles	0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,519	pcph

Speed Inputs and Adjustments

Number of lanes, N	2	
Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	0	pcph	0	pcph	Yes
Exiting freeway volume		pcph		pcph	
On-ramp volume	0	pcph		pcph	No
Off-ramp volume	0	pcph		pcph	No

LOS and Performance Measures

Flow rate, v_p	1,759	pcphpl
Average passenger-car speed, S	0.7	mph
Volume-to-capacity ratio, v/c	4700.00	
Density, D	63.2	pcpmpl
Level of service, LOS	28	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	5,937	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,562	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,390	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	5,979	pcph	11,750	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	411	pcph	2,100	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,278	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.54	
Density, D	19.7	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 NB N. of Studebaker
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	5,929	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,560	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,381	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,276	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.54	
Density, D	19.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 SB. N. of Studebaker
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	5,425	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,428	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	5,839	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,168	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.50	
Density, D	18.0	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	5,082	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,337	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	5,470	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	4,992	pcph	11,750	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	478	pcph	2,100	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,094	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.47	
Density, D	16.8	pcpmpl
Level of service, LOS	B	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	WB SR-22
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	4,407	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,160	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,699	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,350	pcphpl
Average passenger-car speed, S	52.2	mph
Volume-to-capacity ratio, v/c	1.00	
Density, D	45.0	pcpmpl
Level of service, LOS	F	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	3,054	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	804	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,257	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	2,179	pcph	4,700	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	1,078	pcph	1,900	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,628	pcphpl
Average passenger-car speed, S	64.3	mph
Volume-to-capacity ratio, v/c	0.69	
Density, D	25.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	3,930	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,034	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,190	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	2,702	pcph	4,700	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	1,488	pcph	1,900	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,095	pcphpl
Average passenger-car speed, S	58.2	mph
Volume-to-capacity ratio, v/c	0.89	
Density, D	36.0	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	EB SR-22
Alternative	Exisiting
Time period	2015 AM

Flow Inputs and Adjustments

Volume, V	4,218	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,110	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,498	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,249	pcphpl
Average passenger-car speed, S	54.8	mph
Volume-to-capacity ratio, v/c	0.96	
Density, D	41.1	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	6,941	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,827	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	7,471	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	7,047	pcph	11,750	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	424	pcph	2,100	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,494	pcphpl
Average passenger-car speed, S	64.9	mph
Volume-to-capacity ratio, v/c	0.64	
Density, D	23.0	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 NB N. of Studebaker
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	6,931	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,824	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	7,460	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,492	pcphpl
Average passenger-car speed, S	64.9	mph
Volume-to-capacity ratio, v/c	0.63	
Density, D	23.0	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 SB. N. of Studebaker
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	6,030	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,587	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,490	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,298	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.55	
Density, D	20.0	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	5,609	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,476	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,037	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	5,658	pcph	11,750	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	379	pcph	2,100	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,207	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.51	
Density, D	18.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	WB SR-22
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	4,145	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,091	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,420	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,210	pcphpl
Average passenger-car speed, S	55.7	mph
Volume-to-capacity ratio, v/c	0.94	
Density, D	39.7	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	2,742	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	722	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	2,924	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	1,084	pcph	4,700	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	1,840	pcph	1,900	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,462	pcphpl
Average passenger-car speed, S	64.9	mph
Volume-to-capacity ratio, v/c	0.62	
Density, D	22.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	3,523	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	927	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,756	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	2,234	pcph	4,700	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	1,522	pcph	1,900	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,878	pcphpl
Average passenger-car speed, S	61.8	mph
Volume-to-capacity ratio, v/c	0.80	
Density, D	30.4	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	EB SR-22
Alternative	Exisiting
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	3,812	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,003	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,065	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,032	pcphpl
Average passenger-car speed, S	59.3	mph
Volume-to-capacity ratio, v/c	0.86	
Density, D	34.3	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	6,420	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,689	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,910	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	6,604	pcph	11,750	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	306	pcph	2,100	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,382	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.59	
Density, D	21.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 NB N. of Studebaker
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	6,420	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,689	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,910	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,382	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.59	
Density, D	21.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 SB. N. of Studebaker
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	5,980	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,574	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,436	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,287	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.55	
Density, D	19.8	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	5,616	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,478	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,045	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	5,653	pcph	11,750	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	392	pcph	2,100	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,209	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.51	
Density, D	18.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	WB SR-22
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	3,770	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	992	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,020	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,010	pcphpl
Average passenger-car speed, S	59.7	mph
Volume-to-capacity ratio, v/c	0.86	
Density, D	33.7	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	2,699	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	710	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	2,878	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	1,737	pcph	4,700	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	1,141	pcph	1,900	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,439	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.61	
Density, D	22.1	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	3,918	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,031	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,177	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	2,899	pcph	4,700	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	1,278	pcph	1,900	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,089	pcphpl
Average passenger-car speed, S	58.3	mph
Volume-to-capacity ratio, v/c	0.89	
Density, D	35.8	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	EB SR-22
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	3,990	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,050	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,255	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,127	pcphpl
Average passenger-car speed, S	57.5	mph
Volume-to-capacity ratio, v/c	0.91	
Density, D	37.0	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Cumulative
Time period	2035 PM

Flow Inputs and Adjustments

Volume, V	7,580	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,995	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	8,158	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	7,748	pcph	11,750	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	410	pcph	2,100	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,632	pcphpl
Average passenger-car speed, S	64.2	mph
Volume-to-capacity ratio, v/c	0.69	
Density, D	25.4	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 NB N. of Studebaker
Alternative	Cumulative
Time period	2035 PM

Flow Inputs and Adjustments

Volume, V	7,580	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,995	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	8,158	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,632	pcphpl
Average passenger-car speed, S	64.2	mph
Volume-to-capacity ratio, v/c	0.69	
Density, D	25.4	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 SB. N. of Studebaker
Alternative	Cumulative
Time period	2035 PM

Flow Inputs and Adjustments

Volume, V	6,530	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,718	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	7,028	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,406	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.60	
Density, D	21.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Cumulative
Time period	2035 PM

Flow Inputs and Adjustments

Volume, V	6,254	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,646	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,731	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	6,434	pcph	11,750	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	297	pcph	2,100	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,346	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.57	
Density, D	20.7	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	WB SR-22
Alternative	Cumulative
Time period	2035 PM

Flow Inputs and Adjustments

Volume, V	4,540	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,195	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,841	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,421	pcphpl
Average passenger-car speed, S	-	mph
Volume-to-capacity ratio, v/c	1.03	
Density, D	-	pcpmpl
Level of service, LOS	F	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Cumulative
Time period	2035 PM

Flow Inputs and Adjustments

Volume, V	2,936	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	773	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,131	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	1,424	pcph	4,700	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	1,706	pcph	1,900	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,565	pcphpl
Average passenger-car speed, S	64.6	mph
Volume-to-capacity ratio, v/c	0.67	
Density, D	24.2	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Cumulative
Time period	2035 PM

Flow Inputs and Adjustments

Volume, V	3,650	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	961	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,891	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	2,382	pcph	4,700	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	1,509	pcph	1,900	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,946	pcphpl
Average passenger-car speed, S	60.8	mph
Volume-to-capacity ratio, v/c	0.83	
Density, D	32.0	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	EB SR-22
Alternative	Cumulative
Time period	2035 PM

Flow Inputs and Adjustments

Volume, V	3,650	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	961	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,892	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,946	pcphpl
Average passenger-car speed, S	60.8	mph
Volume-to-capacity ratio, v/c	0.83	
Density, D	32.0	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	6,420	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,689	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,910	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	6,457	pcph	11,750	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	453	pcph	2,100	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,382	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.59	
Density, D	21.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 NB N. of Studebaker
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	6,420	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,689	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,910	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,382	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.59	
Density, D	21.3	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 SB. N. of Studebaker
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	5,980	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,574	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,436	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,287	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.55	
Density, D	19.8	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	5,589	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,471	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,016	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	5,595	pcph	11,750	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	421	pcph	2,100	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,203	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.51	
Density, D	18.5	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	WB SR-22
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	3,770	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	992	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,020	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,010	pcphpl
Average passenger-car speed, S	59.7	mph
Volume-to-capacity ratio, v/c	0.86	
Density, D	33.7	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	2,634	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	693	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	2,809	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	1,598	pcph	4,700	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	1,211	pcph	1,900	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,404	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.60	
Density, D	21.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	3,990	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,050	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,254	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	2,624	pcph	4,700	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	1,630	pcph	1,900	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,127	pcphpl
Average passenger-car speed, S	57.5	mph
Volume-to-capacity ratio, v/c	0.91	
Density, D	37.0	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	EB SR-22
Alternative	Cumulative
Time period	2035 AM

Flow Inputs and Adjustments

Volume, V	3,990	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,050	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,255	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,127	pcphpl
Average passenger-car speed, S	57.5	mph
Volume-to-capacity ratio, v/c	0.91	
Density, D	37.0	pcpmpl
Level of service, LOS	E	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Cumulative
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	7,580	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,995	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	8,158	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	7,648	pcph	11,750	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	510	pcph	2,100	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,632	pcphpl
Average passenger-car speed, S	64.2	mph
Volume-to-capacity ratio, v/c	0.69	
Density, D	25.4	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 NB N. of Studebaker
Alternative	Cumulative
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	7,580	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,995	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	8,158	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	3.70	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	9.7	mph
Calculated free-flow speed, FFS	65.7	mph
Measured free-flow speed, FFS	65.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,632	pcphpl
Average passenger-car speed, S	64.2	mph
Volume-to-capacity ratio, v/c	0.69	
Density, D	25.4	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	I-405 SB. N. of Studebaker
Alternative	Cumulative
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	6,530	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,718	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	7,028	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,406	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.60	
Density, D	21.6	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Cumulative
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	6,099	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,605	veh
Trucks and buses	4.5%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.978	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	6,564	pcph
Number of lanes, N	5	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	1.50	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	4.5	mph
Calculated free-flow speed, FFS	70.9	mph
Measured free-flow speed, FFS	53.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	6,101	pcph	11,750	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	464	pcph	2,100	pcph	No

LOS and Performance Measures

Flow rate, v_p	1,313	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.56	
Density, D	20.2	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	WB SR-22
Alternative	Cumulative
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	4,540	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	1,195	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	4,841	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	2,421	pcphpl
Average passenger-car speed, S	-	mph
Volume-to-capacity ratio, v/c	1.03	
Density, D	-	pcpmpl
Level of service, LOS	F	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker Off-Ramp
Alternative	Cumulative
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	2,563	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	674	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	2,733	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume	626	pcph	4,700	pcph	No
On-ramp volume		pcph		pcph	
Off-ramp volume	2,107	pcph	1,900	pcph	Yes

LOS and Performance Measures

Flow rate, v_p	1,366	pcphpl
Average passenger-car speed, S	65.0	mph
Volume-to-capacity ratio, v/c	0.58	
Density, D	21.0	pcpmpl
Level of service, LOS	C	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	Studebaker On-Ramp
Alternative	Cumulative
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	3,650	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	961	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,891	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume	2,138	pcph	4,700	pcph	No
Exiting freeway volume		pcph		pcph	
On-ramp volume	1,753	pcph	1,900	pcph	No
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,946	pcphpl
Average passenger-car speed, S	60.8	mph
Volume-to-capacity ratio, v/c	0.83	
Density, D	32.0	pcpmpl
Level of service, LOS	D	

HCM 2010: Freeway Basic Segment

Basic Operational Analysis

Project	SEADIP
Freeway	I-405/SR-22
Segment	EB SR-22
Alternative	Cumulative
Time period	2015 PM

Flow Inputs and Adjustments

Volume, V	3,650	vph
Peak-hour factor, PHF	0.95	
Peak 15-min volume, v_{15}	961	veh
Trucks and buses	2.6%	
Recreational vehicles	0.0%	
Terrain type	Level	
Grade		
Length		mi
Trucks and buses PCE, E_T	1.5	
Recreational vehicle PCE, E_R	1.2	
Heavy vehicle adjustment, f_{HV}	0.987	
Driver popoulation factor, f_P	1.00	
Flow rate, v_p	3,892	pcph
Number of lanes, N	2	

Speed Inputs and Adjustments

Lane width	12.0	ft
Right-side lateral clearance	>6	ft
Total ramp density, TRD	0.66	ramps/mi
Lane width adjustment, f_{LW}	0.0	mph
Lateral clearance adjustment, f_{LC}	0.0	mph
TRD adjustment	2.3	mph
Calculated free-flow speed, FFS	73.1	mph
Measured free-flow speed, FFS	55.0	mph
Free-flow speed curve	65	mph

Capacity Checks for Segments with Ramps

	Actual		Maximum		Violation?
Entering freeway volume		pcph		pcph	
Exiting freeway volume		pcph		pcph	
On-ramp volume		pcph		pcph	
Off-ramp volume		pcph		pcph	

LOS and Performance Measures

Flow rate, v_p	1,946	pcphpl
Average passenger-car speed, S	60.8	mph
Volume-to-capacity ratio, v/c	0.83	
Density, D	32.0	pcpmpl
Level of service, LOS	D	